

Bozhidar I. Hadzhiev<sup>1</sup>  
Valentina Nikolova-Alexieva<sup>2</sup>  
Iva T. Bachvarova<sup>3</sup>

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## CREATING THE CONDITIONS FOR BROADBAND BUSINESS ENTREPRENEURSHIP TO ENSURE LASTING SUCCESS FOR THE BULGARIAN SOCIETY

*The theory and practice of broadband entrepreneurship is a fact, already. As stated in some research, "...In the modern world of business, entrepreneurship is becoming increasingly broadband and affects the creation of changes in every business space, at every level in every industrial and territorial dimension". This is entrepreneurship driven by broadband shopping of goods and services, instant communications, negotiations and orders. It is based on the ideas of Complex Reengineering theory, the three-star model and the seven concepts of this theory.*

*This study focuses on opportunities to create broadband business opportunities. An attempt is made to reveal the underlying factors for creating these conditions. The main purpose of this study is to analyze the factors for creating conditions for broadband business entrepreneurship in order to draw attention to the opportunities for achieving lasting success for the Bulgarian society.*

*JEL: L26; L81; L87*

### Introduction

A growing number of reports and studies recognize the key role that digital technologies can play in improving the business landscape across the world. It provides an opportunity for both developed and less developed countries to achieve sustainable growth and to create decent jobs and thereby to contribute to the achievement of the sustainable development goals. Broadband entrepreneurship can strongly contribute to reduce poverty and create prosperity and livelihoods and digital entrepreneurs can reap the benefits of the global market. Young people can develop their capacity to build start-ups and innovative community initiatives by using digital technologies as a support. Digitalization can also

<sup>1</sup>Bozhidar I. Hadzhiev, Professor, Dr. Sc (Econ) at Department of Industrial Business and Management, University of Food Technologies – Plovdiv, Bulgaria, e-mail: cei@abv.bg.

<sup>2</sup>Valentina Nikolova-Alexieva, Associate Prof., PhD at Department of Industrial Business and Management, University of Food Technologies – Plovdiv, Bulgaria.

<sup>3</sup>Iva T. Bachvarova, PhD student at Department of Industrial Business and Management, University of Food Technologies – Plovdiv, Bulgaria.

create opportunities in sectors such as cultural and creative industries which employ proportionately greater numbers of young people and women.

Digital hubs and scalable digital services and products are emerging in developing countries. In addition to creating growth and jobs they serve as a way to address local problems using digital means. Broadband entrepreneurship is driven by so-called "frugal innovation", meaning design of products and services that are affordable and durable, without having a focus on sophistication.

Nevertheless, analysis shows that businesses – and SMEs in particular – often struggle with digital developments. Barriers to cross-border trade, regulatory and administrative burdens, insufficient access to finance and digital skills in the workforce. Removing intermediaries, matching employers with their future employees, providing online education, adapting the educational material, giving people their first physical address and their first bank account are just a few of the areas that digital entrepreneurs have to address. In order to build innovation ecosystems, a number of measures are necessary.

Developing and applying the theory of complex re-engineering (CR) prof. Hadzhiev (1996; 2001; 2017) notices the emergence of a new technology related to the philosophy, goals and concepts of CR – **broadband entrepreneurship**. According to him, this technology predetermines the new nature of business management effort and becomes a useful tool for each of the CR concepts, especially the concept of developing and implementing business and/or corporate business models. As known, the concept of developing and implementing business and/or enterprise business models is based on the three-tier model (Diagnostic Model, Change Orientation Model, and Strategic Change Model).

## Literature Review

Broadband entrepreneurship is presented as an integrated entrepreneurship that can be applied in any field (competition, value innovation, divergence, convergence). It builds on classical entrepreneurship, building on the theory of prudent process management and CR theory. It is connected with rethinking, redesigning and perfecting complex business engineering. As prof. Hadzhiev stated in the publication of Broadband Entrepreneurship "...there is a question of complex engineering of the main desires, processes, needs, information, products and services in a given sector, providing benefits for business, nature and society". Technology is a particular type of management effort that continually extends every sector, every kind of entrepreneurship by discovering and acquiring knowledge, provoking new behavior through the prism of natural laws and natural processes, human psyche and artificial intelligence. Knowledge about broadband entrepreneurship is becoming an independent high-weight variable for the gaming business area. According prof. Hadzhiev reengineering tools in the gaming business field for enterprise expansion are as follow:

