PEACOC

PErsonAlised e-Business Coaching for Construction SMEs

Overview of e-commerce in the construction sector

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Table of contents

1. Introduction

This report presents the overview of e-commerce in the construction sector in the four partners countries (United Kingdom, Portugal, Greece and Slovenia). The report was performed under the project PErsonAlised e-Business Coaching for Construction SMEs, and is an output from the activity O1/A1 (Rationalisation Phase). During this phase, each of the partners prepared a report where they collected information on the current state of the e-business practices of SMEs from the construction sector in each country. The comparative analysis of the four reports revealed the main gaps between the situation in each country and the desired situation. The results also allow to identify good practices and the essential aspects to be improved in the SMEs online business performance.

This report will support the Needs Validation Phase of the project (Activity O1/A2) where the partners will conceive the envisaged needs of construction SMEs in relation to knowledge and skills for implementing the best practices in e-commerce.

2. Importance of the construction sector in the countries' economy. Weight of SMEs in the construction sector.

SMEs play an important role in Portugal's 'non-financial business economy', for which they **account for 68.3% of added value and 77.4% of employment**.
Of the 1 295 299 companies existing in Portugal in 2018, **85 311 (6.6%) had their economic activity in the construction sector**. In the same year, the construction sector employed around 328 053 people, which corresponds to approximately **8% of the total number of workers** serving Portuguese companies that year.
In 2018, each company in the construction sector invoiced an average of 248 649.3 euros, which represents a total turnover in the sector of 21 212.5 million euros, representing about **5% of the total turnover of Portuguese companies** in the same year. Of the 85311 Portuguese companies in the construction sector in Portugal, **99.9% are SMEs**.

In Slovenia there were **9 645 individual entrepreneurs** in the construction sector in 2019 and the sector employed around **45 594 employees**, with a **gross average monthly salary of 1 318 euros**. The added value per employee was 32 054 euros. In the same year, the construction industry represented **5,6 % GDP** and created 2,5 billion euros added value, which represents **5,8 % of total added value** created by Slovenian economy in year 2019.
Micro, small and medium-sized enterprises (SMEs) account for 99% of all enterprises in Slovenia. The same ratio applies throughout the EU.

In the UK, the construction industry was in 2019 estimated to have a **value of £118, 997 million - almost £119 billion**. Even compared to the size of the overall UK economy, this is a significant amount. Indeed, in 2018, construction represented **6% of the total economic output of the entire country** and **employed 5% of the entire British workforce**. 99% of the construction companies in UK are SMEs, and many of those are micro-businesses.

The number of firms active in the Greek construction sector in 2019 was around 158.305. It represents an important part of the Greek economy, contributing to 20.3 billion total turnovers.

However, the number of people employed in the construction sector has decreased considerably in the last few years: 280.280 in 2019, a 25.8% decline from 2010 levels.
Only 23% of the employable population showed basic digital skills usage. This aspect also affects the overall productivity of the sector, reaching 19.548€ in 2019, a sharp decrease from 2011 (11%). In Greece, the division of the construction sector is as follows: Construction – 54.7%; Architectural and engineering activities - 28.6%; Manufacturing - 11.1% and Real estate activities - 5.6%.
Greek SMEs represents **63.5% of total valued** added to the economy, above the European average (56.4%). They **employ 87.9% of the population**, also this aspect above the European average (around 66%). The number of companies in the sector were 128.541 in 2008 but experienced a shar drop in the following 8 years (-69%), reaching around 59.762 businesses and increasing slightly in the following year, stabilizing around **62.749 (ELSTAT data): they represent 4.4% of all the SMEs in Greece.** A similar decrease in turnout (from 402 million to 151 million).

3. State of the digital economy in the partner country

The use of Internet by consumers in Portugal, in 2019, exceeded 3/4 of the Portuguese population aged between 16 and 74 years. 73% of respondents made on average more than one purchase per month, in 2020, most of them abroad, especially to China. However, the impact of the pandemic, together with the existence of more Portuguese online stores, is causing a reduction in purchases on foreign websites. The percentage of Portuguese people who buy on the internet, in 2019, was 39%, whereas the Post COVID-19 forecasts predicted an increase to 46% in 2020, accelerating the convergence with the European Union (EU) in 2025, where it is estimated that 69% of Portuguese shopping will done be online. Around 60% of the surveyed companies, 10% of which were from the construction sector, have a presence on the internet and in the case of larger companies (> 250 employees), the percentage reaches 100%. When it comes to e-commerce, around 27% of the surveyed companies use this channel to market their products or services in Portugal. The percentage of large companies that sell their products online is approximately 52%. It is estimated that the value of e-commerce Business-to-Consumer (B2C) in Portugal exceeded 6 thousand million euros in 2019 (2.9% of GDP) and 7.4 thousand million euros for 2020 (estimation). Regarding e-commerce Business-to-Business (B2B), the value reached 90 thousand million euros in 2019 and 103 thousand million euros for 2020 (estimation). When asked about the prospects for the evolution of electronic commerce, about half of the companies foresee growth. The vast majority of companies with e-commerce do not yet integrate the physical store with the online store, but about 25% of the companies already have this integration. About 70% of the surveyed companies already use electronic invoices and their use will increase, since many companies intend to implement it in the short term.

