

Article

Factors That Limit the Development of the Digital Entrepreneurial System in the Scale-Up Phase of the Enterprise Life Cycle

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Abstract: For the interpretation of digital entrepreneurship, the context in which the entrepreneurial process takes place plays an important role. The context emphasizes that to analyze the entrepreneurial process, it is no longer sufficient to analyze only the entrepreneurial actions, but also the environment in which the entrepreneurial process takes place. The aim of this paper is to analyze the part of the context in which the entrepreneurial process takes place in the Republic of Serbia, Montenegro, Bosnia and Herzegovina and Hungary. Following the methodology of The European Index of Digital Entrepreneurship Systems (EIDES), the paper analyzes the system framework conditions, in the scale-up phase of the enterprise life cycle, in the digital dimension. The aim of this paper is a comparative analysis of three countries in transition with one country belonging to the European Union. After identifying the most developed factors, as well as the most underdeveloped factors, the paper discusses the conditions that influenced the results achieved in the four previously listed countries and why their improvement is important.

Keywords: entrepreneurial ecosystem; digital ecosystem; scale-up phase of the life cycle; innovations

MSC: 91D10; 91B62; 91B55



Citation: Đaković Radojičić, I.; Raut, J.; Mitrović Veljković, S.; Dudić, B.; Treľová, S.; Vrhovac, V. Factors That Limit the Development of the Digital Entrepreneurial System in the Scale-Up Phase of the Enterprise Life Cycle. *Mathematics* **2022**, *10*, 1606. <https://doi.org/10.3390/math10091606>

Academic Editors: Natalia Kryvinska and Michal Greguš

Received: 15 April 2022

Accepted: 6 May 2022

Published: 9 May 2022

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1. Introduction

Entrepreneurship is a process that is considered an important driver of economic growth and development, as well as productivity growth. This is evidenced by the extensive literature that focuses on exploring the determinants and outcomes of entrepreneurship at various levels. It is recognized that entrepreneurship is a complex process, initiated by individuals, but also integrated into the broader social context [1]. That is, it is recognized that while the entrepreneurial process is initiated by individuals, the broader regional context regulates the quality and outcomes of that process [1]. Although there is no universally accepted definition of entrepreneurship, there is a broad consensus that entrepreneurial behavior and actions encompass multiple dimensions, focusing on opportunity recognition, risk-taking, resource mobilization, innovation and the creation of new organizations [2]. The effects of such behaviors and entrepreneurial actions are diverse and can include value creation, job creation, knowledge diffusion and creative destruction.

They view entrepreneurship from the perspective of economic development, through various activities and outcomes related to entrepreneurship and suggest that a multidimensional definition of entrepreneurship is better suited to understanding the economic and social benefits that entrepreneurs create. This is in contrast to empirical research that relies

on a unidimensional operationalization of entrepreneurship, such as the self-employment rate, the small businesses ownership rate or the entrepreneurship rate [2]. Most of these indices are unidimensional, indicating the percentage of the population engaged in or willing to engage in entrepreneurial activities (on self-employment [3], on business ownership rate [4], on new business creation [5], on the overall index of early stage entrepreneurial activity [6]). One of the main shortcomings of unidimensional measures is that most of them do not capture differences in the quality of entrepreneurial activity, such as creativity, innovation, knowledge and technology intensity. One-dimensional measures do not take into account various environmental factors, which is important because the efficiency and quality of institutional arrangements can have a major impact on the quality of entrepreneurship and the economic and social impacts that are ultimately achieved through entrepreneurial activities. For this very reason, it is important to recognize the contextually embedded quality of entrepreneurial actions and behaviors at the national, regional and city levels. This is important for several reasons. The first reason is that most entrepreneurial enterprises operate at the local or regional level and are therefore subject to local or regional contextual influences. The second is that there can be significant differences in the structure of the industry and economic base between regions, which underscores the importance of the regional focus [7]. The literature addressing this issue provides a useful basis for developing an index to characterize and profile regional entrepreneurial systems in a way that provides insight into the economic development potential of the observed region.

In the aforementioned literature, entrepreneurship systems are defined as systems of resource allocation that are revived by individuals, who perceive opportunities and mobilize resources for their quest through the path of trial and error [7]. The trial and error of an entrepreneur is a dynamic process. Depending on systemic institutional and economic factors, the net result of these processes is the allocation of resources for productive use, which means that well-functioning entrepreneurship systems should be able to contribute to increasing overall factor productivity [7]. When it comes to trial and error in the entrepreneurial process, entrepreneurs in a situation where they want to start their own business primarily perceive the opportunities that arise [8]. However, entrepreneurs cannot know in advance whether the opportunities are real or not. The only way to confirm the perceived opportunity is to follow it. The result in this case is trial and error [8]. Indices that analyze entrepreneurship at different geographical levels must take into account the complexity of the entrepreneurial process and be able to account for variables at both the system level and the individual level [7].

Since the process of entrepreneurship is extremely important for the development of any country, it is important to have gained knowledge about the state of its development. The entrepreneurship process is very complex. As mentioned earlier, there are various indices that measure this process at different levels. As will be shown below, the authors decided to show the level of development of the factors limiting and slowing down the entrepreneurship process in the Republic of Serbia, Montenegro, Bosnia and Herzegovina and Hungary in the digital dimension in the scale-up phase of the enterprise life cycle. Based on the EIDES methodology, the authors have tried to identify the factors mentioned above, because, except for Hungary, no similar research has been conducted in countries that are not members of the European Union. This article could be the beginning of this research segment, while in the conclusion the authors will present the limitations, as well as the implications for future research.

2. Theoretical Background

The concept of entrepreneurial ecosystems is the subject of increasing research in the field. To better understand the entrepreneurship process in the digital world, the concept of ecosystems has been developed.

Ideas about the entrepreneurial ecosystem can be traced back to Marshall (1920), who studied the factors that stimulated business in specific areas, known as industrial districts [9]. Based on Marshall's work and ideas, research was built on Marshall industrial

districts [10,11], then research based on national innovation systems [12,13], as learning regions [14,15]. While these approaches have different goals, methods and epistemological views of how the economy works, they are all united by the central idea that there are factors outside the company, but within the region, that contribute to competitive advantage at the company level. This is precisely what laid the foundation for the concept now known as the entrepreneurial ecosystem.

Entrepreneurial ecosystems are defined at the socioeconomic level as systems that exhibit the characteristics of self-organization, scalability and sustainability, i.e., entrepreneurial ecosystems are embedded dynamic institutional policies that are reflected in the interaction between entrepreneurial attitudes, abilities and aspirations of individuals in the creation and launch of new ventures [1]. Based on this definition of the entrepreneurial ecosystem, the link between the system and the ecosystem can already be seen. Figure 1 shows the ecosystem model of global entrepreneurship. Entrepreneurial ecosystems are complex socioeconomic structures that revitalize actions at the individual level. As seen in Figure 1, nascent and new entrepreneurs occupy a central part of the entrepreneurial ecosystem. They are individuals who are in the process of starting a new business, and they represent a subset of the adult population in a given country [8]. The prevalent attitudes in the general population influence who decides to pursue an entrepreneurial career. Entrepreneurs cannot decide in advance whether the opportunities they have taken are real or not.