- developing and implementing algorithms for synergy and achieve synergistic effects of different levels: global, international, national, industrial, sector, inter-sector, corporate, intercompany;

- developing and implementation of algorithms for re-engineering the economic and the corporate culture;
- developing and implementation of algorithms for instant orders and for immediate conclusion of transactions;
- developing algorithms for innovation and innovation management at different levels: global, international, national, industrial, sectoral, cross-sectoral, business, intercompany;
- development and implementation of algorithms for broadband shopping in the sector providing merger of wholesale and retail;
- development and implementation of algorithms for the design of artificial intelligence useful for automation and robotic proceedings and businesses in sectoral and cross-sectoral processes (robots with no artificial intelligence are a pile of iron);
- development of algorithms for the implementation of both classical reengineering methods, systems, technologies and standards, as well as the systems SIX-SIGMA, CROSS SELING 1R, MANAGEMENT 3.0 (looks at management and marketing as an upgrade to the industrial era 1.0, that of the Information Age 2.0 based on values as a driver of modern development), AGILE (a series of methodologies in conducting modern dynamic processes), SKREEM (quick process framework for changes), KANBAN (processes for gradual improvements), TEAL (a method of attracting money and neglecting material assets as something shameful), RADICAL MANAGEMENT (the starting point is an organizational culture based on the friendly communication between management and employees and the understanding that the starting point for the business is satisfying customer and all involved in the business process), TQM, GS1 and etc;
- establish and implement algorithms by copying natural processes for solving specific technology and business problems;
- establishment and implementation of algorithms for protection of the environment;
- development and implementation of algorithms to reduce food dependency and the growing desire for comfort.

Broadband entrepreneurship can also be seen as multi-lingual entrepreneurship when entrepreneurial activity is differentiated into different lanes/areas. Broadband is believed to increase the revenue potential for entrepreneurs, as well as reduce the costs of obtaining external resources. As potential entrepreneurial earnings increases, entrepreneurship becomes more attractive. The level of entrepreneurship should therefore rise. **Three main reasons** for increased potential earnings are presented below:

**Broadband and Market Access** : the increased diffusion of broadband and internet usage will enable entrepreneurs to “efficiently expose their companies, market and sell their products and services to a wider audience than they would have been able to afford to reach using the traditional methods” (Lawrence, Tar, 2011, p. 101-119). For example, broadband

enables activities such as e-commerce, through which retailers can reach customers in a much wider geographic area than through physical stores (Atasoy, 2011, p. 234). The market potential therefore increases significantly for entrepreneurs with access to broadband. Numerous studies have verified the impact of market potential on entrepreneurship. Berry and Reiss claimed that thresholds exist to the regional population size for which firms establish themselves as going concerns. Also, they argued for a positive relationship between population size and firm entry rate. Sato et al. verified the prevalence of this relationship as they found that an increase in population density by 10% raises the number of individuals intending to become entrepreneurs by approximately 1%.

**Broadband and Transaction Costs:** increased internet usage allows for the establishment of an “effective inter-business collaboration” (Hsieh, Lin, 1998, p. 113-118). As small firms often suffer from limitations in various types of resources, broadband can reduce the transaction costs involved in obtaining these resources externally. According to Williamson (1985, p. 269-296; 1991), transaction costs stem from asset specificity, information asymmetry, and opportunism. Based on this widely accepted theory, other scholars have argued that the increased prevalence of broadband and internet could reduce these factors, hence lower the transaction costs. Afuah (2003, p. 34-53) argued that asset specificity, defined as the “degree to which an asset can be redeployed to alternate uses and by alternate users without sacrifice of productive value” is affected in three ways by increased internet usage. *First*, internet could facilitate low-cost information exchange about the asset and its value to other potential owners. *Second*, it reduces the site-specificity of assets as firms can exchange large quantities of information without actual physical interactions, reducing the dependency of geographic proximity to counterparts. *Third*, internet reduces the specificity of some information technology related assets by replacing them with its more standardized technology. Increased broadband and internet access also reduces information asymmetries (Wallace, 2004) by facilitating access to market prices through, for example, search engines and price-comparison websites (Brynjolfsson, Smith, 2001, p. 541-558). Costs of monitoring and enforcement can also be reduced, as information on and reputation of the potential counterpart becomes more accessible (Brews, Tucci, 2004, p. 429-451). In line with the theories of Coase (1937, p. 386-406), these developments should lower the optimal size of a firm. As transactions can be more efficiently handled through market exchange, the incentive for firms to internalize transactions diminishes. Lower transaction costs could thus indirectly increase the market potential for entrepreneurs, as potential customers become more inclined to purchase goods and services externally, as well as directly lower the costs for entrepreneurs to obtain resources externally.