In Slovenia, 47% of enterprises provided more than a fifth of their persons employed with a portable device that allows a mobile connection to the Internet. As regards the enterprise size (number of persons employed), most of the small and medium-sized enterprises have a low digital intensity index (46% and 41%, respectively), while among large enterprises the majority have a high digital intensity index (56%). In 46% of enterprises with at least 10 persons employed more than half of persons employed have access to the Internet for business purposes. As regards the enterprise size, 46% of small and medium-sized enterprises and 52% of large enterprises. 17% of enterprises employ ICT specialists: 10% of small, 38% of medium-sized and 84% of large enterprises. 81% of enterprises with at least 10 persons employed are present on

the Internet with either their own website or on the website of the mother enterprise: 78% of small, 93% of medium-sized and 99% of large enterprises.
The Digital Economy and Society Index (DESI), which takes into account connectivity, human capital, use of internet services, integration of digital technology and digital public services, for Slovenia, is 51,2 in 2020 (compared to 52,6 in the EU), being the 16th out of 28 EU Member States in this parameter. Slovenia is implementing the Digitalna Slovenija 2020 strategy adopted in March 2016. Together with the Slovenian Industrial Policy (RISS - Research and Innovation Strategy of Slovenia and SIP), Digital Slovenia is one of the three key sectoral strategies with guidelines for the creation of an innovative knowledge society. Slovenia is currently drafting an all-inclusive artificial intelligence strategy and updating the strategy Digital Slovenia. In 2020, 45% of enterprises with at least 10 persons employed have a low, 32% very low, 22% high and 1% very high digital intensity index. Digitization is key to the competitiveness of Slovenian economy, specially during the pandemic.

Digital technology is increasingly important in the modern UK economy and the UK has a very strong level of digital engagement in its economy. It has been ranked by some studies among the top digital economies in the world, with areas such as supply and access to internet, government and policy support, demand for digital tools and products, and digital innovation all praised as noteworthy. This, one report notes, is particularly true in comparison to its European peers. This digital strength is almost certainly to have only increased in the context of the COVID crisis, with effects which may be permanent. Indeed, 96% of households already had internet access in the UK by 2020, a figure that will presumably increase over time. Furthermore, digitalisation is something that governments are continuing to pursue. Rollout of faster broadbands continues to be the subject of relatively high-profile targets, and digitisation has in the Scottish election (where CIVIC is based) been the subject of some notable discussion even in areas such as education. As such, the UK has all the potential to have a very strong online component to its construction sector.

Greece has one of the least advanced digital economies in the EU and many challenges lie ahead as identified by DESI. Greece holds a low record in terms of internet penetration speed among companies, thus hindering the further development of the digital economy, an aspect of a more generalised phenomenon of the slow transition to fast and ultrafast broadband in the country. In terms of digital technology integration, the country lag behind in many aspects except the use of big data and the electronic information sharing, two areas closely interlinked. On the part of digital education, as highlighted above, only 23% of the employable population show basic digital competences: to tackle this low level of education, the programme “Digital skills for digital Greece” was launched in February 2019. At the same time, the Panhellenic Association of Engineers Contractors of Public Works (PEDMEDE) launches several training activities in different digital areas for the construction sector. The improvement are yet to be seen: the Digital Economy and Society Index (DESI) stood at 33.4 for 2020 for connectivity, an improvement from 2019 but still well below the EU-28 countries’ average (50.1). Finally, only 7% of business in Greece use cloud computing compared to 18% in the EU, and only a very low share of SMEs sells online (11%), whose operations only account for 4% of total turnover.

By analysing the DESI of the four areas in 2020, we can conclude that the UK has the best state of the digital economy, with 60,40, followed by Slovenia (51,25), Portugal (49,62) and Greece (37,32).

4. An overview of the construction sector e-commerce market

4.1. Statistics about internet usage and online sales

Digital transformation is gaining importance in the construction sector in Portugal. More than half of the Portuguese population (67%) uses internet to get inspiration for the interventions they want to carry out at home, as well as to search and hire professionals to carry them out (55%).

In Slovenia, the data about internet usage is available in general terms. Although 52% of persons employed use computers with access to internet and 27% of enterprises use internet advertisement, these percentages are expected to be much lower in the construction sector, particularly in SMEs.

In the UK, the level of engagement with internet and websites of construction companies remains a small but quickly growing part of the construction sector more generally. Estimates indicate that the value of website sales in the construction sector in the UK surpassed £2 billion for the first time in 2018. This is already quite a feat, given that these estimates had them not even reaching £1 billion as recently as 2016, but it seems likely to continue this dramatic growth, given the implications of the COVID situation for e-commerce.

In Greece, 80.4% of the households have access at home to the internet, with still somewhat differences regionally. Great progresses have been made in the last years, effectively doubling the level of broadband internet connections (from 2010). 78.1% of the people in the age range between 16 and 74. Regarding internet sales and e-commerce, 1 out of 2 persons in the same age range have concluded an online purchase in the first quarter of 2020. The number is sharply increasing over the years, more than doubling the numbers during the last decade (from 18.4% to 47.8% in 2020).

Although the digital transformation has not completely passed by the civil construction sector, there is still a lot to be done in terms of agility, efficiency and digitalization of processes. The proof of this, is that this sector is one of the least digitized in the world, according to data from the McKinsey Global Institute.

4.2. E-commerce Regulation in each partner country (Data Protection policies, Consumer Rights...)

In Portugal, the National Communications Authority (ANACOM) is the central supervisory entity for electronic commerce and information society services, assuming an important role in the field of electronic commerce regulation, performing, among other tasks, functions at the level of regulation, supervision, litigation and information. Some of the legal documents currently in force in Portugal, related to electronic commerce are:

- Decree-Law no. 7/2004, of 7 January, which transposes Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market

("Directive on electronic commerce"). Amended by Decree-Law no. 62/2009, of 10 March and by Law no. 46/2012, of 29 August.

