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Entrepreneurial education and innovativeness: evidence from Serbian start-up firms

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Abstract

The main goal of the research is to determine the impact of different types of education on the innovativeness of start-up firms that actively operate in the Republic of Serbia. For the collection of primary data, a specially designed questionnaire is used, which is filled out by founders of start-up firms. A total sample includes 121 start-up firms. Multiple regression analysis, reliability analysis and descriptive statistical analysis are conducted. Based on the obtained results, it has been proven that non-formal and informal education has a positive statistically significant impact on the innovativeness of start-up firms, while formal education does not have a statistically significant impact on a given dependent variable. The conducted research and the obtained results have important implications for the scientific and professional public. Firstly, in line to given results managers' attention should be drawn to invest their time in educational activities that are not covered by the formal education program. Additionally, the importance of sharing knowledge among employees in the firms is especially pointed out. Finally, it is important to highlight the guidelines for improving innovativeness in start-up firms to ensure their competitive position in the post pandemic circumstances.

JEL Classification:

Keywords: *entrepreneurship, innovativeness, start-up firms, education, Serbia*

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1. Introduction

The main task of an entrepreneur is to discover and develop new products and services. According to Jones and Barnir (2019), the process of creating start-up firms can be divided into two perspectives: discovery and creation perspective. The purpose of the mentioned processes is reflected in effectively exploiting the identified opportunity, which is based on the implementation of changes. Therefore, entrepreneurs are expected to explore the sources of innovation, and to identify the chance for the realization of successful innovation (Drucker, 1996). It is proven that innovation present the basis for developing knowledge-based economy and it is crucial for the growth and survival of a business (Ozgen et al., 2013). Moreover, the changes of existing activities through innovation enable entrepreneurs to achieve competitive advantage and improve business performance.

Although entrepreneurs tend to assure successful exploitation of created new ideas and to provide superior market position, they are faced with many difficulties; i.e., limited access to funding sources, lack of market information, monopoly behavior of large enterprises, corruption (Slavković & Simić, 2019). To overcome obstacles, entrepreneurs are expected to find and employ employees who possess the specific skills and abilities (Alvarez & Barney, 2007). In line with previous, plenty of evidence points to the importance of human capital, as personal entrepreneurial assets (Davidsson & Honig, 2003; Shepherd & DeTienne, 2005, Simić & Slavković, 2019).

Previous empirical results have also proven that an entrepreneur is a key actor, thus, it is necessary to look at his characteristics and competences as determinants of the start-up success (Peña, 2002; Slavković & Simić, 2019) and innovativeness (Barker & Mueller, 2002; Marvel & Lumpkin, 2007; Lin et al., 2011, Simić & Slavković, 2019). It is evident that the level of knowledge and skills, experience and motivation that the entrepreneur brings to new venture have impact on business performance. The entrepreneurs with a college education, previous managerial experience, and who are committed to establishing a new venture, have more chances to create a successful start-up firm (Peña, 2002). This is supported by evidence that when making decisions, greater cognitive resources contribute to more efficient problem identification and formulation of an optimal solution (Hayton, 2005).

In addition, there is evidence about the relation between entrepreneurs' education and innovativeness as one of the pillars of successful start-up firms. Barker and Muller (2002) argue that career experience in various fields is important for decision making process related to the implementation of advanced technology. Previous experience in R&D and innovation activities are typically associated, while educated employees tend to have greater cognitive competences that will help in exploring and exploiting new ideas. Marvel and Lumpkin (2007) found that entrepreneurs' educational background and prior technology knowledge, positively affects innovation radicalness. Simić and Slavković (2019) proved that founders' education and entrepreneurial self-efficacy have a significant impact on innovativeness of new ventures.

