Building Next Generation of Globally Responsible Digital Entrepreneurs

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Digitalisation is becoming a significant area of entrepreneurship. We can observe business models that rely substantially on the internet to deliver services and products. On the other hand, one of the most critical challenges for enterprises is environmental protection. In this paper we try to combine the two mentioned areas; therefore this paper aims to present research results on competencies required by responsible digital entrepreneurs, performed within an Erasmus+ funded project DIGI-GRENT: Building Next-Generation of Globally Responsible Digital Entrepreneurs (2018-1-ES01-KA203-050046). Although digital entrepreneurship is noticeable in business practice, the academic literature covering this topic, especially providing related research results, is scarce and this paper addresses the existing gap. The project consortium implemented the research among companies from four European countries: Greece, Italy, Poland and Spain. The presented results focus on the evaluation of the importance of skills in three areas: management, digital and sustainable.

Keywords
Digital entrepreneurship, Digital skills, Managerial skills, Research results, Sustainable skills

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1. Introduction

Digitalisation is becoming a significant area of entrepreneurship. We can observe business models that rely substantially on the internet to deliver services and products [1]. Digitalization of business activities goes beyond that and can be represented by the use of digital supply channels[2]; digital manufacturing [3]; the use of digital technologies - 3D printing, cloud computing and electronic development platforms [4], [5], [6], etc. Although digital entrepreneurship is noticeable in business practice, the academic literature covering this topic, especially providing related research results, is scarce [7].

On the other hand, one of the most critical challenges for enterprises is environmental protection. The scarcity of natural resources, declining biodiversity or air, soil, and water pollution, push companies to focus on sustainable development and include responsible agenda in their business goals. The precautionary principle [8] and the pollution prevention approach [9] show the main directions of acting for business organisations, including those in the digital area [10], [11].

In this paper we try to combine the two mentioned areas; therefore this paper aims to present research results on competencies required by responsible digital entrepreneurs, performed within an Erasmus+ funded project DIGI-GRENT: Building Next-Generation of Globally Responsible Digital Entrepreneurs (2018-1-ES01-KA203-050046).

2. Digi-Grent Project

The DIGI-GRENT project aims to develop an innovative, transnational framework that will improve the knowledge and skills of academic institutions to produce more market/start-up oriented digital and responsible entrepreneurship (DREP) curricula.

The project consortium comprises academics, investors, industry and employment associations, start-up associations, and societal growth partners from different sectors who will co-create the envisaged DREP curriculum and will pilot it through an open innovation and co-creation virtual learning environment (VLE). Namely, the project consortium is led by the University of Almería, while other academic partners participating in the project are: University of Sheffield International Faculty - City College, South Eastern European Research Centre, University of Lodz, Fondazione ISTUD. Academic partners are supported by business environment organisations, such as Federacion Empresarial Metalurgica Valenciana (FEMEVAL), Foundation for Promotion of Entrepreneurship in Lodz, Greek International Business Association (SEVE) and associated partners comprising The Triple Helix Association, Hellenic Business Angels Network, Young Entrepreneurs Of Thessaloniki and Andalucia Emprende.

This extensive coverage of different stakeholders within the consortium will allow working under the quintuple helix-academia cooperation for innovation and best practices concerning DREP, and further can also support policy reform in this area, leading to more prepared graduates ready for the start-up market. DIGI-GRENT also follows up the recent plans of the European Union to promote improved, efficient and clean operations by 2050 and is also

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relevant to the EU2020 targets for R&D, climate change, energy efficiency, entrepreneurship and social cohesion.

3. Research on responsible digital entrepreneurship

3.1 Research methodology

An essential part of the DIGI-GRENT project is research aimed at the identification of competencies required by responsible digital entrepreneurs, especially that academic literature providing empirical considerations within this area is limited [7].

The developed questionnaire has been based on the performed a systematic literature review of academic and non-academic literature review. Academic literature review (ALR) focused on:

- Databases: Scopus, Web of Science, EBSCO and Google Scholar.
- Search fields: title, abstract, keywords.
- Timeframe: 2008-2018.
- Type of publications: published journal articles in English with the availability of the full text (excluding proceedings, books, working papers and other types of publications).

As for the keywords, we referred to the following search phrases:

- (missing OR key OR critical) OR/AND (training needs OR training needs analysis) OR/AND (skills OR competencies OR abilities) AND (digital entrepreneurs OR digital entrepreneurship) OR/AND (sustainable entrepreneurs OR sustainable entrepreneurship OR responsible entrepreneurs OR responsible entrepreneurship)

During the search, we concentred on the 50 top cited papers identified in each database. However, this assumption was sometimes substituted by relevancy matching in order to obtain results better aligned to the investigated thematic area.

