

DIGITAL ENTREPRENEURSHIP DEVELOPMENT: THE PRIORITY OF EU POLICY

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Abstract: The digital system increases productivity and innovation in all sectors, enabling organizations to reach new markets and customers, automate and streamline business processes, and create new business models, products and services. For digital entrepreneurs to thrive in EU Member States, it is necessary for all states to develop policies to support and develop digital entrepreneurship. The actions of all EU Member States are an essential condition for the development of digital technologies and for maintaining Europe's leadership as a knowledge-based economy. The paper outlines the importance of supporting and developing digital entrepreneurship. The article highlights the key aspects of the digital entrepreneurial policies of EU countries, the factors that create conditions for the prosperity and successful operation of digital entrepreneurs. The article sets out five pillars of the digital entrepreneurial framework: digital knowledge base and the ICT market, digital business environment, taxation and the financial environment, digital competences and e-leadership, entrepreneurship. The article also defines the output dimensions of digital entrepreneurship: digital transformation, digital start-ups.

Keywords: digital economy, policy, priorities, challenges, digital entrepreneurship, the digital knowledge, business environment, digital skills.

The global economy becomes digital. Information and communication technology is the foundation of all modern economic systems. Information and communication technologies have a major impact on the economies. Economies have different opportunities and challenges. The use of information and communication technology gives businesses the chance to easily conquer new markets, reduce the sales price and distribute products. Online businesses can be very profitable, so it is necessary to maintain, use all opportunities and develop these businesses. The future of business in EU countries in the digital era will depend both on digital progress and business climate.

Through the Intranet and the Internet in the digital economy, new business models (e-business, e-commerce, e-banking, etc.) based on Business / Business (B2C) Business / Government (B2G) (G2B), etc. These business models have increased efficiency and reduced transaction costs. A key objective of EU policy is to support digital entrepreneurship. A coherent framework for supporting digital entrepreneurship has been

presented in several documents The Digital Agenda for Europe, the Action Plan for Entrepreneurship 2020, the Small Business Act for Europe [1,2,3]. As entrepreneurship support policies are within the competence of EU countries, the European Commission acts primarily as a catalyst for the development of entrepreneurship, supporting the financing of European projects and promoting the exchange of best practices and experiences.

Digital entrepreneurship stimulates economic development through job creation, innovation and competitiveness. Each country develops a strategy for developing and supporting digital entrepreneurship in line with the overall development strategy. To this end, it identifies the situation of entrepreneurship in the country, the specific entrepreneurial opportunities and challenges, defines the priority actions.

The EU's digital economy increases by 12% each year. It is estimated that half of productivity growth comes from investments in information and communication technology. Research and digital innovation will contribute to prosperity in Europe.

Overall, the ICT sector accounts for around 5% of the EU economy. ICT investment accounts for 50% of total European productivity growth [1]. The digital economy is developing rapidly. Advanced digital technologies redefine the rules of the global economy, creating new business opportunities. European businesses remain behind the adoption of advanced digital technologies. This is a challenge for business and requires action at national and European level.

The European Commission has taken steps to support digital transformation, putting this issue at the center of several key policy initiatives. The European Commission has made proposals for the realization of the digital single market, in particular by [4]:

- contributing to activities aimed at enabling digital research to materialize in innovative achievements in Europe, encouraging entrepreneurship and providing a favourable environment for new businesses, creating new business opportunities and jobs;
- developing and implementing measures to make Internet use more reliable and safer in Europe so that citizens and businesses can enjoy the full benefits of the digital economy;
- supporting the deployment of a high-quality digital network infrastructure of which to benefit all sectors of the economy in Europe.

The Digital Single Market addresses the many challenges that European companies face in a digital era, taking steps to help them to be safer and operate throughout the EU. The European Fund for Strategic Investments will allocate over 315 billion euros to support industrial investment in the field of digital upgrading [5]. The Single Market Strategy will update the Single European Market, promoting the provision of cross-border services and improving the business environment.

Digital entrepreneurship is about putting digital technologies at the heart of business and harnessing their power to generate value and growth, innovate and create jobs. It embraces the digital transformation of businesses from all sectors, as well as the creation of new digitally driven companies, through the use of digital technologies (social technologies, mobile, big data, and cloud solutions) to innovate and improve the performance [5].

Digital entrepreneurship aims to integrate

digital business transformation from all sectors, as well as the creation of new digital companies, by using digital technologies to innovate and improve performance.

The Digital Entrepreneurship Scoreboard 2015 distinguishes five framework dimensions and two output dimensions and uses a total of 7 components and 25 indicators to analyze the performance of the 28 EU Member States. The indicators have been updated to provide a relevant view of the current state of play of European businesses in the field of digital transformation and digital entrepreneurship.