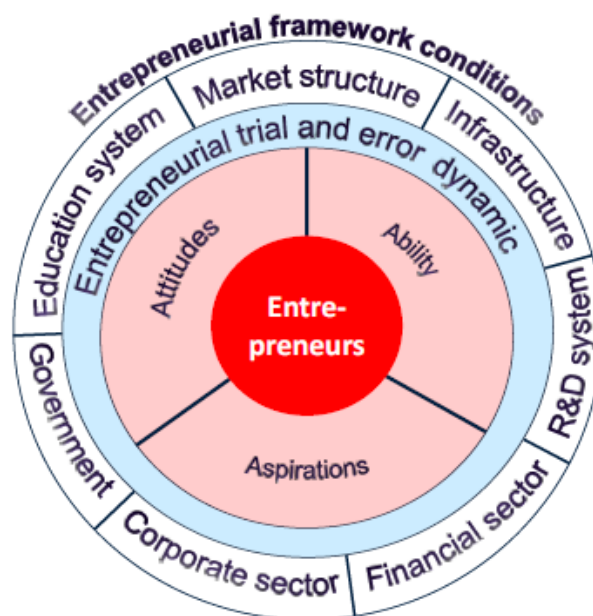


Figure 1. The ecosystem of global entrepreneurship [8].

The only way to confirm the opportunity, that is, the perceived opportunity, is to follow it. Entrepreneurial framework conditions are important because they regulate first who decides to become an entrepreneur and second, the extent to which the outcome of this new venture can fulfill its growth potential [8]. The entrepreneurial decision is largely determined by framework conditions, such as social norms and cultural preferences. The ecosystem of global entrepreneurship is outlined to determine the conditions that actually regulate the context in which entrepreneurship takes place, which will be discussed in more detail below. The extent to which new ventures can realize their potential is regulated by a number of entrepreneurial frameworks and conditions, including government, research and development, education, infrastructure, the financial sector and the corporate sector [8]. A healthy entrepreneurial ecosystem manages resources and deploys them productively. In addition, a healthy ecosystem will manage total factor productivity through process innovation. Looking at the global ecosystem, it is very important to point out why entrepreneurial attitudes, entrepreneurial skills and entrepreneurial aspirations

play an important role. Namely, entrepreneurial attitudes provide answers to how a country actually thinks about the entrepreneurial process. On the other hand, entrepreneurial capabilities provide answers to the question of what can actually be done to improve the entrepreneurial process and whether the people at the center of the entrepreneurial ecosystem have the necessary skills. Finally, entrepreneurial aspirations are intended to provide answers to questions about entrepreneurial aspirations.

To define ecosystems, many prominent researchers in the field begin by defining systems. The system is defined as a set of interconnected and interdependent organizations that work together as a whole to achieve a purpose [16]. In general, an ecosystem is a purposeful, collaborative network of dynamic systems that interact and have constantly changing interdependencies in a given context [16]. In the scientific literature on systems, there are at least three approaches related to innovation and entrepreneurship: innovation systems [17], competitive advantage of nations [18] and entrepreneurship systems [1]. It is important to understand the meaning of the systems concept. As will be shown below, entrepreneurship systems are the approach on which the basic assumptions of this research are based.

The entrepreneurship system concept is based on three important premises that provide a suitable platform for the analysis of entrepreneurial ecosystems [8]. The first premise is based on the assertion that entrepreneurship is the foundation of actions, initiated and performed by agents based on incentives. Another premise is that individual actions are influenced by the institutional framework of entrepreneurship. The third and final premise states that entrepreneurship ecosystems are complex, multiple structures in which many elements interact to produce the performance of the system i.e., the system method should consider the interaction of the constituent elements. The concept of entrepreneurial system is also applied at the regional level [19]. Regardless of whether it is a discussed, biological ecosystem, a technical ecosystem or an entrepreneurial ecosystem, each ecosystem has its own outcome. What all ecosystems have in common is the quality of sustainability through problem solving. Ecosystems can be productive and “live” while on the other hand they can “die”. Sustainability is the most important outcome of the ecosystem process.

To better understand the process of entrepreneurship in the digital world, the concept of entrepreneurial ecosystem is used. The digital ecosystem is a term that emerged in the early 2000s and is defined as “a self-organizing, scalable, and sustainable system composed of heterogeneous digital entities and their relationships with each other, focusing on interaction between entities to increase system utility, promote information sharing, and internal mutual collaboration” [19]. Digital ecosystems have become an important concept for both practitioners and researchers. With the faster progress of digitalization and the growing influence of digitalization in the business world, the concept of digital ecosystems is considered from different perspectives—environmental, economic and technological [19]. Although there are many perspectives when it comes to defining digital entrepreneurial ecosystems, all definitions indicate that digital technologies, context and human resources are very important for digital entrepreneurial ecosystems. Looking at the digital entrepreneurial ecosystem and its relationship with the biological ecosystem, digital technologies and context in the digital entrepreneurial ecosystem are inanimate components, while human resources that use digital technologies and are embedded in the context are living components. The behavior between living and non-living components of the digital entrepreneurial ecosystem constitutes the behavior of the digital entrepreneurial ecosystem. The following section introduces the EIDES methodology, which focuses on the context of digital entrepreneurial systems.

In exploring the concept of entrepreneurial ecosystems, it is necessary to emphasize the importance of context. Each ecosystem, as well as each system, that makes up the ecosystem or that is considered separately, has its own context in which it is built. The context of the ecosystem links the ecosystem to integration and entrepreneurship. Entrepreneurial ecosystems are open systems that depend on or respond to external conditions to some degree. This suggests the phenomenon of the “Russian doll” [20]. For example, formal local

institutions are embedded in the regional level, which in turn is embedded in the national level, which in turn is embedded in supranational institutions. It can be concluded that there is likely to be considerable heterogeneity in the inputs required to build a functioning ecosystem, and that differences in ecosystem performance can be expected across similar structures. Research that examines how different local contexts affect entrepreneurial ecosystems and their constituent systems is very important. This importance is reflected in the fact that different contexts must be considered when considering policy pressures to use the entrepreneurial ecosystems framework's economic development tools. A particular concept of the entrepreneurial ecosystem is not always able to explain entrepreneurial dynamics in different contexts. It is usually limited to a certain number of regions in the observed countries.