**Broadband and Entrepreneurial Opportunities:** the potential earnings as an entrepreneur could also be positively impacted by new opportunities that arise due to widespread broadband access. Baumol (1986) expressed a view of entrepreneurship as individuals responding to opportunities for new products that arise due to technological progress. Eckhardt and Shane (2003, p. 333-349) viewed changes in supply and demand as one way to categorize how these opportunities occur. On the supply side, Schumpeter identified five sources of opportunities including changes in the ways of organizing, new products or services, and new production processes. Exogenous shifts in demand factors such as perception and taste could similarly act as sources of opportunities. Afuah

exemplifies this with internet replacing proprietary communication networks such as Electronic Data Interchange (EDI), in which only network members could exchange information. For example, if a supplier wanted to cooperate and communicate with a new retailer, the supplier had to invest in new EDI equipment in order to access the network specific to the retailer. With the introduction of internet, the supplier could use the same equipment for all relationships. Scholars have further argued that incumbent corporations and organizations might not automatically respond to these opportunities, for example due to uncertainties about the value of new knowledge, information asymmetries and discrepancies between the new idea and core competencies. This would consequently leave room for entrepreneurial exploits. In accordance with Carree et al. who claimed that “[t]echnological change may be the most significant determinant of expanded entrepreneurial opportunities in the late twentieth and early twenty-first century” (Carree, Thurik, van Stel, Wennekers, 2010, p. 167-237), our belief is that increased diffusion of broadband will allow for new entrepreneurial opportunities to arise. These could either be supply-oriented, for example through new ways of using the internet for organizational purposes, or demand-oriented, as consumers demand more IT-solutions.

Increased broadband penetration can also be expected to facilitate the discovery of new opportunities. Heger et al. argued that broadband access reduces proximity not only to customers, but also to “knowledge incubators”, such as universities, other institutions, and, in particular, local business communities. According to Harhoff, these networks facilitate entrepreneurial activities through “knowledge spillovers”, especially in technology-intensive industries. This line of reasoning is supported by scholars such as Christensen and Peterson, who argued that encounters between an individual and his network are important sources of new ideas.

To clarify the impact of broadband penetration on entrepreneurial risks, we will discuss **how broadband affects** new firm survival:

**A. Impact on Entrepreneurial Risks:** Based on the many empirical studies conducted in this field (Wallace, 2004; Berry, 2007), two variables, market positioning and financing, are believed to be of particular importance. As entry into an industry often entails investments (Porter, 1979, p. 137-146; Porter, 2001, p. 62-78), entrepreneurs are likely to lack the capital for these relative to larger firms. As support for this hypothesis, White found that small businesses are more present in industries with low capital to labor ratios. As entrepreneurs therefore tend to be more dependent on financing, this factor might pose a significant obstacle for survival. Bates (1997) found that American males who became self-employed between 1976 and 1982 and received above-average rates of financing were less likely to exit than their counterparts. Similar results have been found by Taylor (1996, p. 253). As internet has made business activities more digitalized and less capital intensive (Porter, 2001; Parker, 2004), the need for financing investments has reduced and the risk of entrepreneurship has consequently decreased. Furthermore, scholars have argued that firms having a dynamic or diversified product range as a result of, for example, re-positioning in the event of market changes that creates new niches, increases the chance of entrepreneurial survival. Brüderl et al. found supporting results (Brüderl, Preisendörfer, Ziegler, 1992, p. 227) showing that survival rates were higher for firms with national rather than local

market coverage. As broadband increases “firms’ ability to move more quickly from idea to product”<sup>4</sup> as well as to reach a wider market, entrepreneurial survival rates should increase.

Given that broadband has a positive impact on new firm survival rates, the risk associated with entrepreneurial activities is expected to have decreased, making entrepreneurship a more attractive alternative relative employment.