The framework dimensions include the environmental factors for digital entrepreneurship and are divided into five pillars:

- digital knowledge base and ICT market;
- digital business environment;
- taxation and financial environment;
- digital skills and e-leadership;
- entrepreneurial mindset.

According to the Digital Entrepreneurship Scoreboard 2015 the content of these pillars is the following [5]:

- the digital knowledge base and ICT market, include factors that support digital innovation as well as indicators of country competitiveness in the production of ICT related products;
- digital business environment, describe the degree of development and use of infrastructures enabling the use of digital tools as well as determinants for an improved business environment;
- taxation and financial environment, include all indicators that capture the ease of finding the necessary financial resources for entrepreneurial investments;
- digital skills and e-leadership, describe the efforts of companies in hiring and training professionals in the domain of digital skills as well as the possibility of acquiring such skills through educational institutions;
- entrepreneurial mindset, encompassing aspects related to the entrepreneurial impetus of society.
- First pillar is designed to capture the investment of government and/or the private sector to support knowledge creation and the performance of digital firms as an engine for diffusion and commercialization of new products. Pillar I performance is measured

using the average score of a composite indicator based on five indicators: European high technology patents per million inhabitants, number of enterprises within the IT sector in clusters, business enterprise R&D expenditure in all NACE activities from high-tech sectors, ICT sector value added as a percentage of GDP and FDI in the reporting economy in the Information and communication sector. The highest values of this indicator are in the following countries Denmark 0.7, Finland 0.8, Sweden 0.95. The lowest values of this indicator are in the following countries Lithuania 0.10, Romania 0.12, Portugal 0.15. The EU28 member states average is 0.4.

The second pillar measures the digital infrastructure capabilities as well as the regulatory framework in its role to ease business and business development. This pillar focuses on the quality of connection infrastructures, the diffusion of integrated technologies supporting business processes and the perception of the business environment by entrepreneurs. Pillar II performance is measured using the average score of a composite indicator based on six indicators: ease of doing business, investments of telecommunications sector in networks as percentage of revenues, percentage of enterprises who have ERP software package to share information between different functional areas, percentage of enterprises using Customer Relationship Management to analyse information about clients for marketing purposes, internet bandwidth and share of enterprises' total turnover from e-commerce. The highest values of this indicator are in the following countries Finland 0.7, Sweden 0.75, Denmark 0.8. The lowest values of this indicator are in the following countries Hungary 0.25, Estonia 0.26, Croatia 0.3. The EU28 member states average is 0.45.

The third pillar measures the availability of financial resources through three channels – venture capital; equity markets and loans, as well as the fiscal environment for entrepreneurship and the cost borne by entrepreneurs to comply with local regulations. Countries exhibiting higher scores under this pillar, tend to have an efficient and fair fiscal system, with lower efforts required to be tax compliant and a lighter weight of taxes on commercial profits. The better fiscal environment is often coupled

by an easier access to finance through all channels. Pillar III performance is measured using the average score of a composite indicator based on five indicators: cost of tax compliance, total tax rate, venture capital availability, ease of raising money through local equity markets and ease of access to loans. The highest values of this indicator are in the following countries Sweden 0.75, Finland 0.8, Luxembourg 0.95. The lowest values of this indicator are in the following countries Italy 0.15, Hungary 0.16. The poor performance of these two countries is due to the long time required to prepare, file and pay taxes on corporate income coupled with the relatively high tax rate, as well as the difficult condition in accessing financial resources. The EU28 member states average is 0.4.

Pillar IV allows to compare the development of digital skills realised through education and training. More specifically, it is designed to capture the distribution of ICT specialist skills, the degree of difficulty of companies in hiring ICT/IT specialists, the efforts of companies in training professionals in the domain of digital skills and the availability of professionals who have obtained IT skills through formalized educational institutions. Pillar performance is measured using the average score of a composite indicator based on four indicators: the percentage of total persons employed that have ICT specialist skills, the percentage of enterprises that provided training to ICT specialists to develop their ICT skills, the percentage of enterprises that had no hard-to-fill vacancies for jobs requiring ICT specialist skills and the percentage of individuals who have obtained IT skills through formalised educational institution. The highest values of this indicator are in the following countries Denmark 0.8, United Kingdom 0.85, Luxembourg 0.9 and Finland 0.98. The lowest values of this indicator are in the following countries Italy 0.1, Romania 0.5. The EU28 member states average is 0.45.