Many theories about regional clusters and regional entrepreneurial systems have gained acceptance in both research and policy circles in recent years. These are theories that underlie Porter's determinants of competitive advantage of firms and nations [18]. Porter's model states that the most important factors that determine the competitive advantage of nations and regions are the following:

- presence of related and supporting industries;
- availability and quality factors of production;
- domestic demand conditions, assuming that demanding customers in the domestic market "push" enterprises to improve their competitive advantage so they are well prepared to enter foreign markets;
- the structure of the economy in terms of the degree of cooperation between firms and the broader economic environment of the national or regional economy [18].

Porter's model was originally developed to explain the competitive advantage of nations over other nations, but has recently been used as a framework for analyzing regional economic structures.

The entrepreneurial ecosystem approach provides an excellent framework for research, policy and entrepreneurial practice. The strength of an entrepreneurial ecosystem depends on the scope and scale of the specialized resources and support that entrepreneurs can access within that system. Because this paper used the EIDES methodology, which uses the term "entrepreneurial system" the authors previously decided to define entrepreneurial ecosystem based on the overlapping meaning of the term. Namely, the authors of the EIDES methodology consider entrepreneurial ecosystems as resource allocation systems that facilitate the allocation of resources according to productive use [21]. From the above, it can be concluded that entrepreneurial ecosystems are very important in defining entrepreneurial systems. When studying the literature, it is clear that in both the biological sciences and this field, authors consider the ecosystem as a set of systems that work together to achieve a specific purpose. From this, the relationship between the system and the ecosystem can be deduced. The aim of this paper is to examine one part of the digital entrepreneurial systems, i.e., the context in which the entrepreneurial process takes place—in the digital dimension of the scale-up phase of the enterprise life cycle. As will be explained in more detail below, the EIDES methodology was used, which examines the three phases of the enterprise life cycle. Since the scale-up phase of the enterprise life cycle is the last phase according to the EIDES methodology, it is very important because it considers the factors in the most mature phase of the enterprise life cycle.

3. Materials and Methods

The evolution of the digitalization process has led to the adoption of new organizational innovations that support entrepreneurial opportunities, with accelerators, entrepreneurial sites, entrepreneurial academies, collaborative spaces and the like standing out. The development of the digitalization process is a very important sociotechnical phenomenon that has conditioned the development of digital entrepreneurial systems, because the use of digital technologies affects not only people's personal lives, but also the development of entrepreneurship and has a great impact on society as a whole [21]. It is

the digital entrepreneurial transformation of the economy that creates important challenges for policy makers [22]. They need data that will describe the framework conditions for digitally empowered entrepreneurship in their countries so that the productivity potential of digital entrepreneurs can be realized and progress toward the digital economy can be strengthened. Without a digital entrepreneurial transformation, i.e., without introducing the digitalization process into all entrepreneurial activity and without following digital trends, entrepreneurs cannot remain competitive in a market that is changing every day and where the changes are largely driven by the digitalization process. The European Index of Digital Entrepreneurship Systems (EIDES) is a response to this challenge for policy makers. EIDES monitors three types of framework conditions in the 28 Member States of the European Union that define how well each European Union country supports entrepreneurial dynamism [22]. The first set of conditions, defined as general framework conditions, describes the context of doing business in each country; the second set of conditions, defined as systemic framework conditions, is directly related to entrepreneurial stand-up, start-up and scale-up; while the third set of conditions, defined as digital framework conditions, describes the overall level of digitalization of the economy as it relates to entrepreneurial activities through the impact on general frameworks and systemic frameworks conditions [22]. When it comes to the phases of the entrepreneurial cycle, systemic frameworks conditions distinguish three phases of entrepreneurial dynamics, as mentioned above. In the first, stand-up phase, the focus is on the decision of the individual to embark on the entrepreneurial process. In the second phase, the start-up phase, the focus is on the subsequent creation of new start-ups. In the last phase, stand-up, the focus is on scaling up start-ups that have discovered a business model with promising growth potential [22]. EIDES is a systemic framework index that describes the context in which the country's entrepreneurial dynamics are embedded and regulates the quality of these dynamics.

As mentioned earlier, the EIDES methodology follows three condition group chapters. Each of these three condition groups has been defined by the authors of EIDES with the corresponding group of factors to be seen in the mentioned study. Depending on the factors observed, certain factors can be found from relevant and pertinent sources cited by the authors of EIDES methodology. Based on the found values of the factors and according to the methodology of mathematical calculation, the value of a certain group of conditions is determined. For the purposes of this research, i.e., for determination of the factors in the scale-up phase of the enterprise life cycle in the digital dimension, the EIDES methodology does not require the involvement of respondents, which does not apply to other phases of the enterprise life cycle, as well as determination of the total EIDES score that is analyzed. The authors chose the scale-up phase of the enterprise life cycle in the digital dimension because the EIDES method does not require the presence of respondents for this part of the digital entrepreneurial system context, since all the factors that constitute this part of the context can be determined based on the sources proposed by the EIDES method. In determining the required values, the found values were reviewed three times by three different authors of the study in order to revise the found data in an appropriate way and eliminate possible deficiencies as much as possible.

The scale-up phase, in the digital dimension, consists of the following four pillars of the digital entrepreneurial system with the related factors:

1. Human capital
 - a. Internet use: searching for information about goods and services (defined as using the Internet to search for information about goods and services, expressed as a % of people [23]) (SC_H_1)
 - b. Internet use: taking an online course (defined as using the Internet to take a course, on any topic, expressed as a % of individuals [24]) (SC_H_2)
2. Creativity and dissemination of knowledge

- a. companies that have ERP software (defined as companies that have an ERP software package for sharing information between different functional areas, expressed as s % of people [25]) (SC_C_1)
 - b. a website with online ordering, booking, or reservation (defined as a website with the ability to order, reserve or book online and at least one of following: webacc, webcml, webom or webper [26]) (SC_C_2)
3. Finance
 - a. Fintech (defined as the number of companies with financial technology per 1,000,000 inhabitants [27]) (SC_F_1)
4. Networking and support
 - a. companies whose business processes are automatically connected to companies and/or customers (defined as electronic information exchange in the supply chain: 1. all types of information with suppliers and/or customers to coordinate the availability and delivery of products and services, 2. information about demand forecasts, inventory levels, production, distribution or product development [28]) (SC_N_1)
 - b. companies that use software solutions such as CRM (Customer Relationship Management) to analyze customer information for marketing purposes (defined as companies that use software solutions such as CRM to analyze customer information for marketing purposes, expressed as % of companies with at least 10 employees in a given NACE sector [29]) (SC_N_2)
 - c. total investment of the electronic communications sector in networks (defined as the telecommunications sectors in networks [30]) (SC_N_3) [22].

The labels for the variables used do not follow the labels defined by the EIDES method, but are defined by the authors. The calculation of each factor containing the variables follows the EIDES methodology.

Following the original basic research from 2021, which dealt with the analysis of the factors of all eight pillars of the digital entrepreneurship system of the Republic of Serbia [31], this research will focus only on the scale-up phase of the enterprise life cycle, in the digital dimension and comparative analysis in Montenegro, Bosnia and Herzegovina and Hungary.