However, in the literature there is no consensus on how to measure human capital of entrepreneurs. Education and/or work experience can be used to measure and determine the structure of human capital (Unger et al., 2011), while different education types (Debarliev et al., 2022; Paduraru, 2013), self-efficacy (Simić & Slavković, 2019), and entrepreneurs' motivation (Unger et al., 2011) are considered as important

elements. Additionally, the beginning of the 21st century has announced the emergence of a knowledge-based economy, that has highlighted the importance of lifelong learning. It has been proven that entrepreneurial education should not be limited to the traditional forms of formal learning (Alfirević et al., 2018). There is the demand to improve knowledge, skills and abilities, that will assure providing better chances in a changing economic and social environment, while institutions as providers of lifelong education are assumed to change (Sezen-Gultekin & Gur-Erdogan, 2016). The unexpected arrival of the COVID-19 pandemic and the following crisis have affected the way in which the entrepreneurial process is carried out (Akula & Singh, 2021), as well as market opportunities that inevitably affect start-up firms (Kalogiannidis & Chatzitheodoridis, 2021). Hence, it is important to explore to which extent entrepreneurs are ready to react to emerging problems and challenges and how their education can influence the implementation of possible solutions.

Considering previous issues related to entrepreneurial education, the purpose of this paper is the importance of different types of education for the innovativeness of start-up firms. The types of education that are covered are formal, non-formal, and informal (Coombs & Ahmed, 1974). Formal education represents the educational process that takes place within a hierarchically structured, formal educational system (Coombs & Ahmed, 1974). Non-formal education is defined as organized, educational activities, which are not connected to an educational institution, and can be attended by people of all ages (Krupar et al., 2017), including the type of organizational effort with the purpose to promote learning capabilities and to improve current specified skills and abilities (Okukawa, 2006). The third type considers informal education as "any organized and sustained educational activities that take place both within and outside educational institutions" (Baseska-Gjorgjieska et al., 2012), including a huge range of activities and gaining experience, providing the connection between theoretical information and professional practice (Orhan, 2020).

Since COVID-19 pandemic caused numerous challenges for the existing education system (Toquero, 2020), it is necessary to determine whether there has been a change in the role of traditional forms of formal education and to identify the importance of non-formal and informal education in the execution of the new venture process, that will imply the guidelines for enhancing innovativeness of start-up firms. For the purpose of this research, innovativeness is observed as the tendency of employees to apply new ideas and choose new alternatives in performing work activities. The subject stated above and the current evidence in the literature led to the following research questions:

- Does entrepreneurs' formal education have positive direct effect on innovativeness of start-up firms?
- Does entrepreneurs' non-formal education have positive direct effect on innovativeness of start-up firms?
- Does entrepreneurs' informal education have positive direct effect on innovativeness of start-up firms?

Conducting this research provides a contribution to the process of European integration and overcoming barriers on the way to adapting to contemporary economic and social trends, which affirms the concept based on knowledge. The obtained results can be useful for creating a framework for improving innovation, and how managers may improve the extent of innovativeness of start-up firms. The sample includes Serbian start-up firms. According to European Innovation Scoreboard (2023) data, Serbia, as non-EU country, is an emerging innovator. In the recent report it is evaluated that performance of this country is at 63.2% of the EU average, highlighting that the country's performance gap to the EU is becoming smaller. Enterprise births add positively to the innovation climate, and SME innovativeness is

ranked as above the EU average. Thus, Serbian context can serve as a role model for understanding the innovation behavior of firms in similar national context.

Possible future research directions include verifying whether or not the results are valid in other national contexts; i.e., in different development levels of innovation and entrepreneurship, different societal and cultural contexts. In addition, it may be important to include a broader aspect of other intellectual dimensions, such as structural and relational capital, considering that education is an investment that improves human capital. In order to avoid socially desirable answers from key informants of start-up firms, a future study may also include the views of non-managerial members, that will contribute to the accuracy of assessing principal variables in current research model.

The rest of this study is organized as follows. In the next section, a theoretical framework of research is developed. Section three provides the research methodology and the data analysis. The presentation and discussion of research findings are provided in sections four and five, while the last section depicts the main conclusions of conducted research and given theoretical background.