**B. Impact on Expected Employment Earnings and Risks** – There have historically been doubts as to whether information and communications technologies (ICT) impact productivity. Scholars have discussed the “productivity paradox”, classically described by Robert Solow as, “[y]ou can see the computer age everywhere but in the productivity statistics” (Solow, 1987, p. 36). In recent years, increasing evidence have been found on the positive effects of ICT on productivity (Bosworth and Triplett, 2003; Carare et al., 2009; Hadzhiev, 2017).

One could therefore expect some of the increased productivity to be captured by higher wages, increasing expected employment earnings. Scholars such as Gillet et al. (2006) and Kolko (2010) have tried to prove this hypothesis empirically but found no significant evidence of it to be true. According to Kolko (2010), this could be due to flexible labor markets in the sense that immigration of workers keeps wages from rising. Broadband could also be argued to impact some determinants of employment risk, for example by substituting some labor functions and by increasing labor market efficiencies through increased use of e-recruiting. However, due to the lack of research in this field, it becomes difficult to assess the net impact. Despite the results from prior studies, one might suspect that increased broadband penetration increases the risk-weighted wages as a consequence of productivity increases. In particular, the argument by Kolko is not fully convincing in a cross-country setting where labor migration between countries is more restricted.

**C. Potential Lagged Effect of Broadband** -One might suspect there to be a time-lag before a given increase in the number of broadband subscriptions is reflected in higher levels of entrepreneurship. It could be argued that individuals must pass through a process of “organizational emergence”, which consists of activities such as preparing a plan or buying or renting facilities, before they start their business. Few prior empirical studies on the economic effects of broadband have however used lagged variables for other reasons than to correct for reverse causality. Kolko (2012) investigated the possibility of an impact from broadband expansion 1992-1999 on employment growth 1999-2006 and found no significant results, concluding that there are no long lags in the relationship. Czernich et al. (2011, p. 505-532) also use time-lags of their independent variable, but conclude that most of the effect of broadband on economic growth occur contemporaneously.

As can be concluded from the discussion above, increased broadband penetration is believed to be reflected in significantly higher entrepreneurial earnings, as well as lower entrepreneurial risks. While broadband could also potentially raise the risk-weighted employment earnings through increases in productivity, these increases are expected to be significantly lower. Although the magnitudes of our arguments have not been quantified,

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<sup>4</sup> OECD. Broadband and the Economy: Ministerial Background Report. Prepared for the OECD Ministerial Meeting on the Future of the Internet Economy. Seoul:17-18 June 2008, p. 11.

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this is to be expected given the many more channels through which broadband penetration increases the utility of entrepreneurship. Thus, **our hypothesis** is that *increased broadband penetration has a significant and positive impact on the utility differential*. This would make entrepreneurship a more attractive alternative for many individuals, and should therefore result in a higher number of new business registrations.

Based on the above understandings, we *set out to identify them the main factors for creating the conditions for implementation of the tools of broadband entrepreneurship*, to analyze these factors in order to draw attention to the opportunities for achieving lasting success for the Bulgarian society.

## **Research Methodology**

The aim of the authors' own research was to identify and analyze the impact of digital entrepreneurship in small, medium-sized and large enterprises conducting business activity in Bulgarian enterprises. The survey used purposive sampling. It was conducted in XI and XII of 2017 on a group of 176 enterprises classified, according to the size of employment, as small, medium-sized and large enterprises. Stratified sampling was used to select the enterprises from the food industry, the financial sector, retail, tourism, heavy and light industry. In this case we sent an e-mail to the membership of Bulgarian Chamber of Commerce and Confederation of the Employers and Industrialists in Bulgaria – CEIBG invited them to participate in the survey. A stratified random sample was a useful blend of randomization and categorization, which enabled both a quantitative and qualitative process of study to be undertaken. A survey questionnaire was addressed both to production companies and services companies. The size of the research sample certainly allows the authors to draw initial conclusions and identify regularities that can be verified during the proper studies. The results presented below are only a fragment of the empirical studies conducted. The dominating group among the enterprises surveyed comprised small companies employing from 10 to 49 people, which accounted for 74% of all the companies surveyed (Figure 1). The second dominating group comprised medium-sized enterprises employing from 50 to 249 people, which accounted for 17% of all the enterprises surveyed, whereas 9% of those surveyed were large enterprises, employing over 250 people. The largest group of enterprises, representing 68.5%, has operated on the market for over 10 years; 21.4% of enterprises declared functioning on the market for 5 to 10 years, whereas the remaining companies have conducted their business activity for a year to 5 years. The enterprises surveyed did not include companies entering the market, i.e. those functioning for a period shorter than 1 year. Among the enterprises surveyed, almost 63% declared good current financial condition, and over 26.3% assessed their financial condition as very good. Only 1% of all the respondents assessed their current financial situation as very poor or poor.