The subject of the research is the analysis of the factors that, according to the EIDES methodology, make up the scale-up phase of the life cycle of the company in the digital dimension, and then a comparative analysis of the factors in the above countries. As can be seen from the above, the research tool is the EIDES methodology, which was used to present the method for calculating these factors.

As mentioned above, the basic pillars of the EIDES index distinguish between general framework conditions and systemic framework conditions. While the general framework represents the conditions at the state level, the systemic framework conditions represent the different types of resources available to entrepreneurial companies in the three phases of their life cycle [22]. This study aims to show what resources are needed by companies in the scale-up phase, which includes the scaling of new companies that have developed a solid and scalable business model.

4. Results

The results of the research will show the values of the factors of digital entrepreneurial systems in the scale-up phase of the life cycle of the enterprise, in the digital dimension in the Republic of Serbia, Montenegro, Bosnia and Herzegovina and Hungary. Each of these factors is normalized in value, as suggested by the EIDES method, so that the final value of the factors can be calculated and a comparative analysis can be performed.

The equations to be used are presented below:

- Human capital

$$(SC_H_1 + SC_H_2)/2 \quad (1)$$

where SC_H_1 represents the use of the Internet to search for information about goods and services, and SC_H_2 stands for the use of the Internet to conduct online courses.

- Creativity and dissemination of knowledge

$$(SC_C_1 + SC_C_2)/2 \quad (2)$$

where SC_C_1 represents companies that have ERP software and SC_C_2 represents websites that offer the ability to order, book, or reserve online.

- Finance

$$(SC_F_1)/1 \quad (3)$$

where SC_F_1 represents fintech (total number of companies with financial technology per 1,000,000 population).

- Networking and support

$$(SC_N_1 + SC_N_2 + SC_N_3)/3 \quad (4)$$

where SC_N1 represents companies whose business processes are automatically connected to enterprises and/or customers, SC_N_2 stands for companies that use software solutions such as CRM to analyze customer information for market and carry, and SC_N_3 represents the total investment of the electronic communications sector in networks. Each Equation is used for each of the four countries analyzed.

4.1. Republic of Serbia

The Republic of Serbia with the capital Belgrade has a population of 7,186,862 according to the last census, excluding Kosovo and Metohija [32].

Human capital is composed of two factors—the use of the Internet to search for information about goods and services has a value of 0.6 [23], and the use of the Internet to conduct online courses has a value of 0.07 [24]. In the pillar of creativity and dissemination of knowledge, the factor of companies that have ERP (Enterprise Resource Planning) software is 0.22 [25], and websites that offer the possibility of ordering, booking or posting online have a value of 0.42 [26]. The third pillar, which constitutes the scale-up phase of the life cycle of the company in the digital dimension, is fintech, which carries a value of 0 [27]. As this factor is calculated as the quotient of the total number of companies with financial technology (number of companies 52) per 1,000,000 inhabitants (population of the Republic of Serbia 7,186,862), fintech receives the value 0.00000723, i.e., in its normalized value 0. The last pillar, networking and support, consists of companies whose business processes are automatically connected with companies and/or customers and has a value of 0.07 [28], companies that use software solutions such as CRM to analyze customer information for the market and carries a value of 0.22 [29] and a total investment in networks by the electronic communications sector of 0.22 [30].

According to the EIDES method, the value of each column is calculated by adding the values of each factor. The value obtained is divided by the number of factors that make up the observed column, i.e., the mean value is obtained.

The values of the pillars, in the scale-up phase of the life cycle of the company, in the digital dimension, for the Republic of Serbia are as follows:

- human capital
=0.335
- creativity and dissemination of knowledge
=0.32

- finance
=0
- networking and support
=0.17

Figure 2 shows a schematic representation of the values of the factors of the digital entrepreneurial system of the Republic of Serbia, in the scale-up phase of the life cycle of the enterprise, in the digital dimension.

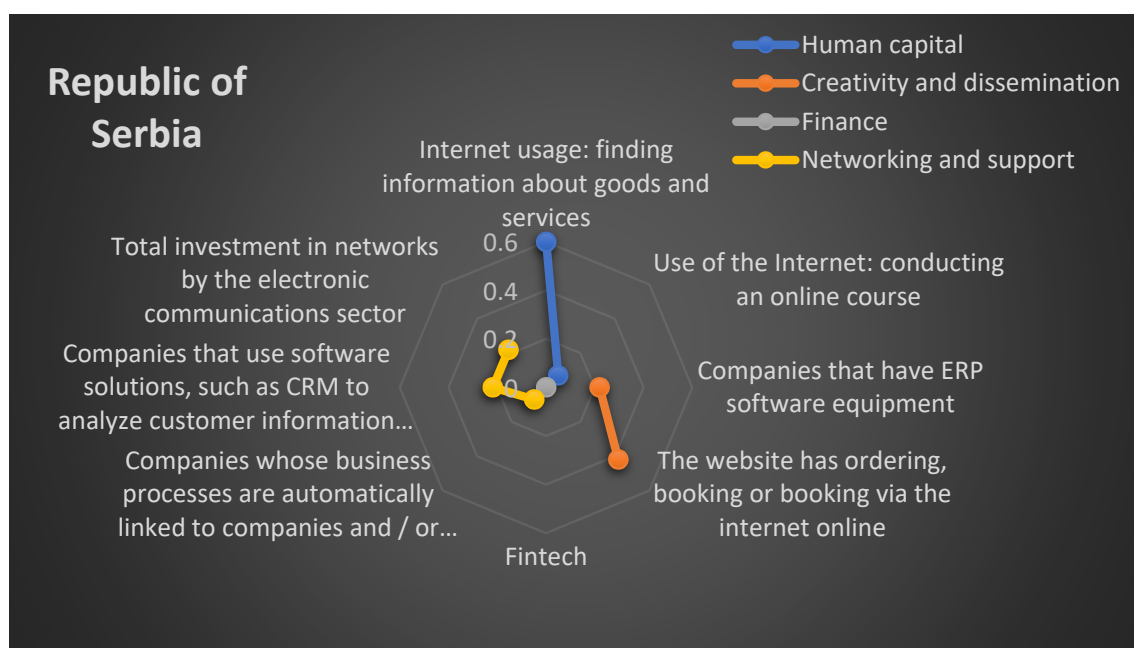


Figure 2. Values of the factors of the digital entrepreneurial system of the Republic of Serbia, in the scale-up phase of the life cycle of the enterprise, in the digital dimension.

As can be seen in Figure 2, the most valuable factor is the using of the Internet to find information about goods and services. The factor with the lowest value, on the other hand, is fintech.

4.2. Montenegro

Montenegro has a population of 622,303 according to the 2016 census [33].