2. Literature Review

2.1. Education as Human Capital Investment

Human capital can be presented as a determinant that indicates a clear distinction between entrepreneurs and non-entrepreneurs (Matricano, 2016). Firstly, entrepreneurs are residual seekers of the substance of the firms, as a result of which there is a strong incentive to use their human capital in order to generate the benefits for the new venture. Secondly, entrepreneurs take rent from investment, which is why they continuously strive to achieve a satisfactory return with an acceptable period of return on investment, with minimal use of external sources (Cliff, 1998).

Although, there isn't consensus about the universal measurement of human capital, its improvement usually is achieved through formal training and/or through the acquisition of work–related experience. The investments in human capital contribute to the improvement of employees' performance (Arthur, 1994; Gelderblom & de Koning, 1996; Boselie, Paauwe & Jansen, 2001), as well as the performance of new ventures (Cooper, Gimeno-Gascon & Woo, 1994; Blanchflower & Oswald, 1998; Van Praag & Cramer, 2001). In accordance to the postulates of the human capital theory, the quality and level of an individual's knowledge is directly related to his cognitive ability, which has a positive effect on firm productivity (Schultz, 1961).

Since the education is related to knowledge, skills, ability to solve problems, discipline, motivation and self-confidence, the logical conclusion is that education enables entrepreneur to deal with problems and to become more successful in starting a new venture (Cooper et al., 1994). The investments in education are usually measured by the length of schooling; i.e., number of years attending formal education programs or duration of training. However, the qualitative aspect of education, which implies the amount and content of acquired knowledge and skills is difficult to measure (Unger et al., 2011). Therefore, we usually perceive individual education as an investment, that can be assessed by the return for the invested time and resources (Schultz, 1961). The way in which the results of education programs are evaluated have to be highlighted, that include both cognitive and non-cognitive dimensions of human capital (Burgess, 2016). For example, enriched investment programs at an early stage of life do not significantly change the intelligence quotient, but on the other hand, they significantly affect individual non-cognitive knowledge and social status (Lonick & Grunewald, 2003). From the entrepreneur's point of view, the effect of the investments in education often are perceived through the success of a new venture on market and achieved business performance (Haber & Reichel, 2007; Bager, 2011).

2.2. Types of Entrepreneurial Education

In the literature, the most common typology highlights three types of education: formal, non-formal and informal (Coombs & Ahmed, 1974, Colardyn & Bjornavold, 2004). Formal education represents the educational process that takes place within a hierarchically structured, formal educational system (from primary schools to colleges). In addition, formal education also includes activities that consist acquisition of general or specialized knowledge, relying on schools and faculties as an important instrument for acquiring different types of knowledge (Coombs & Ahmed, 1974; Etling, 1993).

Human capital can be accumulated by gaining experience during career or training at workplace, which confirms the importance of encouraging different programs of non-formal education and informal learning. Non-formal education is defined as organized, educational activities, which are not connected to an education institution, and can be attended by people of all ages (Krupar et al., 2017). Non-formal education represents the type of organizational effort with the purpose to promote learning capabilities and to improve the quality of individual life through extracurricular activities (Okukawa, 2006).

The difference between formal and non-formal education is based on the fact that non-formal education mainly oriented on present, responds to the local needs of society, less structured and does not assume a hierarchical relationship between students and teachers (Coombs & Ahmed, 1974). Additionally, the implementation of different non-formal education programs points to various challenges, which are not typical for the context of formal education. For instance, participation in non-formal education programs is voluntary, participants in these programs have a wide range of abilities and they have different ages (Okukawa, 2006), and the relationship between lecturer and student is less formal (Etling, 1993).

The COVID-19 pandemic caused numerous challenges for the existing education system (Toquero, 2020). New circumstances contribute to the popularization of remote learning and gaining experience outside the traditional educational institutions (Zhao & Watterston, 2021; Pokhrel & Chhetri, 2021). Introducing the concept "knowledge workers" (Soriano & Huarng, 2013) and highlighting the importance of lifelong learning process (Lans, et al., 2004), informal education is considered an important aspect in the process of starting a new venture. Informal education is defined as "any organized and sustained educational activities that take place both within and outside educational institutions, and cater to persons of all ages" (Baseska-Gjorgjieska et al., 2012). In addition, informal education considers huge range of activities and gaining experience by it learning from family, friends, peer groups, the media. As a result of informal education, individual gain competences that are connections between theoretical information and professional practice (Orhan, 2020). That is fundamental for the future founders of start-up firms, which will provide a good starting point for creating a new venture and facilitate finding solutions for the issues at a very beginning of new venture process. The most common challenges, a high degree of risk and uncertainty when making important decisions are just some of the reasons why the importance of lifelong learning should be emphasized in the context of entrepreneurial activities.

