

SMEs E-commerce Adoption in Outermost Regions: Cases from Madeira

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Abstract. Digital economy is growing day by day, and e-commerce plays an important role in this growth. Its importance cannot be ignored, and while markets become global, transactions become digital, and new digital business models arise, organizations must react and adapt to this new reality.

Small and Medium Enterprises (SMEs) play an important role in society, as they represent most of the existing organizations and are important contributors to the economy. Factors that affect E-commerce adoption in SMEs has been widely studied, nonetheless, it has not been studied in the context of the Outermost Regions, acting as motivation for this study, with the purpose of identifying the influencing factors and benefits, of the E-commerce adoption by SMEs in the Outermost Regions.

Outermost regions are European regions geographically distant from the mainland, thus, affected by several constraints that brings them limitations. The lack of knowledge acts as subject of interest to conduct this study that will be conducted thru case study research methodology to collect data, and TOE Framework to analyse data.

Keywords: e-commerce, outermost regions, technology adoption, innovation, benefits, enablers, inhibitors

1 Introduction

Digital and technological revolutions are a reality and are part of our daily life. The business environment is rapidly changing mainly because of innovation, technological breakthroughs, and globalization that forces companies to respond [1].

Regardless of size, businesses are unlikely to survive if they don't adopt and use information technologies, especially SMEs. The current competitive challenges faced by many businesses, create the necessity SMEs to adopt E-commerce and other innovative information technologies.

E-commerce opens a range of opportunities for SMEs [2] and allows them to access the digital and global economy. Technology adoption means that the company has adopted technology as part of their business, not just using it [2].

SMEs represent 99% of all businesses in European Union [3], symbolizing a major force of employment. In Madeira Autonomous Region SMEs represent 99,9% of

companies [4], and they are the major driver of regional economy, and employment, similarly to Europe's mainland. This study focusses on E-commerce adoption in SMEs from Madeira Autonomous Region, as being one of the Outermost Regions (ORs) of Europe.

Outermost regions of Europe, are known to have several constrains, arising from the geographical remoteness of these regions, and, while there are many studies related to e-commerce adoption in developed or in developing countries, none is related to the Outermost Regions.

Even though most regional SMEs are local businesses, digital and technological adoption is becoming more and more part of their strategy and the COVID-19 pandemic accelerated this process in many of them, forcing them do adopt technologies at a fast pace, allowing them to survive in this "new" business environment. However, there is no empirical evidence on how these SMEs are affected by known Outermost Region constrains, which, by itself, is a driver for interest in this study.

Knowing that SMEs have a significant weight in Madeira Autonomous Region, where the Outermost Region status, and associated constrains are a reality, this study intends to answer the following question – How is E-commerce adoption by SMEs influenced by factors in the outermost regions?

2 Research Background

2.1 Outermost Regions

Outermost regions (ORs) are EU members territories located in areas of the globe that are remote from Europe. These regions, deal with several difficulties related to their geographical characteristics, in particular: remoteness, insularity, small size, difficult topography and climate. They are economically dependent on a few products (often agricultural products or natural resources). These features act as constraints on their future development potential [5].

Madeira Autonomous Region, as an OR, suffers from these constrains, and thus, is affected by unexisting factors in European mainland, motivating the interest of this study.

2.2 Small and Medium Enterprises

According to the European Commission recommendation [3] micro, small and medium-sized enterprises (SMEs) can be generally defined by enterprises that employ fewer than 250 persons, with an annual turnover not exceeding 50 million euros and/or annual balance sheet not exceeding 43 million euros. Small enterprises are defined as having less than 50 employees, with an annual turnover and/or annual balance not exceeding 10 million euros. Microenterprise is defined as an enterprise which has less than 10 employees and with an annual turnover and/or annual balance does not exceed 2 million euros.