- Law no. 24/2014, of 14 February, which came into force on June 13 with the changes made by Law no. 47/2014 of July 28. Transposes Directive 2011/83/EU of the European Parliament and of the Council, of 25 October, on consumer rights, in contracts concluded at a distance and outside the commercial establishment, with applications to electronic commerce.
- Law no. 58/2019, of 8 August, which ensures the national implementation of the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data. (Ensures the execution of the General Data Protection Regulation (GDPR) in Portugal).
- Decree-Law no. 91/2018, of 12 December, which approves the new Legal Regime for Payment Services and Electronic Currency, transposing the Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market.

Slovenia uses GDPR in place for Data protection.

Although it has formally left the European Union, the UK continues to use GDPR as its model for data protection law, with much of the necessary adjustments having been made both among business and the public before Brexit took place. Whether this remains the case through future years and governments remains to be seen; a variety of factors could push the UK to loosen these protections, but at the moment there do not appear to be any such overt plans and this sort of speculation remains speculation only. For the moment, the UK government altered UK law sufficiently so that although the EU's GDPR no longer applies in the UK, the rules it sets out continue to apply in practice through domestic UK law. With that being said, companies that continue to handle EU data will still need to comply with the original EU GDPR.

In terms of consumer rights more broadly when shopping online, the UK has two central laws that address this: the Consumer Contracts Regulation and the Consumer Rights Act. These laws, in brief, cover a range of issues including the level of detail of description required for products to be sold online, the returns and cancellation policies, the quality and functionality of products being sold online, and the rights of consumers if a product does not work as intended upon arrival. The rules are reasonably clear generally speaking, with a 30-day refund having to be offered as legal requirement if the product does not work as intended and a 14-day refund legally required more generally. Nevertheless, the applicability of these rules for construction will vary depending on the exact nature of the thing being bought online, as there are exceptions for certain types of products and services.

In Greece, the legal framework is regulated by the general consumer protection law (law 2251/1994) and the specific legislation regulating electronic commerce (PD 131/2003, incorporating Directive 2000/31/EC and Joint Ministerial Decision Z1-891/13-06-2013 incorporating Directive 2011/83/EU on consumer rights). Accordingly, Greek businesses are able to deliver free and unlicensed e-commerce services and to produce valid contracts by electronic means. Regarding the privacy of users, Regulation (EU) 2019/1150 introduced rules regarding the relation between online platforms and their business users: it regulates the conduct of online platforms (thus also e-commerce marketplaces).

4.3. How do most companies use e-commerce and for what kind of services?

Given the nature of the construction industry, it is perhaps not surprising that it is considered one of the less well-developed sectors when it comes to e-commerce.

Most of the Portuguese SMES in the construction sector do not use e-commerce. Few companies have an online store, and these are mainly in the area of construction materials trade. Many companies in the construction sector in Portugal choose to join digital platforms instead of having their own website.

Slovenia does not have detailed sectoral analysis of e-commerce.

In UK, there are some aspects of e-commerce that the sector in UK has adopted. Electronic document management is cited as one key use of e-commerce, pushed in large part by clients and facilitating quicker management of documents. Another example is maintaining a website – this can serve a large variety of functions, including general business information, contact information, advertising, recruitment, and purchasing. The precise ways in which a website will be used will of course depend on the construction company in question – its clients and target audience, as well as the product or service that it is trying to sell. This will change not just the aesthetic and structure of the website, but also in some cases whether the website offers direct sales at all. Beyond the direct provision of e-commerce by construction companies themselves, the internet has also given rise to "marketplaces", on which users can search for a particular product or service and be provided with possibilities from numerous different providers.

In Greece, most businesses are still not ready to reap to a larger extent the benefits of e-commerce, let alone in the construction sector. Most bought individual goods are clothes and digital equipment (almost 95%).

There is a great potential for growth of e-commerce in construction companies, which is currently practically non-existent. E-Commerce will play a key role in the sale of products and services in the construction sector, and it is important that companies understand its importance and use it to attract more business at national and international level. The PEACOC project will contribute positively to the growth of e-commerce in the construction sector in the different countries, since it will promote the transmission of knowledge and the qualification of workers in e-commerce.

4.4. What services do they sell online? (products, services for construction/rehabilitation such as local work, design, consulting and diagnostic services...)

In Portugal, the e-commerce of products and services in the construction sector is practically non-existent. The majority of products sold online in Portugal is clothing and accessories (59%), followed by mobile equipment (47%) and computer and electronic equipment (40%). Meals delivered at home was the type of product with the highest growth in terms of e-commerce, due to the change of behaviour of the Portuguese population caused by COVID-19. For the same reason, online training also increased significantly in the last year, representing 21% of the electronic content acquired. Regarding the services category, hosting services continues to lead e-commerce in Portugal (44%).

In Slovenia, companies sell online mostly products. However, there are some construction companies who offer:

- online calculation for concrete works or asphalt works built;
- calculations for brick needed for a wall;
- tools via which one can acquire offers for construction works (single house range) from more providers;
- trials for calculation of materials for single family house from foreign provider.

IN UK there is a significant variety of services and products offered online by companies in the construction sector. In terms of the actual service of construction itself, online engagement tends to take the form of descriptions of various case studies of jobs that a company in question has completed, with an option to get in touch with the company in question for more information about using their services. Sometimes this contact takes the form of a generic contact form, other times a more specific form concerning the type of work that the enquirer wants done, and sometimes simply a physical or email address to use.

Physical products are for a variety of reasons easier to sell more straightforwardly online. Depending on the type of company – whether a construction company per se or a company that deals more in supply of construction – a broader or narrower array of products may be on offer, available either for purchase directly through the company's own website or through third parties. With that being said, it is a clear trend that most construction companies themselves do not appear to sell physical products directly on their websites, but focus almost entirely on the services they offer. These do vary somewhat, even in emphasis if not in substance, but common services seem to include renovation, construction, property maintenance, architecture, design, planning, conversions, remodelling, and general trade services.