In the human capital pillar, the use of the Internet to search for information about goods and services is 0.50 [23], while the use of the Internet to take online courses is 0.13 [24]. When analyzing the second pillar, i.e., creativity and dissemination of knowledge, equipping companies with ERP software is a factor that is rated as low reliable [25], while the factor analyzing websites with ordering, booking or online booking facilities is rated as 0.45 [26]. In determining the value of the creativity and dissemination of the knowledge pillar, only the factor that analyzes websites that have ordering, booking, or online booking capabilities is considered. Finance, as the third pillar, is fintech, which has a value of 0 [27] (the total number of companies with financial technology is 10, while the total population is 622,303). The last pillar, i.e., networking and support, companies whose business processes are automatically connected to companies and/or customers, has a value of 0.23 [28], the factor of companies that use software solutions such as CRM to analyze customer information for market needs is 0.23 [29] and the factor of total investment in networks by the electronic communications sector is 0.21 [30].

Following the EIDES method, the value of each pillar is calculated by adding the values of each factor. The value obtained is divided by the number of factors that make up the observed column, i.e., the mean value is obtained.

The values of the pillars in the scale-up phase of the life cycle of a company, in the digital dimension, for Montenegro are as follows:

- human capital
=0.315
- creativity and dissemination of knowledge
=0.45
- finance
=0
- networking and support
=0.22

Figure 3 shows a schematic representation of the values of the factors of the digital entrepreneurial system of Montenegro in the scale-up phase of the life cycle of the company, in the digital dimension.

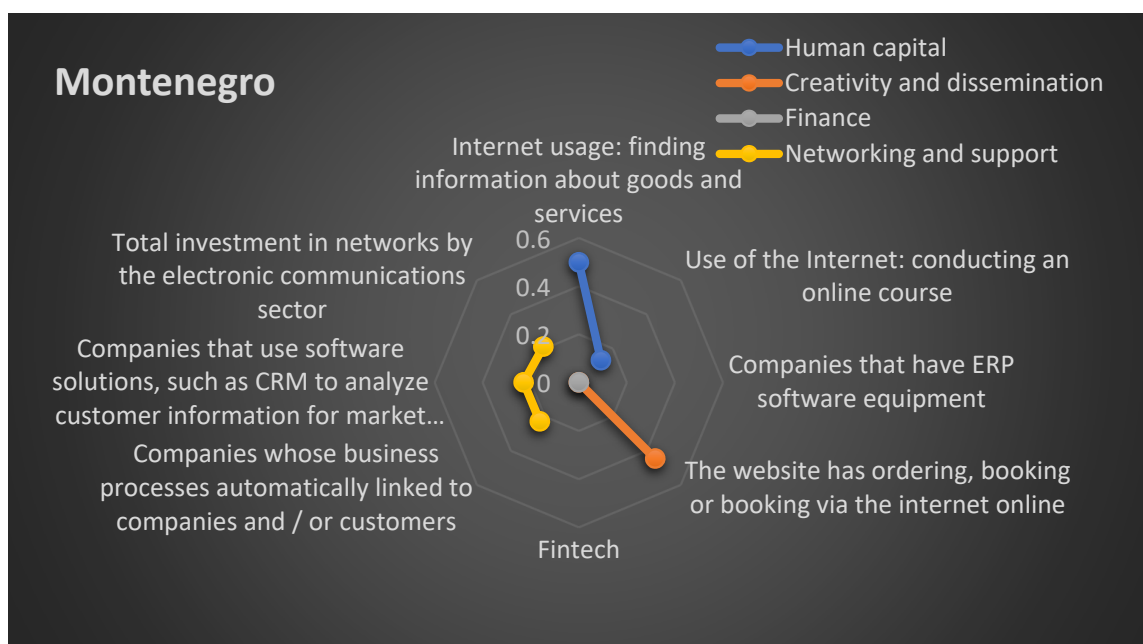


Figure 3. Values of factors of the digital entrepreneurial system of Montenegro, in the scale-up phase of the life cycle of the enterprise, in the digital dimension.

As can be seen in Figure 3, the most valuable factor is the use of the Internet to find information about goods and services. On the other hand, the factor with the lowest value is fintech, as in the Republic of Serbia.

4.3. Bosnia and Herzegovina

Bosnia and Herzegovina has 3,754,693 inhabitants according to the last census [34].

In the human capital pillar, the use of the Internet to search for information about goods and services is 0.51 [23], while the use of the Internet to conduct online courses is 0.07 [24]. In the creativity and dissemination of the knowledge pillar, companies that have ERP software have a value of 0.26 [25], and a website that provides the ability to order, book, or reserve online has a value of 0.41 [26]. In the finance pillar, fintech has a value of 0 [27] (the total number of companies is 7 and the total population is 3,754,693). In the last pillar, i.e., networking and support, companies whose business processes are automatically linked to companies and/or customers have a value of 0.11 [28], companies that use software solutions such as CRM to analyze customer information for market needs have a value

of 0.09 [29] and the total investment in networks by the electronic communications sector is 0.12 [30].

According to the EIDES method, the value of each pillar is calculated by adding the values of each factor. The value obtained is divided by the number of factors that make up the observed column, i.e., obtaining the mean value is obtained.

The values of the pillars in the scale-up phase of the life cycle of the company, in the digital dimension, for Bosnia and Herzegovina are as follows:

- human capital
=0.29
- creativity and dissemination of knowledge
=0.102
- finance
=0
- networking and support
=0.106

Figure 4 shows a schematic representation of the values of the factors of the digital entrepreneurial system of Bosnia and Herzegovina, in the scale-up phase of the life cycle of the enterprise, in the digital dimension.