2.3 Innovation

In literature a great diversity of definitions for innovation can be found [6], as it is studied in many disciplines and has been defined from different perspectives [7]. Most definitions include the development and implementation of new ideas [8], that can be anything, from new products, processes, or services within the organization [8]. In innovation, the term implementation, means that the ideas are put into use [8], thus, made available for others to use, differentiating it from other concepts, such as invention [2]. In other words, to be considered innovation, it needs to be implemented, ensuring that is accessible to potential users, either internal (thru internal processes and proceedings) or external (clients) [2].

The adoption of innovation is directly associated to change in the organization, either on its structure or functioning (or even both) [9]. It can act as a tool to influence the environment or as a reaction to changing environments [9].

The OECD, in the Oslo Manual, provides a general definition of innovation, stating that “innovation can be defined as a new or improved product or process (or combination thereof) that differs significantly from the unit’s previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)” [2].

2.4 E-commerce

The term commerce is used to describe buying and selling transactions conducted between business partners [1]. If this definition of commerce was used to describe electronic commerce (e-commerce), it would be narrow [1]. There is no universally agreed definition of e-commerce, as many definitions can be found in existing literature, and they have been changing through time. E-commerce can generally be seen, as an environment to sell and buy products or activities online between customers and suppliers [10] or as a business model where transactions take place over electronic networks, mostly the internet [1]. But it’s much more than that. E-commerce not only involves buying and selling as it also involves electronically innovating, communicating, collaborating, and discovering information [1]. Global markets, price transparency and high efficiency trading can be also attributed to EC [11].

E-commerce adoption. Adoption reflects the strategic orientation of the enterprise and can be measured by whether the enterprise currently uses or will soon use at least one form of the technology associated with an electronic network in their business process, for exchange of information, communication, distribution transactions and/or collaboration [12]. If it is new to the organization, the adoption of a system, policy, program, product, or service is considered as innovation [9], so, for the purposes of this study, EC adoption will be considered as innovation to the SME.

E-commerce benefits. Prior studies reveal that, considering the benefits, EC adoption, along with other technological innovations provide positive impact on the organization [13]. EC provides many benefits, not only for organizations, but also for cus-

tomers and society, and the number of benefits keep increasing over time [1]. Literature proposes a great range of benefits, but it is also indicative that they are country-specific [14] and sector specific [15]. Some authors also state that EC benefits can be divided into intangible and tangible benefits, where tangible benefits are related to sales, cost reduction, new customers, and others, while intangible benefits are related to efficiency, improved customer relations and others [16]. The literature review provided empirical support that e-commerce provides many benefits for SMEs [17] as E-commerce is more convenient for the clients because it allows them to order and pay anywhere, anytime, from any connected device, reducing shopping time [10]. It may also enrich profits in reducing communication costs [10]. It is also suggested in the Literature, that perceived benefits are the main reason for e-commerce adoption [18], increasing the SMEs owner's probability of allocating resources towards adoption [17]. Literature also suggests that it is worthwhile to adopt some form of e-commerce to achieve sales growth and operational efficiency (reduced operational costs) [15].

E-commerce enablers. Enablers are factors that are conducive of e-commerce adoption [19], and the literature demonstrates their importance. The adoption of e-commerce is affected by both internal and external organization factors [17], and their relative importance may vary depending on the local business conditions [17], and they both can act as enablers or inhibitors. Environmental pressures also influence managers decision into adoption [18]. In fact, literature shows that the mindset of the owner/manager is what will determine the ICT adoption by SMEs [20], as his characteristics and technological knowledge/expertise on the subject is a key factor for adoption [21], along with having a positive attitude and will to achieve the objectives [22]. SMEs working on a wider market (minimum regional market) suggests the existence of more ambitious and strategic aware owners, and thus, ready to sale on a bigger scale [23]. Organizational readiness is also very relevant to the level of e-commerce adoption [24], as it means that the SME must be technologically and financially prepared to the implementation [24]. Readiness and external pressure are also seen as important to achieve maximum benefit with adoption [25]. Competitive advantage depends on the SME effectively using the technology [26]. The availability of business resources (business relationships with foreign ICT companies) is also an enabler [19]. Perceived usefulness and perceived ease of use of innovation affect the company's attitude towards adoption [18] considering that perceived usefulness is the belief that the innovation to be adopted will improve the company's processes execution capabilities [18].