It can be concluded that there is a high growth potential for e-commerce in the construction sector, and there must be a focus on training and other measures to support companies in this field.

4.5. How dynamic and interactive are the websites from most companies?

In Portugal, the websites of most companies in the construction sector are informative and usually do not interact with the user. Some companies do not have website and are represented in social media, such as Facebook, LinkedIn, etc. Technologies of social media and mobility are the most implemented technologies in companies, followed by Cybersecurity, which reflects the concern of organizations with the safety of their employee and customer data. Many websites are not optimised for smartphones or prepared to accept payments via a mobile device.

In Slovenia, some large companies have excellent web sites, however it is not the case of SME, which sites normally are not interactive.

In UK, but also in the other countries, the interactivity of construction company websites seems to vary somewhat, but following a general pattern. Websites will be split into sections, indicated by a standard set of tabs at the top, which usually include headings to the effect of "About us", "Our Services", "Our Work", "Contact us". Given the nature of the business, they also tend to include a significant number of pictures, generally of projects that the company has undertaken and completed, and contact forms of varying complexities. At best, these are quite detailed and

specific, with fields to help considerably narrow down the enquirer's area of interest, budget, and other significant details; at worst, there is simply an email address or phone number to use.

As such, there is relatively limited interactivity to the construction company websites beyond the forms and pictures – where such companies have social media presences, these can be used interactively, but tend to be distinct from the company website.

In Greece, there are no specific e-commerce platforms for construction. The ones that exist are for other types of products or generalist platforms.

4.6. What kind of software and technology is mostly used?

There are two large families of E-commerce solutions in Portugal: those whose website hosting we can manage (e.g. Prestashop, WooCommerce) and those in which the hosting is included in the offer (e.g. Shopify). There are also companies that choose to develop their own e-commerce platform. All these e-commerce platforms allow for the creation, editing, management and publishing of content (Content Management System (CMS)). These platforms normally allow the integration of existing online payment solutions from different companies. PayPal is one of the leaders in online payment solutions in Portugal. Easypay, is a Portuguese company for online payment with more than 4 600 customers in Portugal. Other online payment companies such as 2CheckOut, Klil&Pay, Paybox, Payplug, LemonWay, Stripe, PayLine, PayZen and Digital Payments Gateway (DPG) from SIBS are also working in Portugal. These online payment companies integrate different Fraud Detection Solutions such as 3D Secure; PCI-DSS Compliant; etc). In Portugal, the Finance service requires companies to use certified billing software (e.g. InvoiceExpress).

Despite these technologies being not specific from construction sector companies, they can also be adopted by them.

Slovenia does not have these data. Companies would not share it as well as providers also not do it.

Also in the UK, various forms of software and technology has been employed. Various types of forms are being customised and used on the websites, as well as frequently carousels of images.

In terms of payment, this is difficult to tell from the website of most construction firms given that, as mentioned above, they do not generally facilitate payment for their most common services on their website – or at least not in a way that is straightforward to find. For companies that deal more in physical products and construction supplies, payment does tend to be possible online, and technologies are employed to match that. This includes technology facilitating the creation of user accounts, the use of bank cards for payment, issuing of invoices, and of course where relevant, the integration of third party payment apps to the site to allow a smoother purchasing process. Payment apps like this include those such as Sagepay and Paypal.

Some of these companies also have feedback form prompts enabled, stock checks, store locators, and even on the rare occasion, a live chat function.

In Greece, regarding payments, debit cards represent now the most popular means of payment (64% of online buyers use it), followed by Cash on delivery (57%) and credit cards (42%).

Nowadays, 98% of Greek online consumers access the internet daily, and mostly they use search engines to compare prices and electronic banking for various operations.

4.7. What is the weight of the international sales?

There are no statistics regarding this data for Portuguese SMEs of the construction sector.

In Slovenia, the weight of the international sales was 16.6% in 2019 (8.5% more than in the year 2018).

The UK operated with a deficit of £10,421 million in 2019 according to official figures, with imports constituting more than double the value of exports in this area, despite recent reductions of the deficit by – in relative terms – a small amount.

Greece does not provide specific data for the construction sector. However, in global terms the weight of the international sales is very low: 93.1% of the consumers prefer online domestic sellers. ELSTAT does not provide specific numbers on the sale though. They are provided by the International Trade Administration of the United States, stating that although they represent 25% of total online purchases, they have decreased by 5% last year. Currently, only 24% of Greek businesses offer their goods abroad via e-commerce (mostly to the EU or the US).

5. E-commerce main barriers for the SMEs of the construction sector

5.1. What are the reservations or concerns that prevent entrepreneurs from adopting new behaviours and using new tools regarding e-commerce?

The Portuguese business structure is mainly composed of SMEs and, according data from 2020, just about 40% has an online presence. In other words, there is still a small investment by SMEs in online platforms. Although digital transformation is in the interest of most organizations, many struggle in carrying out these types of initiatives.

The main barriers to the adoption of e-business in Portuguese construction SMEs are the small size of the company, the complexity of the technology as well as the price of the technology.

The investment of e-commerce in Portugal does not guarantee a short term return, rendering it inviable to most SMEs.

The digital and technological illiteracy of entrepreneurs, managers and employees are also a barrier to the growth of e-commerce in the SMEs. According to the study performed by ACEPI, 26% of the respondents identified the lack of knowledge as one of the main barriers to digital transformation in their companies. 28% of the companies reported not having the necessary people, which is partly due to the lack of qualified human resources in this area.

In Slovenia, it depends on how company is transparent, grey economy in the private sector is still a problem. More digitalized process means more transparency and more funds to apply such system and get trained all the staff. Bigger MSP are getting more and more aware how e-commerce is important.