The ALR was followed by the non-academic literature review (NALR), that had the same focus in terms of the timeframe and searched keywords. Nevertheless, the scope concentrated on:

- Database: Google.
- Search fields: MBAs, professional courses/programs.
- Other requirements: identified courses should be offered by recognised universities/business schools/providers; w program with learning outcomes/training goals or skills should be accessible.

The ALR resulted in the identification of 31 papers that we included for further analysis, whereas as a result of NALR we identified 13 organisations providing education (both undergraduate/postgraduate and vocational) on digital and/or sustainable/responsible entrepreneurship and analysed the programmes in order to determine the key competencies and skills [7], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [22]. As a result of both parts of the literature study, we have developed a questionnaire, including the selected, following parts:

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- The extent to which digital activities are included in business models of surveyed companies as "developers/providers" and "users".
- General entrepreneurial and managerial skills and competencies, comprising: Opportunity recognition; Networking; Flexibility and adaptability; Communication with stakeholders: customer/supplier and others; Interpersonal relations/teamwork; Organising business: day-to-day operation management, business process management, etc.; Business architecture: strategy, long-range management, etc.; Financial management; Access to early-stage financing.
- Digital entrepreneurship skills and competencies, comprising: ICT management; Digital security; Social media marketing / digital marketing; E-commerce/m-commerce; Digital communication and social networks; Digital innovation; Online business: online business model generation, online opportunity recognition, etc.
- Sustainable /responsible/green entrepreneurship skills and competencies , comprising: Business ethics; Corporate social responsibility; Sustainable strategic management; Sustainable operations management; Sustainable marketing; Sustainable research and development; Sustainable business model development; Sustainable challenges anticipation: foresighted thinking; Social/environmental/economical (CSR) problems identification and management; Understanding sustainable-relevant systems and subsystems; Understanding sustainable-relevant standards.

The computer-assisted web interview (CAWI) was executed in 4 European countries, in which the DIGI-GRENT project is being implemented (Greece, Italy, Poland, and Spain). From March to May 2019, we gathered 205 responses included in the research sample (ca. 50 per country).

In order to evaluate the importance of skills, we used a 7-point Likert scale, where 1 indicated that the surveyed skill is important/relevant at all, and 7 indicated that the surveyed skill is very important/relevant.

3.2 Research results

The majority of the enterprises in the research sample could be characterised as small employing less than 50 people (64%) and operating on the market for more than 5 years (81%) (see figures 1 and 2).
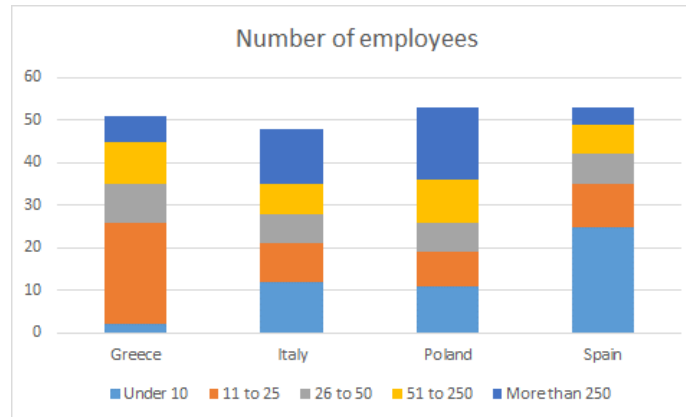
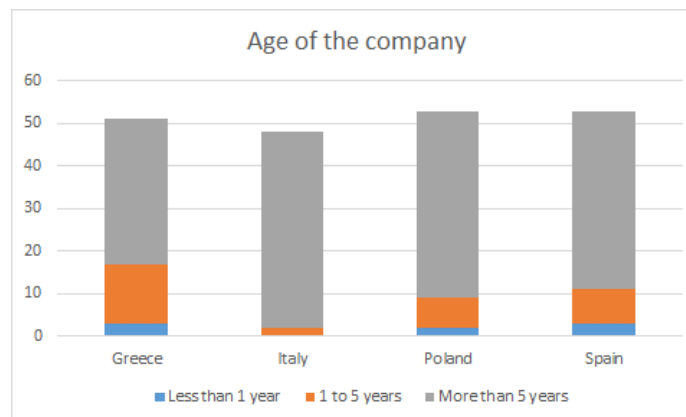**Figure 1** Number of employees per country.

Figure 2 Age of surveyed companies per country.