E-commerce barriers. Scientific literature shows the effectiveness of e-commerce for SMEs, but also demonstrates that there are some barriers in applying it [10]. Barriers are inhibitors for the technology adoption. "Political instability", "lack of resources", "lack of adequate infrastructure", "shortage of skills", "privacy and security issues", "governmental issues" and "business characteristics" are inhibitors commonly identified on emerging economies, however all other inhibitors can be found both

on emerging as on developed. The lack of a practical and reasonable knowledge of ICT by owners and staff means that they don't have the skills to use and exploit any technology associated with e-commerce, and will act as an inhibitor for e-commerce awareness, and adoption [27]. Many inhibitors are attributed to a lack of strategic planning for the long term [28]. Culture, in emerging economies also has big influence as inhibitor, because face-to-face [29] sales and bargain while transacting [19], are considered cultural beliefs and assumptions [19], difficult to overcome, amongst consumer and partners. However, it is noticeable that even though there are barriers, the benefits of adoption are worthwhile, and the barriers are not insuperable [28]. It is also seen on some papers that the perceptions of external pressures for adoption decreases the perception of barriers, helping SMEs overcoming them [18].

3 Research Methodology

The Case Study Research Methodology was chosen to investigate the factors affecting e-commerce adoption in SMEs on outermost regions, with cases from Madeira Island. To the best of our knowledge, there is no prior research in Madeira or any other outermost region about e-commerce adoption in SMEs and the factors affecting it. This study is seen as an explanatory case study, as its main purpose is to provide explanation to a certain phenomenon in a certain context [30], more specifically, E-commerce adoption in the context of the outermost regions.

Case study can be either a qualitative or a quantitative methodology [31] that investigates in detail one (or more) contemporary phenomenon within its real-world context, providing a better understanding or to improve already existing knowledge on the subject [31]. It can use cumulative data from different sources (observations, enquiries, documentation, interviews, etc.). However, the analysis always takes place within specific limits, in a certain situation, in a certain environment.

3.1 TOE Framework

In 1990, Tornatzky and Fleischer describe the entire process of innovation in a book called *The Processes of Technological Innovation*, where the TOE Framework is presented, as being part of the innovation adoption process, and representing the segment of how the enterprise context influences adoption and implementation of innovations [32], through three different elements that affect enterprise decision making (Technology, Organization and Environment) [32]. A model that covers many contexts, as TOE does, can offer greater explanatory capabilities [33], as it considers that changes (innovation adoption) in an organization are affected by individuals and characteristics of the organization.

Technology. Includes all technologies that are relevant to the organization, whether they are internal or external, if they are currently in use or if they are available in the market, but currently not in use [32]. Technologies currently in the organization are important to define the pace of technological change that the organization can under-

take [32]. Availability relates to technologies existing outside the organization that define the limits of what is possible and how the organization can evolve and adapt [32].

Organization. Organizational context refers to the characteristics and resources of the organization. Human resources (and qualifications), resources availability and size, top management support and organizational culture directly affect the adoption of innovation [34]. According to the literature, organizational context contains the variables most often investigated in terms of innovation adoption influence [35].

Environment. Environmental context, usually external factors, relates to all factors that surround the organization's business operation area [34,35], such as competitive pressure, supplier and customer pressure, industry and market structure/characteristics, socio-cultural issues, external technological support infrastructures, and government support/regulations [34,35]. In this study, Spatial and locational was added as a factor, to consider the outermost region status and conditionings.

4 Data Analysis

The factors influencing E-commerce adoption, namely enablers and barriers, are analysed under TOE framework. Identified benefits are also analysed in this section.

4.1 Cross-case factors affecting adoption

Collected data, analysed under the TOE Framework is presented in Table 1.