2.3. Entrepreneurial Education and Innovativeness

According to Liñán (2004) entrepreneurial education is considered as an effective strategy that brings more innovation. There is increasing interest in developing educational programs, that will encourage an entrepreneurial mind-set, the growth of new businesses, and the more efficient use of the creative potential and acquiring new knowledge and skills. To satisfies the need of both entrepreneurs and society, entrepreneurial education includes all forms of education and training (Karimi et al., 2010).

2.3.1. Formal Education and Innovativeness

Despite the fact that start-up firms represent a vital part of each economy, they are often faced with difficulties in doing their business. The failure rate of new businesses is high, while even in the case of their survival in the market, there is a high probability of achieving only marginal results (Cooper et al., 1994). Uncertainty is reflected in the undertaking of activities and the implementation of ideas and knowledge to achieve success in a turbulent and dynamic environment (Bosma et al., 2002). In addition to the identified uncertainty, entrepreneurs face a wide range of threats and challenges such as: insufficient availability of financial resources, lack of managerial skills, insufficiently competent employees, lack of relevant knowledge and skills, outdated technology, poor infrastructure, institutional inefficiency (Khalique et al., 2015).

Formal education enables acquisition of knowledge, abilities and skills necessary for discovering and exploiting business opportunities. For instance, analytical skills, understanding of market conditions, general and specific knowledge can contribute to building self-confidence and easier overcoming different issues at the early stages of a new venture development, as well as more efficiently performing entrepreneurial activity (Robson et al., 2009). The results of conducted research in this field indicate that most firms that achieve growth in sales and profits have founders with academic degree, who are interested in attending education program (Peña, 2002). Entrepreneurs' educational level influences their strategy planning skills (Mcmullan & Long, 1987), their ability to overcome information overload and to analyze complex knowledge (Carpenter & Fredrickson, 2001), but also increases firm's flexibility and openness to change (Classen et al., 2012). In accordance with the given theoretical and empirical evidence, it is possible to formulate the following hypothesis:

H1: Entrepreneurs' formal education positively affects innovativeness of start-up firms.

2.3.2. Non-formal Education and Innovativeness

Formal education represents an important aspect of the educational process, but not necessarily the most important. Human capital can be accumulated by attending school, but also by gaining experience while working in practice or training at the workplace, which affirms the importance and need to encourage different forms of non-formal education and learning. In addition, the tendency to increase unemployment and the difference in wages imposes the need to implement radical changes, which will primarily aim at harmonizing the needs of the country and its authorities to implement the necessary education program. The reason for the emergence of non-formal education is the inability of formal education programs to follow the changes in the education system, which occurred as a result of the accelerated development of science and technology, as well as economic and social changes. Accordingly, non-formal education is an integral ingredient of a successful nation and its national policy, which consequently leads to individual well-being (Krupar et al., 2017).

The knowledge and skills of employees are becoming increasingly important for the competitiveness and innovativeness (Tharenou et al., 2007), as a result of which contemporary firms spend billions of dollars every year on employee training and development programs. With these investments, greater flexibility of the labor force is achieved, which makes the firm ready for possible downturns and crisis. The strategic importance of training and development is proven by the fact that by implementing the aforementioned investments, the firm tends to improve financial performance, create a workforce that is more skilled in performing work tasks, and develop a suitable environment for continuous learning (Bhattacharya et al., 2014).