In our research, we have both focused on digital products and/or services providers and users. The shares of providers varied between 30% in Spain and almost 60% in Greece, whereas the shares of users were higher, ranging from 73% in Italy to 98% in Spain (see figure 3).
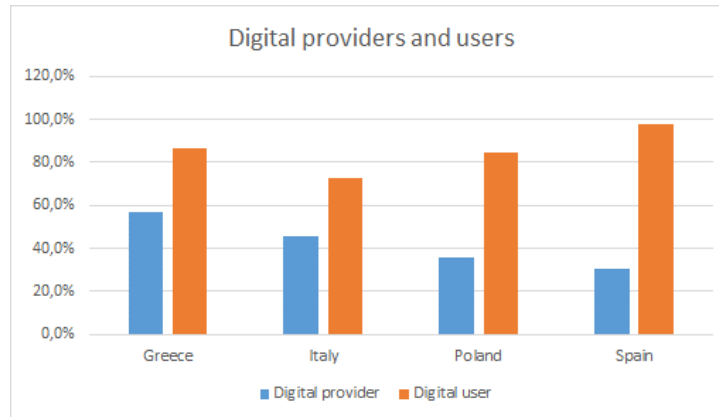
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Figure 3 Shares of digital providers and users per country.

The importance of managerial skills on the used scale was evaluated from 4.94 (Access to early-stage financing) to 5.82 (Flexibility and adaptability; Interpersonal relations/teamwork). Other essential skills highlighted by the respondents were: Networking (5.74) and Communication with stakeholders: customer/supplier and others (5.71). As for the countries, the average importance varied from 5.56 in Spain (SD=0.20), 5.50 in Greece (SD=0.14), 5.69 in Poland (SD=0.54) to 5.72 in Italy (SD=0.60).

Figure 4 Importance of managerial skills per country and in general.

The next part of the survey focused on the importance of digital skills as the most important among them were considered Digital security (5.67), followed by ICT management (5.35),

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Social media marketing / digital marketing (5.19) and Digital innovation (5.17). The country perspective could be characterised as follows: 4.63 in Spain (SD=0.46), 5.13 in Greece (SD=0.21), 5.23 in Poland (SD=0.60) and 5.44 in Italy (SD=0.39).
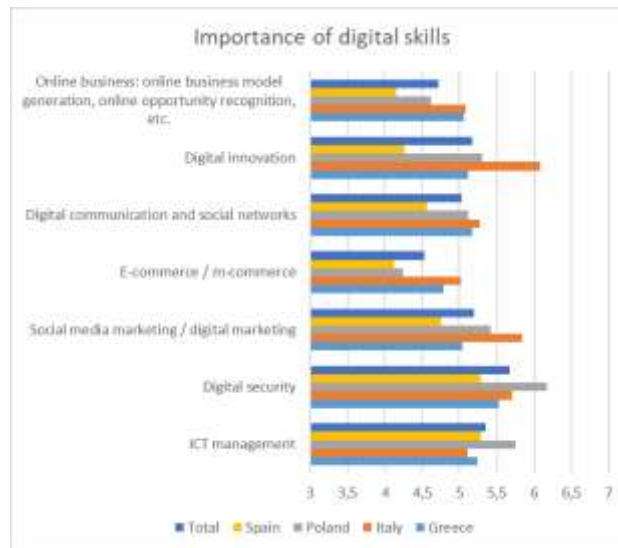
Figure 5 Importance of digital skills per country and in general.

Finally, among sustainable/green skills, the highlighted ones were: Business ethics (5.64) and Corporate social responsibility (5.03). The importance of all the other skills in this area was evaluated below 5. As for the countries, the average importance varied from 3.34 in Poland (SD=0.97), 4.12 in Spain (SD=0.51), 4.96 in Italy (SD=0.41) to 5.02 in Greece (SD=0.34).

Figure 6 Importance of sustainable/green skills per country and in general.

4. Conclusions

This paper aimed to present research results on competencies required by responsible digital entrepreneurs, performed within an Erasmus+ funded project DIGI-GRENT: Building Next-Generation of Globally Responsible Digital Entrepreneurs (2018-1-ES01-KA203-050046).

Given the scarcity of the results of research on responsible digital entrepreneurship, this study is one of the few, that explores this subject. This paper focuses on the descriptive analysis of selected, initial data resulting from the conducted research. Nevertheless, we plan to publish full research data, as well as results of comparative and statistical analyses in the nearest future.

We will also use the findings of the research in the course of the presented project. The university-industry links, developed through co-creation in the DIGI-GRENT project will allow us to use the academic knowledge provided by higher education institutions and offer solutions to the entrepreneurs (current and future ones) to improve the required competencies (both in the digital and sustainable area).

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