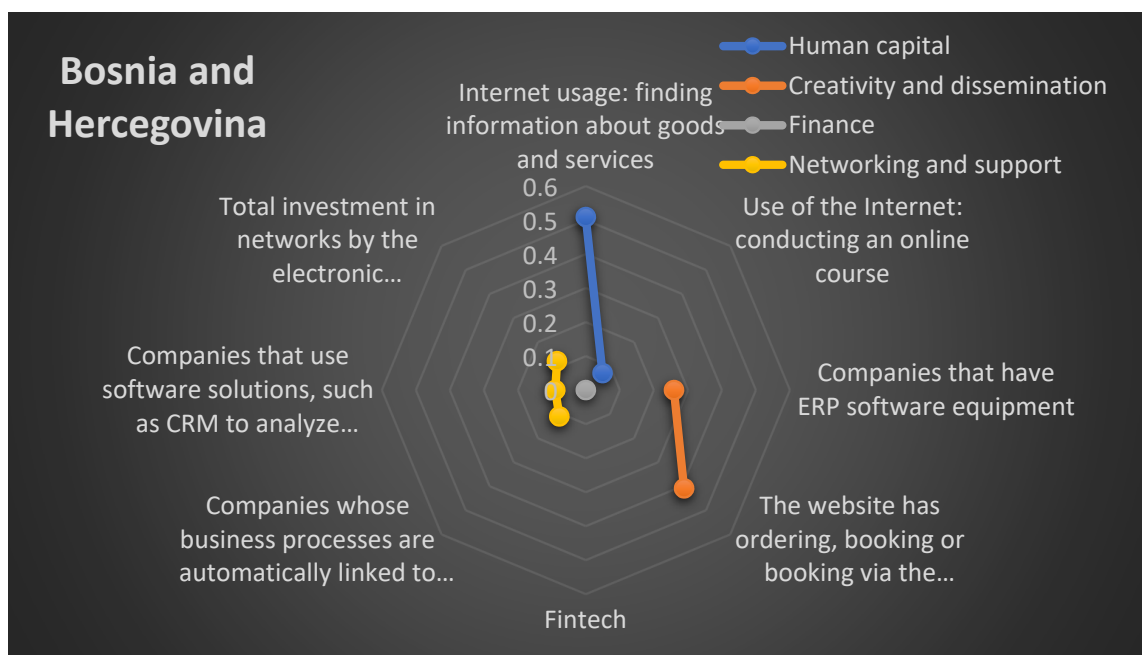


Figure 4. Values of the factors of the digital entrepreneurial system of Bosnia and Herzegovina, in the scale-up phase of the life cycle of the enterprise, in the digital dimension.

As can be seen in Figure 4, the most valuable factor is the use of the Internet to find information about goods and services, as in the Republic of Serbia and Montenegro. On the other hand, the factor with the lowest value is fintech, as in the Republic of Serbia.

4.4. Hungary

According to the last census, Hungary has a population of 9,628,247 [35].

In the human capital pillar, the use of the Internet to search for information about goods and services has a value of 0.79 [23], and the use of the Internet to take online courses has a value of 0.12 [24]. In the creativity and knowledge dissemination pillar, companies that have ERP software equipment have a value of 0.21 [25], while a website that provides the ability to order, book, or reserve online has a value of 0.29 [26]. In the finance pillar,

fintech has a value of 0 [27] (the total number of companies is 192, while the population is 9,628,247). In the networking and support pillar, companies whose business processes are automatically linked to companies and/or customers have a value of 0.08 [28], companies that use software solutions such as CRM to analyze customer information for market needs have a value of 0.10 [29], and the total investment of the electronic communications sector in networks is 0.08 [30].

Following the EIDES method, the value of each pillar is calculated by adding the values of each factor. The value obtained is divided by the number of factors that make up the observed column, i.e., the mean value is obtained.

The values of the pillars in the scale-up phase of the company life cycle in the digital dimension for Hungary are as follows:

- human capital
=0.445
- creativity and dissemination of knowledge
=0.25
- finance
=0
- networking and support
=0.086

Figure 5 shows a schematic representation of the values of the factors of Hungary's digital entrepreneurial system, in the scale-up phase of the enterprise life cycle in the digital dimension.

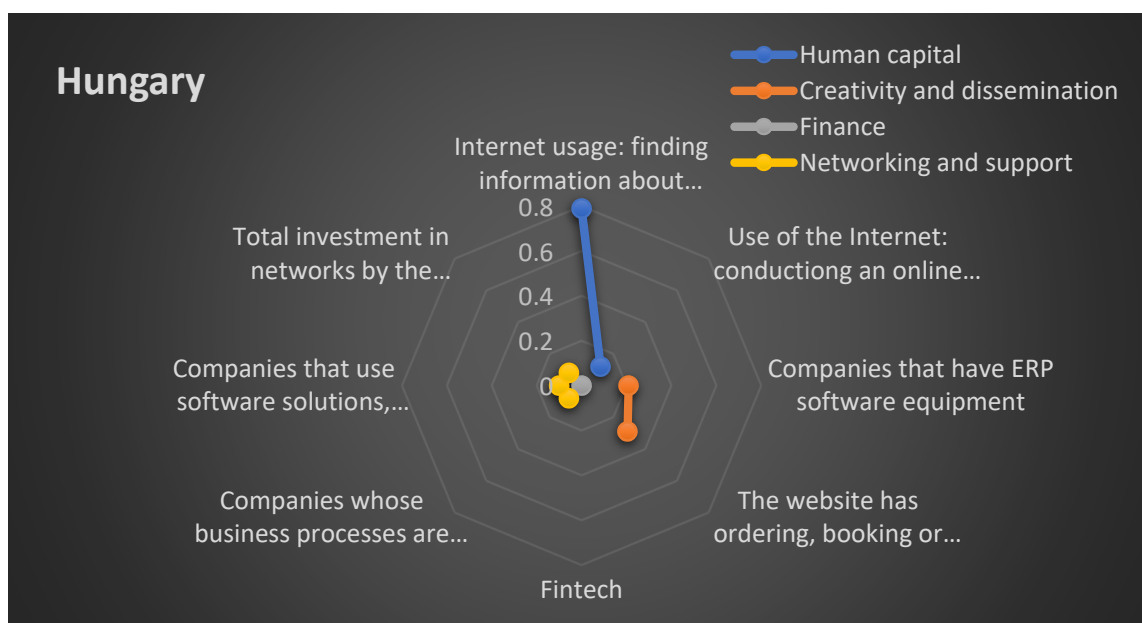


Figure 5. Values of the factors of the digital entrepreneurial system of Hungary, in the scale-up phase of the life cycle of the enterprise, in the digital dimension.

As can be seen in Figure 5, the factor with the highest value is the use of the Internet to find information about goods and services, as in the previously analyzed countries. The factor with the lowest value is fintech.

4.5. Scale-Up Phase of the Enterprise Life Cycle

For companies to reach the scale-up phase of the lifecycle, they need access to management knowledge in the start-up phase to improve their workforce in the scale-up phase.

Both small and large companies need access to management knowledge to build and run efficient organizations around their business models [22]. Business sophistication contributes to greater efficiency in the production of goods and services.

The quality of business networks and related industries, as measured by the quantity and quality of local suppliers and the extent of their interaction, is important for a variety of reasons [22]. When companies and suppliers in a given sector are linked in geographically proximate clusters efficiency also increases, opportunities for innovation open up and barriers to entry for new companies are reduced. The businesses and strategies of the individual companies support modern business processes.

5. Discussion

As mentioned above, a comparative analysis of the scale-up of the life cycle of the company in the digital dimension is presented for the Republic of Serbia, Montenegro, Bosnia and Herzegovina and Hungary.

As can be seen in Figure 6, the human capital pillar in the scale-up phase of the enterprise life cycle of digital entrepreneurship system is the most developed in Hungary, while it is the least developed in Bosnia and Herzegovina. According to the EIDES methodology, human capital includes the use of the Internet to search for information about goods and services and the use of the Internet to take courses. The question of why these factors are not developed in Bosnia and Herzegovina arises. Also, the Republic of Serbia with a value of human capital of 0.335 and Montenegro with a value of 0.315 do not have a significantly higher value than Bosnia and Herzegovina, with 0.29, while Hungary has a value of 0.455.