In the literature, it is proven that vocational and professional skills are more important for entrepreneur than university education (Sena et al., 2012). Therefore, it is relevant to explore whatever formal education programs provide knowledge and skills that will contribute to the entrepreneurs' readiness to start a new venture. There are numerous non-formal institutions which provide trainings in management and starting

a new business (Winn, 2005). Through non-formal education program, we can prepare a good basis for the development of new ideas, that cannot be created through formal education. In accordance with the previous results, the hypothesis can be defined:
H2: Entrepreneurs' non-formal education positively affects innovativeness of start-up firms.

2.3.3. Informal education and Innovativeness

Previous empirical results have proven that working experience, not only the level of formal education, has important impact on success of start-up firms. For example, Stuart and Abetti (1990) highlighted previous experience as an important determinant of the success of new technical ventures. Analyzing success factors, it can be concluded that nature and heterogeneity of the experience are relevant for entrepreneurial performance. In other words, knowledge and skills in different functional areas, past ownership experience and leadership experience are relevant indicators of the success of start-up firms (Cooper et al., 1994; Rotefoss & Kolvereid, 2005). A critical aspect of the entrepreneur's personality is the level of optimism, which directly influences the success of the new venture. Although it is unexpected, a high level of optimism leads to excessive self-confidence, and consequently has a negative impact on business. Since today's market environment is characterized by dynamism and turbulence, there are a large number of entrepreneurs who have experienced business failure. Although experienced entrepreneurs who had major business failures are more prone to pessimism than those who did not have the opportunity to experience failure (Ucbasaran et al., 2008), the continuation of entrepreneurial activity and the period of recovery from failure results in the acquisition of new knowledge and information, but also in additional agility of entrepreneurs to achieve superior performances. However, the previous research results suggest that start-up firms whose founders had previous ownership experience managed to reach the satisfactory level of business stability (Peña, 2002).
Professional experience provides skills and know-how that can be used to deal with uncertainty in innovation and to cope with challenges involved in strategic changes (Hamori & Koyuncu, 2013). Moreover, according to Ahn et al. (2017) experience in specific industrial field can play an important role in enhancing strategic agility. In line with presented empirical evidences, informal education and lifelong learning process are emphasized, since these types of education have key role in acquiring relevant experience for entrepreneurs. Therefore, it is possible to formulate the following hypothesis:
H3: Entrepreneurs' informal education positively affects innovativeness of start-up firms.

3. Methodology

3.1. Data collection procedure and sample structure

The determination of the impact of different types of entrepreneurial education on start-up innovativeness is based on the original research. To gain access to research participants, we approach firms in Serbia, using Business Registry Agencies database. We have selected start-up firms that are not older than 5 years, have less than 50 employees, and are actively doing business in current period. Through follow-up interview with key informants, the purpose of the research has been explained and they have been asked for permission to take part in this research. The specially designed questionnaire has been distributed by email to founders or managers of start-up firms in Serbia. After two weeks, the reminder email has been sent to all selected participants, that have not sent their responses. After two months of collecting responses and taking into account the defined limits, the total sample counts 121 valid responses. The characteristics of the respondents are presented in Table 1.

Table 1. Sample characteristics

Characteristics of respondents	% of responses	Characteristics of respondents	% of responses
Gender		Experience in industry	
• Male	67.8	<2 years	5.0
• Female	32.2	2–5 years	34.0
		More than 5 years	52.0
Age		Industry	
• <30 years	7.4	Manufacturing	19.8
• 31–50	69.4	Trade	28.9
• Older than 50 years	23.1	Services	51.2
Education		Size	
• Without university degree	54.5	Below 10 employees	89.3
• High school	39.7	10–49 employees	10.7
• University degree	5.8		

Source: Author

3.2. Research instrument and measures

In order to collect primary data, special designed questionnaire is used. The questionnaire is composed of questions defined in the form of statements, which measure the degree of agreement of the respondents. In line with this, a Likert scale of 5 points was used, starting from 1 "I completely disagree" to 5 "I completely agree". Types of entrepreneurial education is measured by using 7 items; e.g., "You use the knowledge acquired through formal education for daily work in your company.", "You have attended some kind of training that is relevant to performing your company's basic and other activities." This part of the questionnaire was defined in line with previous researches conducted by Davidsson, P. and Honig, B. (2003), and Moon and Kym (2006).