Pillar V compares the EU28 MS entrepreneurial mindset. More specifically, it is designed to capture the desirability of being an entrepreneur, the perception people have about entrepreneurs and the extent to which individuals are ready to start their own business. Pillar performance is measured using the average score of a composite indicator based on three indicators: the percentage of

respondents that would prefer to be self-employed if they could choose between different kinds of jobs, the percentage of respondents that would set up a new business or take over an existing one if they had the means to start their own business, including sufficient funding and the percentage of respondents that have a broadly favourable overall opinion about the entrepreneurs. The highest values of this indicator are in the following countries Spain 0.7, France 0.75, Romania 0.8. The lowest values of this indicator are in the following countries Slovenia 0.15, Sweden 0.3, Czech Republic 0.3. The EU28 member states average is 0.55.

The output dimension is aimed at measuring the digital entrepreneurial spirit itself. The two output dimensions identify and quantify digital entrepreneurs in Europe. These two dimensions consist of the following:

- digital transformation;
- digital start-ups.

Only a small part of businesses fully exploits digital technologies. There are still a large number of companies (about 40%) that do not use any technology associated with digital entrepreneurship. These companies are typically SMEs operating in sectors such as mining, construction, manufacturing, transport and storage.

At the other end of the spectrum, there is a group of companies that exploit fully digital by adopting all four technologies: they represent only 2% and are usually large companies operating in the finance sector. Despite their potential to dramatically change business performance, large data technologies are the least common among European companies.

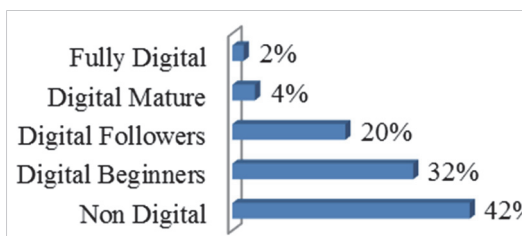


Figure 1. Distribution of digital enterprises, total EU Source: [6]

According to the Digital Entrepreneurship Scoreboard 2015 the content of output dimensions is the following [5]:

- digital transformation, capture the firms that are adopting/using four novel digital technologies – Cloud, Mobility, Social Media and Big Data - as well as the share of firms' turnover deriving from e-commerce;
- digital start-ups, describe the birth rate and employment shares of digital start-ups.

The indicators of the digital transformation are the following:

❖ Digital penetration rates (measured as % of companies falling in the following different clusters)

- Share of Non-Digital companies among all companies;
- Share of Digital Beginners among all companies;
- Share of Digital Followers among all companies;
- Share of Digital Mature among all companies;
- Share of Fully Digital among all companies;
- Within companies that adopted several digital solutions, combinations of solutions adopted by the different companies' clusters.

❖ Percentage of companies adopting cloud solutions

- Percentage of companies adopting enterprise applications (Customer Relationship Management, Enterprise resource planning);
- Percentage of companies adopting other solutions in the public cloud.

❖ Percentage of companies relying on social media for business purpose

- Percentage of each of the 10 reasons that were given by the companies for adopting social media.

❖ Percentage of companies adopting Big Data

❖ Percentage of companies adopting mobile solutions

- Percentage of companies adopting mobile solutions for external usage;
- Percentage of companies adopting mobile applications for internal usage;

❖ Percentage of turnover from e-commerce.

To measure digital transformation, take into account the adoption of new technologies - Cloud, Mobility, Social Media and Big Data

- by companies as well as the share of direct turnover derived from e-commerce. Fully digital companies based on all four technologies represent only a small part of the total of companies in the investigated countries, ranging from 1.2% in Italy to 2.6% in the UK. In most countries, companies that rely on a single technology, digital beginners represent the largest part of the market. There is an interdependence between the size of the company and the adoption of new technologies. The bigger the company, the more it relies on all four digital technologies. 20-30% of larger companies adopt three or four technologies, compared to just 4-11% of smaller companies [6]. In industries dominated by large companies is a stronger digitization. Three technology-based companies and four-technology digital

companies are more likely to work in the fields of finance, information and communications, oil and gas. Non-digital companies most often work in the field of mining and construction.

Countries with a better favorable environment tend to achieve results in e-commerce. Companies that do more e-commerce, hire more IT specialists, or provide training to IT specialists within the firm. E-commerce is more prevalent in countries with higher spending levels for research, development and patenting. Share of enterprises' turnover from e-commerce is shown in figure 2. E-commerce remains limited across the EU, although some Member States are outperforming. On average, in EU-28, 17% of business turnover comes from e-commerce.