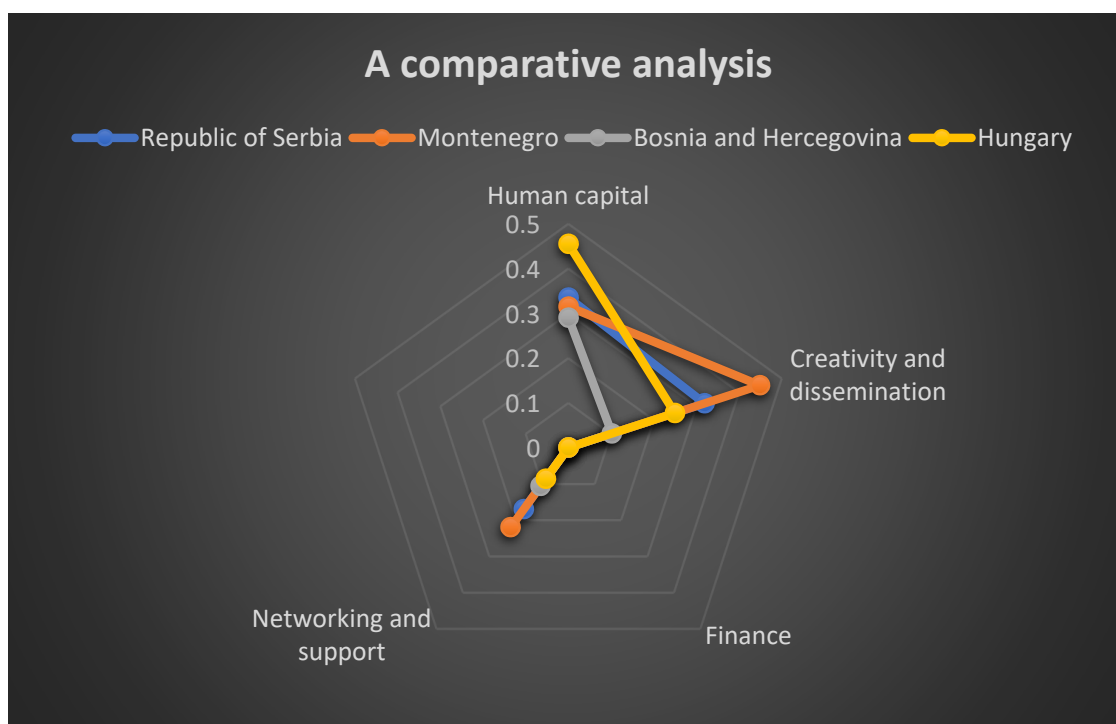


Figure 6. Values of factors that make up the scale-up phase of the life cycle of digital entrepreneurial system enterprises in the digital dimension, for the Republic of Serbia, Montenegro, Bosnia and Herzegovina and Hungary.

The need to follow trends and adopt best business practices is particularly evident in the area of human resources. Human resources have become an important element in recent decades due to technological change, increasing computerization, and the reorientation of companies from production to services. There is a growing need for creativity. When introducing modern techniques for human capital management, it is necessary to take into account the specifics of the local culture and make appropriate adaptations to one's

business needs. The analyzed factors do not show high values in the use of the Internet, although we live in an era of mass popularization of digital technologies. The influence impact that information and communication technologies have could not pass by all the companies that, thanks to the application of this technology and its innovative solutions, are forever changing the current way of conducting every day and business activities. It is important to influence the attitude of human capital and highlight the benefits they must realize through the use of information technology. Especially in the scale-up phase of the enterprise life cycle, human capital benefits greatly from the use of the Internet to find information about goods and services, as search time is reduced and available information can be easily compared. On the other hand, digitization and information technology make online courses much easier today than in the past. Introducing human capital to the benefits of using the Internet for these purposes will not only increase the valuation of the digital entrepreneurial system in the scale-up phase of the enterprise life cycle, but also increase the effectiveness of the business where the human capital is located. The Republic of Serbia, Montenegro, and Bosnia and Herzegovina, unlike Hungary, are countries that are still in the process of transition, which could be one of the explanations for the lower values of the factors in this research area.

In the field of creativity and dissemination of knowledge, Montenegro has the highest score, while Bosnia and Herzegovina has the lowest. Since creativity and dissemination of knowledge in the scale-up phase of the digital entrepreneurial life cycle are companies that have ERP software and websites where one can order, book or reserve online, it is concluded that Montenegro is more developed than Hungary, whose score in this area is the lowest at 0.25. It should be taken into account that Montenegro is a country with numerous tourist destinations and that it has best understood and used the potential of digital marketing. Montenegro has recognized the potential for the development of ERP systems that allow companies to manage online sales more easily and create a good experience for the end customer. Developing creativity and spreading knowledge is very important, in the scale-up phase of a company's life cycle in the digital dimension. As ERP software support is also emphasized in this area, its importance is reflected in solving a certain group of business problems that occur as a result of the development of digitalization. In business systems, changes are part of daily business. Changes that take place in companies and the planned response to them, their impact on businesses and the impact of local, regional or even global business opportunities help companies plan and appropriately align the available internal and external resources or even acquire new ones to successfully achieve their goals. As ERP software continues to be the foundation for data, appropriately utilized opportunities to integrate ERP solutions with other solutions will be key to success in the near future, for users as well as manufacturers and suppliers. The advantage of an ERP system is that it is a system that integrates information management by managing data flows through a complete organization [36]. The use of ERP software is very important because it allows companies to easily share and transfer information, simplifies the decision-making process and helps in business planning.

In all four analyzed countries where fintech was analyzed, the number of financial technology companies per 1,000,000 inhabitants was the lowest. As its simplest, we can say that it is a symbiosis of technologies and customer services for the financial market. Certainly, the fintech value in the analyzed countries is not 0, the value of 0 was determined after normalizing the factor, but the values are certainly low. Fintech is a phenomenon that describes new technologies aimed at improving automating the provision and use of financial services [37]. The role of fintech is to enable the company to provide its customers with the best possible use of new technologies for the delivery of their financial services. It can be concluded that there is still no significant financial investment in this area in the countries studied. The importance of fintech is manifold. By investing in fintech companies, the whole country can be able to simplify internet banking, payments and transaction processes. On the other hand, they can potentially improve the security of enterprise databases and ensure cybersecurity [38]. The benefits are also seen in the management of

online financial processes, the development of financial services related to technology, and the management of cryptocurrencies and other digital assets [39]. By investing financial resources in fintech, in addition to the benefits listed, fintech provides the ability to see the movements made, in such a way that one can see where the transaction came from or is coming from, which provides transparency and security. In addition, fintech is an important area because it enables the reduction of transaction costs. One possible explanation for the low scores in the countries surveyed is the lack of regulations governing fintech. As technology becomes increasingly important both in the daily lives of individuals and under the conditions of the modern, it is likely that fintech will become increasingly important.