Figure 1  
Distribution the respondents by size of the companies

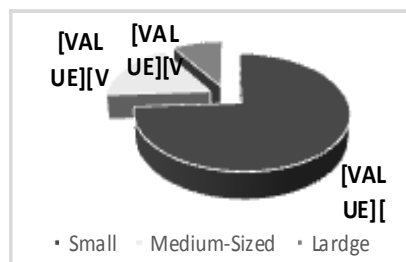


Figure 2  
Distribution the respondents by sex

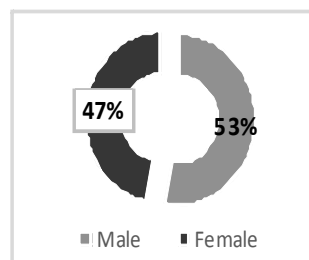
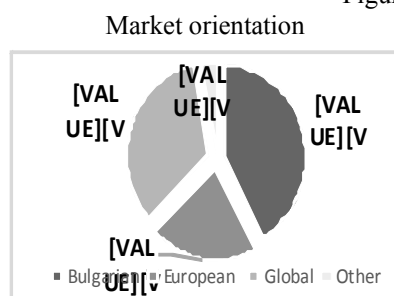


Figure 3



53% of men and 47% of women participated in the study (fig. 2). The presented companies have a different market orientation (fig. 3) – 42% work on the Bulgarian market, 34% on the Global market and 21% on the European market.

Factor analysis was used in this study to measure the validity of the instrument. The questionnaire was designed on a ten point Scale which ranged from 1 to 10 point, where 1 means the very low evaluation, and 10 – very high evaluation. The factors that have been investigated are grouped into separate groups as follows: **Group „A“** – the availability of appropriate infrastructure for active and passive entrepreneurial subjects respectively; **Group „B“** – knowledge of the relevant market players; **Group „C“** – the potential to meet business requirements in the relevant market area; **Group „D“** – potential for marketing and financial evaluation of the respective business activity; **Group „E“** – opportunities to rethink the business. Each group includes specific factors that are rated by the respondents on a scale of 1 to 10 (see Table 1).



Table 1

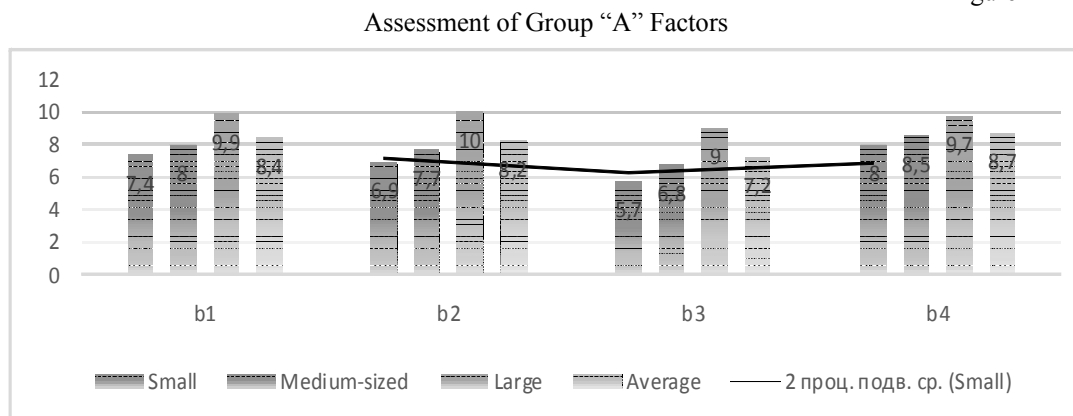
Systematization of the surveyed factors by specific groups