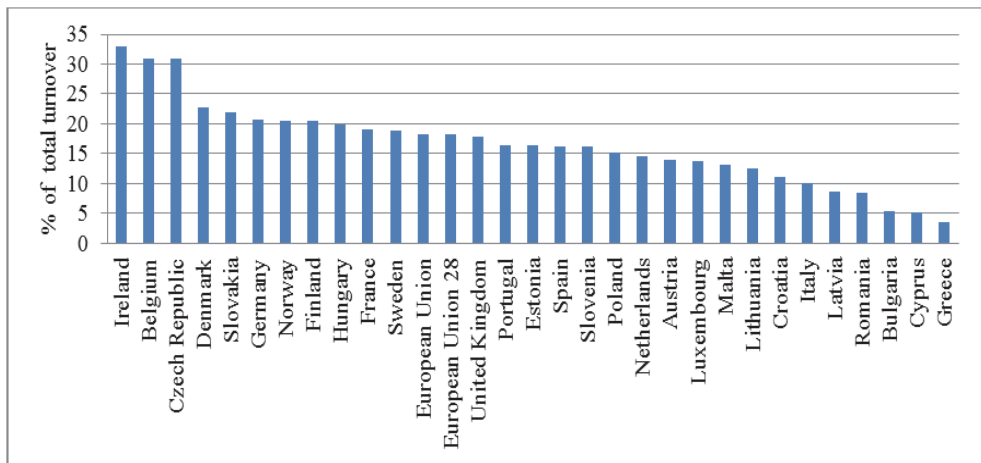


Figure 2. Total electronic sales by enterprises, as a % of their total turnover. Source: [7]

The set of indicators included in the output dimension will reflect the outcomes of the digital entrepreneurial process, namely the digital transformation of traditional businesses and the creation of digital start-ups. The indicators of the ICT start-ups are the following:

- ❖ Information and Communication Technology Birth Rate;
- ❖ Employment share of Information and Communication Technology enterprise.

The digital start-ups pillar allows analysing the birth of new enterprises in the ICT sector and the size of the ICT sector.

Figure 3 shows the average performance of ICT initiatives in EU Member States 28. This indicator depends on the initial size of the ICT sector. Countries with an already established ICT sector may have lower birth rates due to a lower market share available for new ICT firms in the economy, with a relatively high number of firms holding a large market share.

Dimension performance is measured using the average score of a composite indicator based on two standardized indicators: the Information and communication technology birth rate and the employment share of information and

communication technology enterprises births. Latvia 0.97, Poland 0.95, Lithuania 0.90, France 0.78 and Slovenia 0.70 are the best performing among the EU member states²⁸.

The lowest values of this indicator are in the following countries Ireland 0.12, Austria 0.15, Belgium 0.16. The EU28 member states average is 0.45.

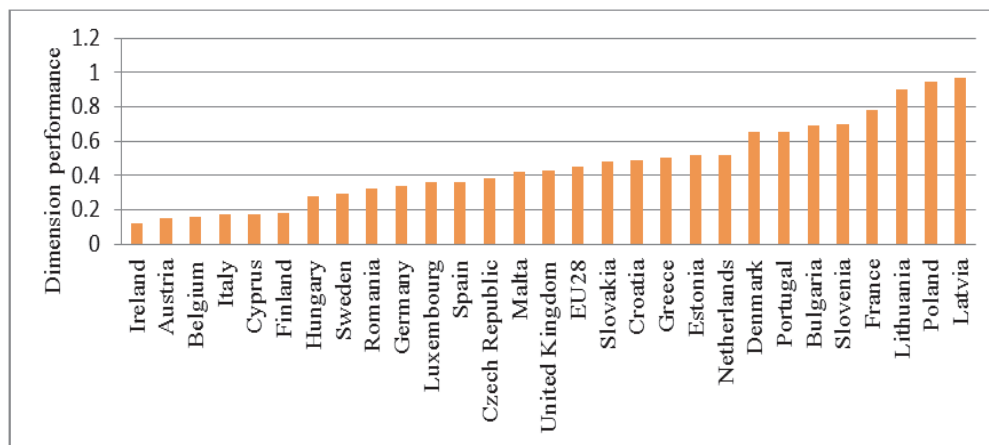


Figure 3. ICT Start-ups Source: [5]

So, many EU Member States are lagging behind in creating favourable conditions for digital entrepreneurship. The implementation of digital technologies among businesses is rather limited, especially among small businesses in the mining, construction, manufacturing, transport and storage industries. The digital system can lead to productivity and innovation in all sectors, enabling European organizations to reach new markets and customers, automate and streamline business processes and create completely new business models, products and services. European SMEs are estimated to grow two to three times faster when adopting digital technologies.

To advance in creating favourable environments where digital entrepreneurs can start and thrive EU Member States, there are priorities in the field of digital entrepreneurship - from investment to support knowledge-building, skills-building measures, access to entrepreneurship. The action of all EU Member States is a key condition for

the potential of digital technologies and maintaining Europe's leadership as a knowledge-based economy. The business future in the EU countries in the digital age will depend both on digital progress and on the business climate.

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