Table 1 – Summary of collected data analysed under TOE Framework

Factors		Alpha	Beta	Gamma	Delta
T	Relative advantage	+	+	+	+
	Compatibility	-	+		-
	Complexity				
O	Top management support	+	+	+	-
	Resources availability (size)	-	+	+	+
	ICT knowledge	-		+	
E	Government support	+	+		+
	Competitive pressure			+	-
	External support	+	+		+
	Market characteristics	-	-		-
	Spatial and locational	-	-	-	-
	Covid19-Pandemic		+		+

Within the technology element, relative advantage, is suggested to have a positive effect on adoption, compatibility is suggested to have a negative effect, and complexity was not considered by the SMEs during adoption.

In the organization element, the importance of top management support and resources availability for adoption are suggested to have a positive effect on E-commerce adoption. Resources availability always takes importance, as SMEs, due to their size, can face difficulties in allocating resources. Competitive pressure does not have a clear positive or negative tendency.

In external element, government support and external support are suggested to have a positive effect. Market characteristics and spatial and locational factors, in a consensus, are suggested to have negative effect on adoption. Madeira is mainly a proximity market, where face-to-face transactions are preferred. Spatial and locational, as companies consider, that being in the middle of the ocean, away from any supplier, is a huge and costly limitation, and when adopting E-commerce, it acts as a demotivator. COVID-19 is perceived to provide positive effect on E-commerce adoption, and it seems fair to suggest that the pandemic had a positive effect on any innovation adoption.

4.2 Cross-case benefits of adoption

There is empirical support in literature that E-commerce adoption provides benefits for SMEs. Table 2 shows a summary of benefits identified in SMEs.

Table 2 - Benefits identified in SMEs

Benefit	Alpha	Beta	Gamma	Delta
Sales, revenue, and profits growth		+	+	
Improved customer satisfaction		+	+	
Increased market reach	+	+	+	+
Reduced communication/operational costs	+	+	+	
Improved processing and delivery speed		+	+	
Improved staff satisfaction/productivity		+		
Increased company productivity		+	+	
Improved company Image	+	+	+	+
Improved competitive advantage		+	+	
Improved external communication	+	+	+	
Improved distribution channels		+		+
Improved business processes		+		
New Customers	+	+	+	+

It was possible to understand, that all the SMEs felt that their global image had improved and that their market reach was increased. They all also identified that they gained new customers. Surprisingly, only two of the four SMEs identified that their sales increased with E-commerce adoption, Beta and Gamma. The same SMEs also were the only ones identifying that there was an increase of client satisfaction, increased company productivity, improved processing and delivery speed, and, improved competitive advantage.

Improved external communication was also identified as a benefit, but still, one of the SMEs, Delta, did not identify it as a benefit. Delta was also the only one not iden-

tifying reduced communications/operational costs as a benefit. This goes in the opposite direction of literature findings, where improved external communication and reduced communications/operational costs are perceived to be (almost immediately) gained benefits, with the online business processes of the SMEs.

According to Beta's CEO words, it was possible to understand that their staff satisfaction was increased, and that they also improved their business processes. No other SME identified these as benefits. Beta and Delta have also improved their distribution channels with the implementation of "internal delivery systems", their staff of the company deliver orders directly to customers. Nonetheless, this is only possible due to the island's dimensions, and staff availability.

5 Conclusion

The thesis overall purpose has been to study factors that affect E-commerce adoption by small and medium enterprises (SMEs) in the outermost regions, understanding gained benefits as well.

Using TOE Framework, to analyse CEO's answers, it was possible to associate literature existing enablers and barriers to the technology, organization and environment elements of the TOE Framework, in comparison to the CEO's answers, allowing to understand which ones have a positive effect and which ones have a negative effect on E-commerce adoption in SMEs located in the outermost regions.

Overall, the findings suggest that in the outermost regions, the factors that affect E-commerce adoption are mostly consistent with the findings from literature, however, there are factors, like Spatial and Locational, that directly affect SMEs in the Outermost Regions, not acting as impediment, but as benefit limiter.

Regarding benefits, it is suggested that in the outermost regions, more specifically in Madeira, companies gain benefits with E-commerce adoption, mostly similar with the ones found in literature, but with limitations.

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