Group	Composite factors
„A“	<ul style="list-style-type: none"> <li>-a1 – availability of appropriate digital infrastructure</li> <li>-a2 – assessment of the development of the productive forces at the destination of the subject and the concentration of production (coefficient of localization)</li> <li>-a3 – concentration of consumption at the destination of the subject</li> <li>-a4 – stage of development of scientific and technical progress and innovation activity</li> </ul>
„B“	<ul style="list-style-type: none"> <li>-b1-an assessment of the market's need for the relevant business activity of the subject</li> <li>-b2- assessment of knowledge about the specific features of the market and marketing</li> <li>-b3- structure of the market share of competitors in the sector</li> <li>-b4- knowledge's degree of the legal and political factors affecting the market</li> </ul>
„C“	<ul style="list-style-type: none"> <li>-c1 – the potential of the subject to meet the political and legal requirements for the business concerned</li> <li>-c2 – fulfillment of economic requirements related to the business concerned</li> <li>-c3 – fulfillment of currency-financial requirements</li> <li>-c4 – fulfillment of social requirements</li> <li>-c5 – human resources organization</li> <li>-c6 – preparation and implementation of innovative, manufacturing, transport, insurance, forwarding and others activities</li> </ul>
„D“	<ul style="list-style-type: none"> <li>-d1 – marketing knowledge is recommended for the “Logistic model Service Quality”</li> <li>-d2 – for the financial evaluation of the respective business activity is recommended evaluation of structure, accessibility, volume and speed use of capital for the relevant business activity;</li> </ul>
„E“	<ul style="list-style-type: none"> <li>-e1 – the nature and type of business processes;</li> <li>-e2 – the nature and type of business communications;</li> <li>-e3 – the nature and type of business negotiations;</li> <li>-e4 – investment interventions (for SMEs surveyed, low-performance indicators are for circular economy, GSI, artificial intelligence, information networks and applications, robotics, industry 4.0, intelligent technologies, synergy);</li> <li>-e5 – interventions to reconsider approaches and exit systems markets (for SMEs surveyed low-performance indicators are for mergers and acquisitions, sales channels, transnationalization, public-private partnerships, cutting-edge technologies and innovation / technological, product, financial/).</li> </ul>

The scale for measuring and evaluating the indicators on the above-mentioned factors is multidimensional with an ordered structure. The possible average value of the indicators is 50. The averaged assessment of the indicators for the surveyed SMEs is 23 and for the large companies surveyed is 38.

The results of the Group „A“ Factors rating are shown in Figure 4. It is noted that the factors **a1** and **a4** are the least appreciated from the three types of enterprises. The highest average score is given on factor **a2** (8), large companies give the highest scores averaged estimates of factors **a2** (8.9) and **a3** (7.3).

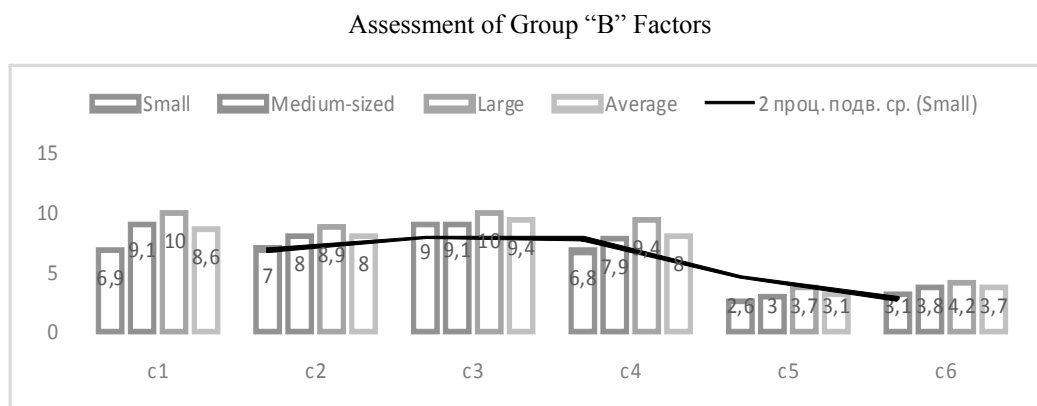
Figure 4



Source: Own Field Survey, 2017.