The part of the questionnaire measuring the innovativeness of start-up firms contains 10 items, that are defined according to the research by Dess et al. (1997), who analyzed strategic aspects of the entrepreneurial success, and Wach et al. (2020), who analyzed business performance in 185 German firms. Examples of the given items are: "In the process of solving the problem, you are always ready to apply alternative solutions.", "When performing work tasks, you often apply new, unusual and innovative solutions."

Statistical data processing was performed with the computer support of the statistical package for social sciences IBM SPSS Statistics, Version 23 (Statistical Package for Social Sciences). In order to test the defined hypotheses, a multiple regression analysis was conducted, as well as a descriptive statistical analysis and reliability analysis. The level of statistical significance used in this research is $\dot{\alpha} = 0.01$.

4. Results

In the first step, a descriptive statistical analysis and reliability analysis was carried out. According to the values presented in Table 2, the highest value of the arithmetic mean is identified in the case of formal education, which implies that the respondents included in this research believe that they have a high degree of formal education compared to the knowledge and experience they acquire through non-formal

education programs and forms of informal education. The highest value of the standard deviation is recorded in the case of non-formal education, which implies the highest heterogeneity of respondents' attitudes. The reliability of the given statements was measured using the Cronbach's alpha coefficient (DeVellis & Thorpe, 2021). The value of Cronbach's alpha ranged from 0.738 to 0.923, that indicates high level of internal consistency of statements.

Table 2. Results of descriptive statistical analysis and reliability analysis

Variables and items	Arithmetic mean	Standard deviation	Cronbach's alpha
Formal education	4.1942	0.95388	0.856
Non-formal education	3.2521	1.09568	0.738
Informal education	4.0140	0.83620	0.790
Innovativeness	3.8545	0.72641	0.923

Source: Author

In the literature there is evidence that some individual and organizational characteristics affect the relationship between independent and dependent variables. Therefore, they need to be controlled to achieve an adulteration free relationship between observed variables (Liu & Almor, 2016; Dabić et al., 2021). The control variables are: several personal demographic characteristics, namely gender (male, female), age (below 30, between 31 and 50, above 50), level of education (without university degree, high school, university degree), and years of experience (up to 2 years, from 2 to 5 years, over 5 years), as well as some organizational characteristics, namely organizational size (2 to 9 employees, 10 to 50 employees) and industry (trade, service, manufacturing).

Table 3. Correlations between the study variables

Variables	1	2	3	4	5	6	7	8	9
1. Gender	1								
2. Age	0.129	1							
3. Education	0.088	0.290**	1						
4. Experience	-0.011	0.265**	0.157	1					
5. Industry	0.085	0.080	0.166	0.234**	1				.
6. Size	-0.068	0.149	0.059	0.175	-0.139	1			
7. Formal education	0.073	-0.085	0.158	0.154	0.229*	0.084	1		
8. Non-formal education	-0.013	-0.033	0.130	0.246**	0.290**	0.164	0.433**	1	
9. Informal education	-0.054	-0.092	0.084	0.194*	0.209*	0.090	0.571**	0.577**	1
10. Innovativeness	-0.059	-0.001	0.157	0.298**	0.199*	0.110	0.458**	0.636**	0.743**

Source: Author

The correlations between the study variables are presented in Table 3. Several associations are noteworthy. Formal education, as well as non-formal and informal education are significantly and

positively associated with innovativeness. Therefore, the assumptions for regression analysis are met and the significance of these associations are presented in next tables.