The final area in the scale-up phase of the enterprise lifestyle in the digital entrepreneurial system is networking and support. All four analyzed countries studied have approximately the same value, with Hungary having the lowest value of 0.086, while Montenegro has the highest value. Since this area consists of factors related to companies whose business processes are automatically connected to companies and/or customers, companies that use software solutions such as CRM to analyze customer information for market needs and overall investment in networks through the electronic communication sector, it can be concluded that Montenegro is also at the top in the area of creativity and knowledge dissemination compared to the other analyzed countries. As mentioned above, we are witnessing the growing influence of digitalization in all areas of the market and the increasing pressure on companies that do not invest in the automation of their business processes. Although the transition to an automated system is a really big step, regardless of the size of the company, CRM is one of the solutions that is as easy as possible to set up and use. CRM software is primarily designed to enable communication about the user, a new project or a specific business opportunity between all team members, ensuring that all members are up-to-date with the current situation [40]. CRM software can be integrated with other systems, such as the ERP software just mentioned. As the market for CRM software grows, so will the number and customization of software packages. Increasing functionality targeted at specific industries and international support are certainly noticeable development directions today [41]. Increasing competition is really making the customer the central figure of any business. CRM software also enables smarter advertising with campaign and execution while tracking results throughout the advertising process, more efficient sales focusing only on the essential facts to get the job done more efficiently and effectively and customer care to attract new customers and retain existing ones and provide them with a responsible and effective service [42]. When deciding to use a particular software solution, it is necessary to focus on the organization of all processes and business benefits, where the functionality and traceability of business processes are of great importance. In order for the software to offer maximum potential to the company and for it to be used efficiently, it is necessary that all areas of the company are equally involved and regularly enter all newly created documents and their data. When it comes to investment in networks by electronic sectors, the accelerated development of electronic communications and the growing share of this sector in the country's economy is one of the most important factors for the development of digital business systems. It is important to emphasize the role of the strategy for the development of electronic communications and to set the main directions and goals of successful development of electronic communications. Given the fact that the global society is recovering from a crisis that has left consequences on both the economy and society, the strategy for the development of electronic communications should aim to secure a more favorable position in the global economy.

As can be seen from the above, the factors that hinder and slow down the development of digital entrepreneurial systems in the analyzed countries were identified in the scale-up phase of the enterprise life cycle, in the digital dimension. The proposed actions should not be considered as a final outcome, but as possible directions for their improvement.

6. Conclusions

6.1. Theoretical Contributions

As EIDES research suggests, policy for the entrepreneurial ecosystem must comprehensively consider the stand-up, start-up and scale-up phases of the enterprise life cycle and incorporate the dynamics of the ecosystem as a whole.

As policy attention shifts to the dynamics of the scale-up phase of the enterprise life cycle, enterprise-specific policies are likely to be less effective, and there will be a greater need to consider system-level dynamics within systems frameworks [22]. Policy initiatives for entrepreneurial ecosystems should be designed and implemented in coordination with support initiatives in “market” and “system failure” regimes [22]. To be successful, entrepreneurial ecosystem policies must actively engage ecosystem stakeholders. To be effective, entrepreneurial ecosystem policies should facilitate ecosystem participants identification with the broader ecosystem and strengthen ecosystem actors’ engagement to coordinate their actions and actively identify ecosystem deficiencies [22]. Entrepreneurial ecosystem policy requires a long-term approach. Successful ecosystem interventions must be coordinated, to ensure that sufficient momentum is maintained to overcome ecosystem interventions. As the entrepreneurial ecosystem phenomenon leads the digitalization process, coordination between the entrepreneurial ecosystem and digitization policy is necessary.

As mentioned at the very beginning of the research, this paper aims to identify and compare the values of the factors of the digital entrepreneurial system, as well as the factors that constrain digitization in the scale-up phase of the enterprise life cycle in the digital dimension. According to the EIDES methodology, the study of a country’s overall digital entrepreneurial system is very complex. For a complete comparative analysis, one of the implications of the research is certainly the analysis of the general framework, the system framework and the general framework and the system framework conditions in the digital dimension, with the formation of a group of respondents proposed by the EIDES methodology. Hungary and Croatia are included in the 2018 and 2019 EIDES surveys, but as a member state of the European Union, the Republic of Serbia, Bosnia and Herzegovina and Montenegro. Another implication for future research is a study that includes countries in transition in order to conduct a comparative analysis of countries in transition in the Balkans and countries in the European Union.

6.2. Practical Implications

As we live in the era of digitalization, it is important to follow the digital dimension of the entrepreneurial system. According to the authors of the EIDES methodology, it is necessary to review the values of the factors that make up the digital entrepreneurial system once a year to see if the state has made progress or slackened in its work on the digital entrepreneurial system. This has implications for future research for the annual revision of the value of the digital entrepreneurial system, with a particular focus on the digital dimension, because it is the digital dimension that provides the opportunity to compete in the market and keep pace with globally successful economies.

6.3. Limitations and Future Research

When it comes to the limitations of the research, the authors would certainly emphasize the relevance of the data. As suggested by the EIDES methodology, only relevant sources suggested by the same were used. However, there is a possibility that the sources are not regularly updated. The authors suggest, and this is also a suggestion for future research, verifying the relevance and timeliness of these sources as well as conducting a full study as suggested by the EIDES methodology. The EIDES research deals only with countries that belong to the European Union, which in this case is only Hungary. The Republic of Serbia, Bosnia and Herzegovina and Montenegro have not been covered by the EIDES study so far, which is very important. When conducting a complete study according to the EIDES methodology, not only the factors that invest in the scale-up phase of a company’s

life cycle are taken into account. By applying the EIDES methodology, it will be possible to evaluate each country in the stand-up, start-up and scale-up phases of the enterprise lifecycle, as well as determine the final EIDES score that shows the current state of the digital entrepreneurial system of the analyzed country. In addition, by creating an appropriate sample of respondents suggested by the EIDES method, it is possible to identify factors that slow down and hinder the development of the digital entrepreneurial system of a given country. On this basis, it is easier to make suggestions to eliminate or mitigate the factors that slow down and hinder the development of digital entrepreneurial system and influence the improvement of overall digital entrepreneurial system.

Author Contributions: Conceptualization, I.Đ.R.; Data curation, J.R. and B.D.; Formal analysis, I.Đ.R. and S.M.V.; Investigation, J.R. and V.V.; Methodology, I.Đ.R. and S.M.V.; Project administration, S.M.V.; Resources, S.T. and V.V.; Supervision, B.D.; Validation, S.T.; Visualization, J.R. and B.D.; Writing—original draft, S.T. and V.V. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data is contained within the article.

Conflicts of Interest: The authors declare no conflict of interest.

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