One of the main factors that prevents UK construction entrepreneurs from adopting new behaviours and tools when it comes to e-commerce is simple habit and culture. Many sources

note that familiarity is among the biggest enemies of e-business in construction. Others, however, suggest a broader and more concrete variety of reasons. One of these is the expense – new technologies (depending on their intended function) can require significant investment, the sort of capital that many companies either simply do not have or are reluctant to spend.

Another such reason is the burden of data. Being able to access and organise data much more easily is a key perk of doing business digitally, but it can also be one of the biggest challenges when setting up whatever system a company chooses. Transferring all a company's existing data into a new, digital format can be a cumbersome and complex task, just as it also invites new and challenging questions about data protection. Data protection has been very high profile in Europe in recent years, and security of data as well as payment has been a major issue even longer. This is something that businesses must grapple with, or risk facing the consequences to their image. As such, the questions and extra work implied in doing digital business are often-cited factors in companies choosing not to engage in e-commerce.

In Greece, the most concerns for the entrepreneurs, there is definitely the fear that bureaucratic pressure might be too big to handle, especially in the case of SMEs. Many months to get all the necessary permits from office (tax office, Chambers of commerce etc.), before even approaching the payment question with the banks. Entrepreneurs have reported that the banks, in order to allow online payments on the ecommerce platform, required an important share of data collection from the end users and that the website is completely in Greek language. Possibly the conditions for setting up an e-shop have improved since that witness because now it is a requirement to access the "e-Retail" fund.

In conclusion, the digital and technological illiteracy of entrepreneurs, managers and employees is currently one of the main barriers to the growth of electronic commerce in SMEs in the construction sector. The development of specific training actions for this sector will increase knowledge through the qualification of human resources in this area and thus promote digital transformation in the companies.

More information available on the real advantages of e-commerce will also allow changing the habits and culture of SMEs. Training actions in e-commerce must address the economic benefits of e-commerce for companies compared to the initial costs.

To combat the initial bureaucratic difficulty faced by companies that want to join e-commerce, training actions should address an analyse of the main legal instruments that regulate the activity of online stores in the country.

5.2. How complex is it to start an e-Business?

The first step is normally to register the business, a process that is relatively simple and cheap in UK. The level of complexity and expense implied in this process varied based on the sort of business one intends to set up – for example the Sole Trader arrangement or (more likely for a company offering construction services) a Limited Company.

An E-Commerce platform is much more complex and requires an entirely different business model than a "read only" site. It has to interact with people, internal and external to the organisation, as a content management system. A good Request for Proposal (RFP) is crucial for

the development of an e-Commerce platform. This should take into account several factors such as:

- Business background (description of the type of business and its operation);
- Short-term and long-term billing goals;
- Budget available to invest;
- Project launch date;
- Team to be made available for project management;
- Integration needs with platforms (management platforms (ERP), warehouse management (WMS), Business Intelligence (BI) and customer management (CRM));
- Number of products to be made available;
- Management of product catalogues, prices and stocks - manual or automated;
- Order management - manual or automated;
- Carrier management - manual or automated;
- Languages and currencies;
- Price lists;
- Payment methods (choose intermediary payment partners);
- Customer service management;
- Content management;
- Integration with Marketplaces;
- Marketing and Promotion Tools;
- Analytics, Tracking and Reporting;
- Platform content and navigation.

5.3. - Is there enough information and training available on this topic?

The training courses in e-commerce currently available in Portugal are not specific to professionals of the construction sector. Taking into account the variety of types of products and services offered by companies in the construction sector, the development of specific courses for e-commerce managers from this sector is of great importance.

In Slovenia, partly, there are also national grants for companies to become more digitised.

Although e-business in the construction sector is quite a niche topic, starting up an e-business more broadly is not a difficult subject on which to find information in UK. A simple online search reveals a broad range of sources of information, and the website of the Government itself is reasonably straightforward and clear on the requirements for potential businesspeople.

In terms of formal trainings, the UK is home to many universities and colleges, and business qualifications of various types are very commonplace. Increasingly, in particular following COVID, such courses are likely to be available remotely as well as in-person, to varying degrees.

Similarly, although digital skills are to some degree well-integrated in the UK's population, there remains an abundance of courses and website from which to learn, often not prohibitively expensive. With that being said, this will depend on the level of expertise being sought. A more complex or interactive website will require a greater level of skill and knowledge, which in turn will require a more specialised course.

In Greece, there are available courses on digital skills, some of them offered even by IDEC itself. The Digital Strategy 2021-2025 explicitly mentions the possibility to organise courses with

modern educational tools for training in digital skills for SMEs' employees in certain areas, among them also e-commerce businesses.

In Greece there are several courses about e-commerce that are not specific for the construction sector. They cover topics of e-business management, including ideate and implement a web platform for online commerce.

In conclusion, most of the training available on e-commerce is not specific to the construction sector. The complexity of this sector and the wide range of services offered requires the existence of specific training adapted to the reality of most companies in the sector.

5.4. Is the security of online transactions still a concern?

A study, carried out in Portugal showed that security remains a matter of concern with regard to online payments, with 46% of the sample expressing insecurity when using a bank card in this type of transaction.

In Europe, Portuguese people are the most withdrawn in online shopping due to concerns about payment security. Portuguese were the ones who bought less due to this reason. According to the Eurostat study in which EU citizens were questioned about trusting the Internet to shop online, one reason why people did not buy or order goods or services over the Internet was payment security or privacy concerns, such as fraudulent use of payment card details. Concerns about payment security were the second most common barrier reported in 2019. Payment security or privacy concerns prevented 6% of individuals aged 16 to 74 from buying or ordering over the internet in 2019, one percentage point less than in 2017 (7%) and five percentage points less than in 2009 (11%).