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.785[a]	.617	.607	.45543
a. Predictors: (Constant), formal education, non-formal education, informal education				

Source: SPSS output

Table 5. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.052	3	13.017	62.760	.000[b]
	Residual	24.268	117	.207		
	Total	63.320	120			
a. Dependent Variable: innovativeness						
b. Predictors: (Constant), formal education, non-formal education, informal education						

Source: SPSS output

Table 6. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.215	.220		5.514	.000		
	Formal education	.002	.054	.003	.036	.971	.657	1.521
	Non-formal education	.206	.047	.311	4.386	.000	.651	1.535
	Informal education	.488	.068	.562	7.216	.000	.540	1.852
a. Dependent Variable: Innovativeness								

Source: SPSS output

In order to test the defined hypothesis, a regression model is created. The R2 value shows that the data fit the regression model, while the F statistic is statistically significant at the $p < 0.01$ level (Table 4 and Table 5). The variance inflation factor (VIF) is less than 5, indicating that multicollinearity is not a problem (Table 6). According to the results presented in Table 6, it is determined that non-formal and informal education have a positive statistically significant impact on start-up innovativeness.

5. Discussion

This paper proposed and tested a conceptual model of the impact of different types of entrepreneurial education on start-up firms' innovativeness. It has been proven that the formal education of entrepreneurs has no statistically relevant impact on the given dependent variable, which is in accordance with previous studies. Hamori and Koyuncu, (2013) believe that long immersion in formal education may cause path dependence, which might be a double-edged sword for innovativeness. There is evidence that formal education programs don't contribute to the acquisition of knowledge and skills that are relevant

for the starting and managing a new venture (Robson et al., 2009; Slavković & Simić, 2019), and they don't have significant impact on the level of innovativeness (Ahn et al., 2017).

It is proven that the significant positive impact of non-formal and informal education on innovativeness, which corresponds with previous studies which show that the acquired working experience has a significant impact on innovativeness (Stuart & Abetti, 1990; Simić & Slavković, 2019). Analyzing success factors, nature and heterogeneity of the experience are relevant for entrepreneurial performance (Cooper et al., 1994; Rotefoss & Kolvereid, 2005). Professional experience provides skills and know-how that can be used to deal with uncertainty and to cope with challenges involved in strategic changes (Hamori and Koyuncu, 2013), while experience in specific industrial field can play an important role in enhancing strategic agility (Ahn et al., 2017). Therefore, informal education and lifelong learning process are emphasized, since these types of education have key role in acquiring relevant experience for entrepreneurs.

The obtained results are in line with previous evidence that vocational and professional skills are more important for entrepreneur than university education (Sena et al., 2012). In other words, knowledge, abilities and skills that are developed and acquired outside the formal educational institutions are more important for the development of innovative potential. Previous study proved that higher value of human capital leads to higher satisfaction and creative and innovative potential of employees (Inkinen, 2015). In addition, the high degree of willingness of respondents to acquire relevant knowledge and information for establishing and managing a new venture through permanent contact with their colleagues and other stakeholders, classifies the concept of informal education as a fundamental aspect of today's educational system.

6. Conclusion

Contemporary reality is characterized by work on the development of various educational strategies, which primarily aim to achieve the best possible production and economic effects. All forms of education (formal, non-formal and informal), as well as all educational strategies (permanent education, continuous professional education, lifelong learning, etc.) become not the only part of human capital, but also a necessary precondition for its growth and development. One of the important differences between entrepreneurs and non-entrepreneurs is based on the possibilities of human capital development. The level of formal education, acquired experience, as well as various forms of networking are important determinants of the success of entrepreneurial process. Since the entrepreneur is a central figure within the entrepreneurial process, the characteristics, behavior, and knowledge that he uses to effectively exploit the identified opportunity are highlighted. Starting a new venture is characterized by a high degree of risk and uncertainty, limited resources, and other limitations, thus entrepreneurs tend to overcome different issues and ensure the success of the new venture. A wide range of competences, different ways of responding of entrepreneurs may be some of the reasons for the differences in the level of innovation.

The research results indicate that the level and field of formal education do not have a significant impact on innovativeness, despite the fact that respondents mostly agree that the knowledge and skills acquired by attending the given education program correspond to the requirements they face during the entrepreneurial process. However, it was not identified in the case of other types of entrepreneurial education. It has been proven that acquired knowledge and experience through non-formal education programs and permanent work on personal development have a positive and significant impact on the level of innovation. The high degree of willingness of respondents to acquire relevant knowledge and information for the establishment and management of start-up firm through permanent contact with their colleagues and other stakeholders, classifies the concept of informal education as a fundamental

aspect of today's educational system.