The results of the Group „B“ Factors rating are shown in Figure 5. It is noted that the factor **b3** is the least appreciated from the three types of enterprises. The highest average score is given on factor **b4** (8.7), large companies give the highest scores averaged estimates of factors **b2** (10) and **b1** (9.9).

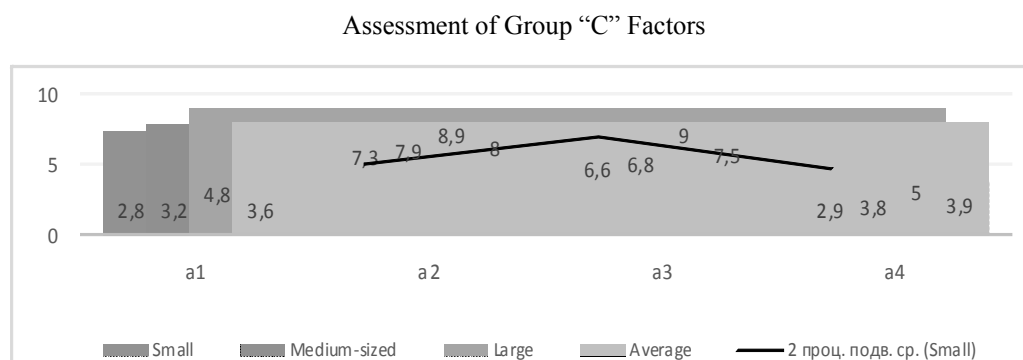
Figure 5



Source: Own Field Survey, 2017.

In the assessment of the Group „C“ Factors (see Figure 6), it is noted that the factors with the lowest average aggregate rating are **c5** (3.1) and **c6** (3.7). The highest average score is given on factor **c3** (9.4), large companies give the highest scores averaged estimates of factors **c1** (10), **c3** (10) and **c4** (9.4).

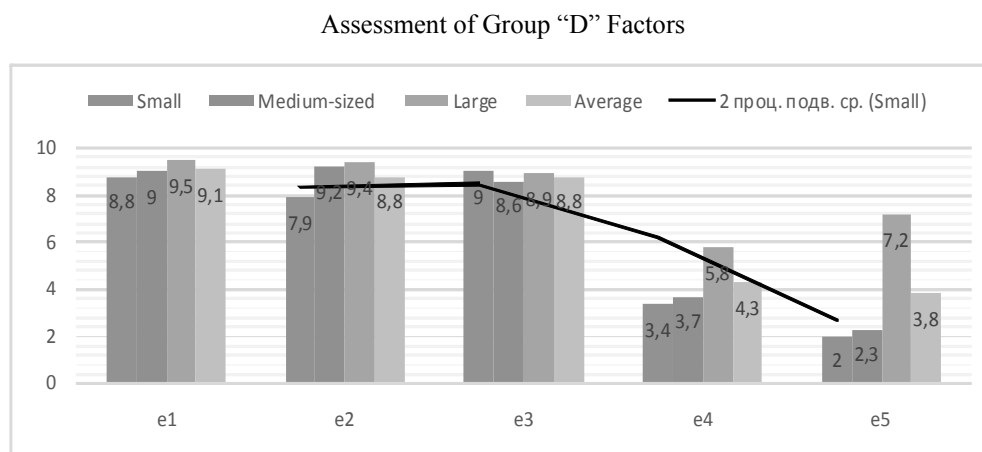
Figure 6



Source: Own Field Survey, 2017.

The results of the Group „D“ Factors rating are shown in Figure 7. It is noted that the factor d1 is the least appreciated from the three types of enterprises. The highest average score is given on factor **d2** (8.3), large companies give the highest scores averaged estimates of factor **d2** (9.4), compared to the other representatives of small and medium-sized enterprises – respectively (7.3) and (8.2).