Among EU Member States, the percentage of people who considered payment security a concern varied a lot in 2019 - ranging from 1% of individuals in Estonia to 23% in Portugal.

Digital payments in the UK tend to have a positive image, and online shopping is relatively widespread. One study suggests that online transfer or PayPal is the third most widely accepted payment method by businesses, second only to cash and cheque, the single most common payment method used by consumers, and overwhelmingly the most preferred option to businesses. For construction specifically, this trend holds – online transfer or PayPal is second in being offered by construction businesses only to cheques, and remains the most used method by consumers, as well as the most preferred method by businesses.

In terms of security more specifically, the report suggested that although security was raised by both consumers and businesses as a concern around online payment, it is not a chief concern and is not a major factor in preventing the provision of online transactions as a payment method by businesses.

Security of online transactions does not represent a major concern for buyers in Greece as long as well-known carrier for online transactions are supported. In fact, in the last few years, debit cards have surpassed cash on delivery as the preferred method of payment, which proves further that people's preferences are switching to online purchasing (this is also due to banking control over capitals).

In conclusion, the confidence in the security of online transactions varies significantly between the different countries. A greater harmonization and knowledge in this field are thus essential for increasing confidence in e-commerce.

5.5. What are potential disadvantages of e-commerce in the construction sector when compared to other sectors and how might they be surpassed?

There are issues with setup in particular as regards e-commerce including the necessity of **extra work and extra costs**. These will of course vary depending on the digital activity or tool in question that an organisation is using, but establishing new methods, technologies, and approaches through e-commerce is likely to create challenges. As such, it is important that companies are strategic in what e-commerce practices they choose to adopt. These choices should be made based on fully informed decisions, bearing in mind the financial and human resources available to the company, the needs and goals of the company, and the level of digital expertise that already exists within the company.

Security is also one of the challenges when it comes to e-commerce, both in terms of finance and data. It is important both for the sake of the company and its clients that transactions and any online resources are securely protected. Most clearly this is the case for financial transactions, where the company and/or clients stand to lose money to fraud or hackers of various kinds, but it does have a broader impact. Where a client's data or money is somehow lost, this is an enormous blow to the credibility of the broader company, and can even make the news if data breaches are large enough.

This can only be remedied with careful consideration of the technology being used and proper investment to ensure that all necessary and advisable precautions have been taken.

Furthermore, the services provided by a great part of SMEs of the construction sector (for example, window manufacturers) require the budget preparation that involves collecting information about the building, namely measurements made by the company on site. This need makes e-commerce unattractive for Portuguese companies, who consider face-to-face communication with the client to be essential. The fact that buildings are not standardised and each architectural design is unique contributes to the difficulty of the implementation of e-commerce in some sectors of construction industry.

For the Greek construction sector, given its quite bad shape after many years of employee and capital haemorrhage, there might be important challenges to overcome in this area compares to other sectors' SMEs. The first one is to lack liquidity to invest in setting up an e-shop. Even more so if the company does not have the necessary digital skills in-house and necessitates to outsource them to a consulting company or hire e-commerce manager.

The transfer of knowledge to construction sector SMEs through training actions focused on the main concerns and difficulties inherent to the implementation of the e-commerce in the sector will increase the confidence of companies in e-commerce and demystify the complexity they feel exist in this type of business.

The courses on e-commerce should provide trainees with the necessary knowledge to implement a strategic plan in e-commerce and the best practices to adopt. Choosing the platform for e-commerce is one of the most important steps and is therefore a topic to be

addressed. The platform must be chosen based on the type of business and the main objectives of the company in order to include all the necessary functionalities.

The digitization and implementation of e-commerce in the company should be a facilitating process and should not add high additional efforts in terms of allocating resources and time. This is only possible through the qualification of resources and the adoption of the most appropriate strategy.

6. National initiatives and incentives for digitization and more specifically for e-commerce

Some national initiatives have been implemented in the different countries.

In Portugal the digital transformation of the Portuguese companies is one of the pillars of the Digital Transition Action Plan that reflects a defined strategy for a digital transition in the country. This will provide measures and actions that support investment, stimulating the digitalisation of companies by raising awareness and training, in particular SMEs, and the development of competing initiatives to consolidate the business's scientific and technological knowledge. This pillar focuses mainly on Portuguese companies, particularly SMEs. Regarding this pillar some initiatives and actions were already developed.

One of the initiatives coordinated by IAPMEI (Portuguese Agency for Competitiveness and Innovation) is the **Digital Innovation Hubs for Entrepreneurship:** This measure intends to stimulate a national network of Digital Innovation Hubs to be developed in connection with the recognised competitiveness clusters and technological interface centres, which will be interconnected with the European network of hubs to be promoted by the European Commission in the European framework programs for 2021-2027. Digital Innovation Hubs function as a one-stop-shop that helps SMEs to adopt digital technologies promoting innovation and digital transition of their business processes, in view of their competitiveness. With the support of hubs, SMEs will be able to test new digital technologies, access advanced digital skills and obtain specialised training, advice and access to the necessary financing for their digital transition. This initiative will also promote collaboration with other SMEs, large companies and entities from the research and innovation system.

In Slovenia SPS subsidies were created for the digital transformation of companies, regardless of the industry and also Vouchers for digital strategies, digital competence, websites / online sales and cybersecurity.