The obtained results have important implications for members of the academic and professional public. In a theoretical sense, the obtained results can be useful for creating a framework for improving innovativeness, which will highlight the experience and characteristics of entrepreneurs as a central component. This framework can be considered as a part of the model that includes the elements that should be followed to assure the success of start-up firms. Important managerial implications of the conducted research are reflected in terms of recommendations that can improve the degree of innovativeness. In other words, it is desirable to organize non-formal education programs in the form of trainings, which will aim at acquiring practical knowledge and developing creativity. In addition, various forms of networking should be encouraged, through professional events, seminars, conferences, where interested participants can share their experience and knowledge with others. The implications for the educational system are in favor of the newly emerging circumstances caused by the COVID-19 pandemic. A greater focus on forms of remote learning should be used and applied also within formal education program, which will achieve greater efficiency in acquiring entrepreneurial education.

As in the case of other research in the field of social sciences, the research conducted for the purposes of this paper has several limitations. Firstly, in this paper the focus is on one part of human capital, namely education, that is presented as key human capital investment. Secondly, our sample contains answers from Serbian start-up firms. Due to these specific circumstances, our results may have limited implications for start-up firms operating in different circumstances. Thirdly, a self-assessment approach was used to assess the items comprising principal variables in this paper. Managers may have more favorable views on different parts of the business than other employees, or vice versa. Despite this, it often happens that a start-up firm has a very small number of employees, or the manager is the only employee, which calls into question his objectivity when answering the questions included in the questionnaire.

Possible future research directions include the following: firstly, the research should be conducted in other national context to verify whether or not the obtained results in this paper are valid in different contexts, which are in different development levels of entrepreneurship and innovativeness; secondly, other human capital dimensions should be involved to obtain a more comprehensive picture of the role of education in a given context; thirdly, in order to avoid socially desirable answers from key informants, it should be revealed if managers are only employees in the start-up firms, which will provide an opportunity to incorporate the views of non-managerial members to improve the accuracy of assessing principal variables.

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Appendix

Section I		
Construct	Item	Question
Formal education	ED1	You have a formal education that corresponds to your position in the company.
	ED2	You use the knowledge acquired through formal education for daily work in your company.
Non-formal education	ED3	You possess relevant knowledge and skills related to starting a new business (e.g., writing a business plan, project management, writing a marketing plan, etc.).
	ED4	You have attended some kind of training that is relevant to performing your company's basic and other activities (seminars, training, etc.)
Informal education	ED5	You have knowledge and information from the sphere of your company's core business that enable you to successfully conduct the tasks.
	ED6	Through working with your employees, you acquire new or improve your existing knowledge, skills and abilities.
	ED7	Through formal and informal connections with experts outside your company, you acquire new knowledge and information important for doing business.
Innovativeness	INN1	In the process of solving the problem, you are always ready to apply alternative solutions.
	INN2	You tend to look at the identified problem from different perspectives.
	INN3	When performing work tasks, you often apply new, unusual and innovative solutions.
	INN4	You explain the ideas and solutions you propose in detail to your employees.
	INN5	You spend most of your time for exploring the current trends in the market.
	INN6	You Introduce new products/services that meet the needs of your consumers/clients.
	INN7	You encourage the development of processes that contribute to improving quality and reducing costs.
	INN8	You implement significant changes in various areas of your business.
	INN9	You pay attention to the function of research and development, technological leadership and innovation.
	INN10	You are investing significant funds to implement modern technological solutions.
Section II		
Industry		• Manufacturing • Trade • Services
Size		• Below 10 employees • 10–49 employees
Gender		• Male

	• Female
Age	• <30 years • 31–50 • Older than 50 years
Education	• Without university • degree • High school • University degree
Experience in industry	• <2 years • 2–5 years • More than 5 years