Figure 7

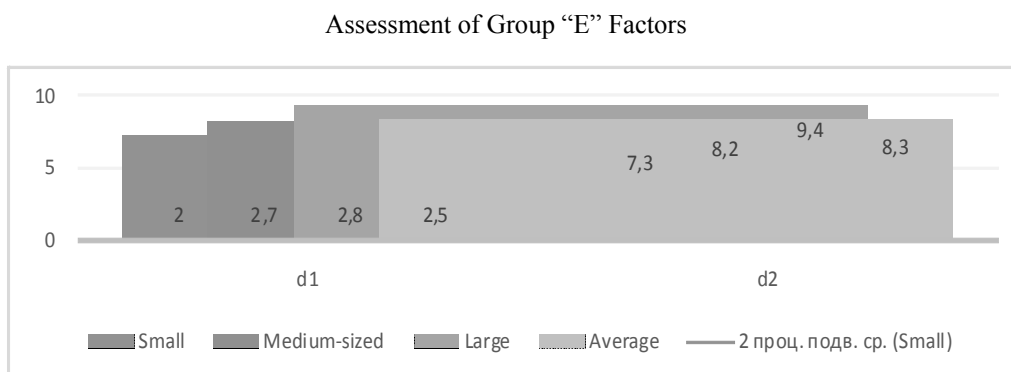


Source: Own Field Survey, 2017.

In the assessment of the **Group „E“** Factors (see Figure 8), it is noted that the factors with the lowest average aggregate rating are **e5** (3.8) and **e4** (4.3). The highest average score is given on factor **e1** (9.1), followed by **e2** and **e3**, which receive the same score – 8.8. It is

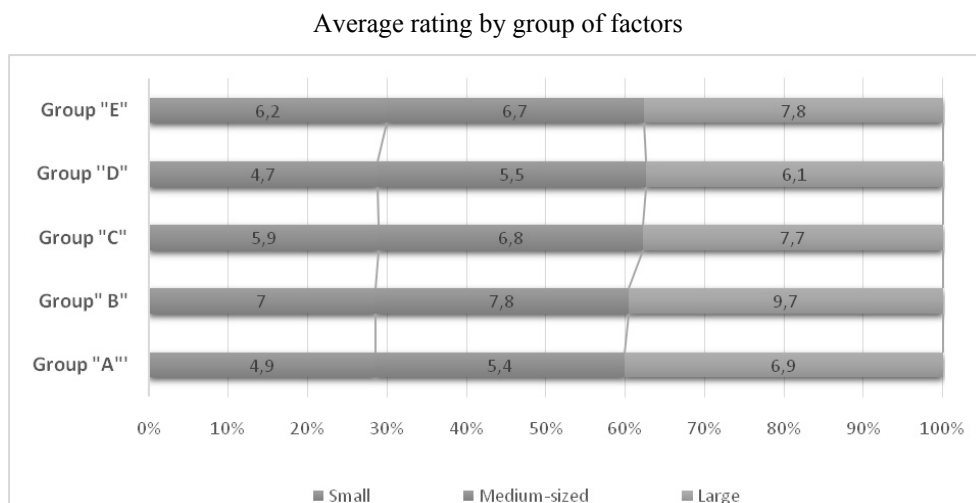
noted that large enterprises give a relatively high individual estimate of factor **e5** (7.2), as opposed to low individual ratings of SME representatives – respectively (2) and (2.3).

Figure 8



The average individual ratings of the different types of enterprises (small, medium and large) by the different groups of factors show that relatively the highest estimates are given by large enterprises, followed by medium-sized enterprises (see Figure 9). An important conclusion can be drawn here, namely that a better technological, resource and policy-legal environment needs to be created to stimulate broadband entrepreneurship among SMEs.

Figure 9



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In particular, management efforts should be directed to improving the lowest-performing indicators. This will allow to create better conditions for the implementation of broadband entrepreneurship tools, and hence to create sustainable success for the Bulgarian business. It could be started by building digital infrastructures to unite the efforts of Bulgarian companies at the sectoral and inter-sectoral level and thus to achieve a synergic and multiplier effect.

Similarly, setting up entrepreneurial centers and clubs and encouraging the entrepreneurial efforts of passive entrepreneurs by finalizing their efforts to obtain a final product or service will help create and operate a Bulgarian market for innovation and smart products.

## **Conclusion**

The present study reveals that creating conditions for broadband business entrepreneurship to achieve lasting success for the Bulgarian society requires efforts both from the passive and active Bulgarian entrepreneurial structures and from the Bulgarian government.

Initially, the focus of these efforts should be to improve indicator values to create a more efficient infrastructure to unite entrepreneurial efforts, as well as to create an appropriate environment (centers, clubs for the promotion of inventive, streamlining and any creative, innovation and investment activity) to promote and support the entrepreneurial activity of SMEs.

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