There are also a significant number of initiatives and incentives for companies in UK to digitise and get into e-commerce, particular since their number expanded considerably – and necessarily – at the onset of the COVID pandemic. There is, for example, a £20 million fund to support digitisation and working from home provided by the UK government, tax relief and rebates on things like research and development, grants available from the Government's innovation agency, and more general financial packages that can be used to partially fund digitisation. At this stage, it is important to note that to some degree, these packages will differ in their size and nature between the four nations of the UK: England, Northern Ireland, Wales, and Scotland, where CIVIC is based. It is important to note the distinction between these packages and their natures, however. The tax incentives for R&D are for R&D rather than digitisation or e-commerce per se, and as such when being applied for, a company will have to draw a clear link between the digitising efforts they are undertaking and the required definition

of “research and development”. Similarly, grants, though attractive in their financial status, are very competitive and are likely to be highly in demand. As such, it may be useful when applying for these for a company to perhaps find some particularly innovative or interesting niche in the project they are hoping to accomplish beyond the ordinary process of digitisation and buying into e-commerce. Further such funds and incentives may be available beyond these, in smaller amounts or in ways more tangentially related to digitisation and e-commerce. Certainly, in light of the COVID situation, although it seems to be coming to an end, it seems likely that development and incentives in this direction will continue.

Greece recently launched a strategy for the Digital Transformation of the country. Although available only in Greek at the moment, the main features of this digitization strategy are its holistic approach (so encompassing all areas of the digital world for a complete digital society) and the cooperation between all stakeholders (public, private, businesses, universities, civil society etc.). The first point relating to the ease of doing business is the even wider access of the population to the internet. Then, the strategy has a specific point on the digitization of business, namely to “facilitate the transformation to digital enterprise”: this entails the creation of a central network for digital invoices, the promotion of online training programs and the support of electronic commercial solutions. The strategy itself acknowledges that SMEs are more and more involved in the digitization process, but mostly for the national market. Most importantly, it has been announced that a fund for supporting businesses to open an e-shop will soon be active thanks to the European Structural Funds. The financial subsidy will cover 100% of costs until 5000€ for setting up e-commerce platforms for SMEs. It is called “e-Retail”.

In conclusion, there are significant number of initiatives and incentives to promote digitalization and e-commerce in companies of the construction sector of the four countries. Thus, it can be important to include information of these kind of initiatives in the training courses programmes.

7. Training courses currently available in the country to support e-commerce in the construction sector

Different training courses and other events in e-commerce are currently available, however, they are not specific for professionals of the construction sector. Despite that, may be interesting to adapt some of the topics covered in these courses to the construction sector.

Some examples of face-to-face and online training courses are:

e-Commerce (the course aims to provide trainees with the necessary knowledge to implement a strategic e-commerce plan and be able to master the most relevant concepts to enhance the sale of a product and / or service, through the internet) - *training entity: WEBSTUDY*

E-commerce - Sales through Interactive or Digital Media (The course aims to provide trainees with technical knowledge that allows them to use the different digital media for planning, developing and monitoring Marketing strategies and campaigns. The specific objectives of the course are: to acquire the main notions of Digital Marketing; to identify the different digital platforms; to know how to plan, implement and monitor Marketing strategies; to know how to promote brands using digital media; to manage online communities on major social networks; Know the role of digital influencers; to apply the rules of building e-mail Marketing to elaborate Digital Marketing Plans) - *training entity: TRAININGHOUSE;*

Online Sales Laws (training course about mandatory legal information in online stores; remote contracts (online sales); discounts (balances, promotions and sales); rules for working with influencers; out-of-court settlement of consumer disputes (ADR); online complaints book; issuing invoices; VAT in Portugal and the European Union; transport documents; geographic blocking in online stores; processing of personal data and GDPR; general conditions of Sale) - *training entity: Tudo sobre E-Commerce;*

Legislation for Ecommerce (analysis of the main legal instruments that regulate the activity of online stores and covered topics such as: general identification and information; general sales conditions and terms of use; shipping and payments; returns and refunds; prices and discounts / price reductions (balances, promotions and sales); digital communication; billing. The course also provides models of general conditions of sale and terms of use and the most up-to-date versions of the legislation) - *training entity: Tudo sobre E-Commerce;*

Email Marketing for Ecommerce (the course addresses topics such as: the importance of email marketing for the success of an online business; creation of a database for online store; how to segment a database to improve the performance of email marketing campaigns; types of email sent in ecommerce; analysis of the performance of email marketing campaigns knowing the main performance indicators; what is and how to take advantage of Email Marketing automation) - *training entity: Tudo sobre E-Commerce;*

Facebook Ads for Ecommerce (the course addresses topics such as: the importance of running ads on Facebook; ad account requirements; the importance of using Facebook Business Manager; how to structure campaigns; the different stages of the purchase process; what types of ads and content one should do for the different stages of the purchase process; how to create audiences and what kind of existing audiences; budget distribution for different types of campaigns; image and copy rules; measurement and monitoring processes (metrics and automatic rules) - *training entity: Tudo sobre E-Commerce.*

Some examples of workshops and knowledge programs:

E-Commerce Experience - The E-Commerce Experience is a global program of acceleration and e-commerce solutions. The program was developed for retail and online stores and include with Workshops, Dynamics, Mentoring and Technical Visits. https://ecommerceexperience.co/;

Tudo sobre E-Commerce Conference – The conference Tudo sobre E-Commerce (Everything on eCommerce) aims to present the best Portuguese and international success stories, in a day of learning, networking and knowledge sharing about ecommerce and digital marketing. The Conference presents professionals from the online business world with proven track record in the market, including examples from various types of businesses and from various industries and sectors, to talk about a wide range of ecommerce-related topics;

CTT e-Commerce Day - event created by the Correios de Portugal to discuss e-Commerce in Portugal.

Specific annual event (webinar) organized by business newspaper: **Finance on topic how digitalized are Slovenian construction companies**: https://oe.finance.si/8967853/Kateri-so-najvecji-izzivi-digitalizacije-gradbenistva-v-Sloveniji.

DIGIT AGENDA event organized by Chamber of commerce and industry of Slovenia: DigitAgenda 2016 includes key recommendations on how to raise the average productivity

growth in the Slovenian economy to 3% by 2025 and create 10,000 new digital jobs by 2025. The Chamber of Commerce and Industry prepared it with the participation of some businessmen within four working groups.

8. Aspects to be improved – importance of training

Digitalization is an important process for export companies to compete on national market e-commerce is probably obligatory. For large system this is inevitable requirement.

For SME construction companies we have to convince them which advantages can e-commerce bring, how much resources actually need changed business models or business model supported with e-commerce. However, in next years, stricter competition will force remaining SME to get digitalized or to stop their business. For craftsmen this is not so much important as it is for construction industry (bigger projects and more staff being employed). Education attainment in the construction sector is also an important factor for adoption of e-commerce.

In Portugal, e-commerce has not been growing too much with relation to the European average. Although the broadband infrastructures in Portugal are quite modern, which allows easy access to the internet, it is imperative to reduce the knowledge gap in Portugal in relation to European performance. The national e-commerce market needs more know-how to gain more experience and to have a fixed strategy from the companies.

Although, the available information is not specific for the construction sector, it gives us a picture of the current state of e-commerce in SMEs in Portugal.

According to the Portuguese study performed by ACEPI, 26% of the respondents identified the lack of knowledge as one of the main barriers to digital transformation in their companies. 28% of the companies reported not having the necessary people, which is partly due to the lack of qualified human resources in this area.

Also in Greece, most of the employable population in Greece lack the basic digital skills, in a market where by now 90% of the jobs require such skills. The Greek government is aware of the challenges regarding the structural obstacles (infrastructures, internet connection etc.), so it is important to develop quality training material that can be exploited, with the Greek Ministry of Digital Governance representing a great stakeholder for the project.

On the other hand, the outlook in Scotland and the broader UK for e-commerce is generally quite good. Although there are indications that the construction sector is in some ways a little more hesitant than some other sectors, overall, confidence in digital tools seems high and adaptation seems generally well underway. Furthermore, there are government incentives and funds to support businesses in digitising and adopting new e-commerce practices, so the only question that remains is the training.

One of the key aspects to upgrading a company’s e-commerce practices is having employees with the required expertise, for which having relevant trainings is essential. While trainings on e-commerce and digital issues generally seem to be relatively commonplace, trainings on e-commerce in construction specifically are much more difficult to find. This concern is common to the four partner countries of the project.

Taking into account the variety of types of products and services offered by companies in the construction sector, the development of specific courses for e-commerce managers from this sector is of great importance.

Companies deal with a large amount of information on a daily basis, much of which is sensitive or confidential, so ensuring data storage, access and security is crucial. In this context, companies must guarantee the training of their employees so that they adopt preventive behaviours that they must follow to guarantee the company's cybersecurity.

The implementation of trainings directed at this topic specifically can surely only be of benefit to those construction companies looking to innovate and improve their digital outlook. As such, PEACOC should be satisfied that it is filling what might reasonably be called a gap in the market, ensuring that construction companies have dedicated and specific expertise available to them as they seek to adapt to the modern digital era.

9. Conclusions

This report presented an overview of e-commerce in the construction sector in the four partners countries of the project PEACOC (United Kingdom, Portugal, Greece and Slovenia) and includes the relevant information from the national reports performed by each partner.

It can be concluded that SMEs play an important role in the four countries, representing 99.9% of the construction companies in Portugal, 99% of the construction companies in UK and 99% of all enterprises in Slovenia. The same ratio applies throughout the EU. Therefore, they account for a great part of the added value and the employment in the countries.

Although the digital transformation has not completely passed by the construction sector, this sector is one of the least digitized in the world, what can be verified in the analysis carried out by the four countries. Most of SMEs in the construction sector do not use e-commerce and few companies have an online store. A great part of the websites is informative and do not interact with the user. Some companies hand chooses to join e-commerce digital platforms instead of having their own website. Therefore, there is a great potential for growth of e-commerce in construction companies, which is currently practically non-existent.

The digital and technological illiteracy of entrepreneurs, managers and employees is currently one of the main barriers to the growth of electronic commerce in SMEs in the construction sector. The development of specific training actions in e-commerce for the sector will increase knowledge through the qualification of human resources and will help the companies to adopt the most appropriate strategy promoting digital transformation.

Several courses about e-commerce are available in the partners countries, however most of them are not specific to the construction sector. The complexity of this sector and the wide range of customized services offered requires the existence of specific training adapted to the reality of most companies in the sector. Training actions must address the economic benefits of e-commerce for construction companies and the initiatives and incentives in the country to promote digitalization (note that the necessity of extra work and extra costs were identified by the companies as potential disadvantages of e-commerce implementation). Training actions must also address the analyse of the main legal instruments that regulate the activity of online stores in the country and which is applicable to the sector. This will increase the confidence of construction companies in e-commerce namely regarding the security which remains a matter

of concern in some of the countries. In addition, the training courses on e-commerce should also include the necessary knowledge to implement a good Request for Proposal and the adoption of the most appropriate strategy.

PEACOC will design, develop, test, implement and disseminate an innovative e-Business Manager Training Course (BMT) based on the needs and specificities of the construction sector. The eBMT course will comprise a series of modules each addressing elements of the e-Business lifecycle which normally features core processes such as (1) Trading; (2) Contracting; (3) Payment and (4) Delivery, but also supporting processes such as Communication; Promotion; Overall Service and also other Relevant Information (national digital/e-commerce strategy; national initiatives and incentives for digitalization, e-commerce national regulation; cyber security; strategy and good practices; economic benefits analysis; etc.).

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