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for every opinion now accepted was
once eccentric."

Bertrand Russell



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Editorial Foreword

Dear Readers,

Welcome to an exciting new issue of our scientific journal ***Review of Applied Socio-Economic Research – Volume 20 / issue 2 / 2020***. It is an issue published in the unprecedented challenge of Covid-19 pandemics, which negatively affected the business and society. All the world is doing the best to meet this challenge in a spirit of solidarity. Covid-19 pandemics could change our world, how businesses and society may develop over the next years. In this context, new topics start to become central in the academic and research debate: new technology, digital education, e-commerce, public health, telemedicine, human rights protection, social behavior, social resilience, social cohesion, solidarity and volunteering, innovation, frontier research, etc.

This issue provides a venue for high-quality research works of academics and researchers from Greece, Turkey, the United Kingdom, and Romania. They approached various interest subjects for the transformative period we live in due to the impact of the Covid-19 pandemic. Two research papers are focused on health, approaching the management of change in private sector healthcare organizations in Bangladesh, and adults' obesity in Turkey. As we know, the social and solidarity economy could be a viable alternative in these times of crisis. Therefore, the readers could consult an interesting paper about social financing as a driver for sustainable local development in EU Mediterranean countries. Besides the Covid-19 impact, Romania is facing particular challenges because it ranks 27th out of the 28 EU Member States in the European Union, according to Digital Economy and Society Index (2019). Considering this, the editors propose a paper concerning youth unemployment and digital literacy skills in Romania in the current digital transformation context. A young Romanian researcher investigates in detail the recent educational paradigm shift: technology-enhanced adaptive and hybrid education. Also, a Romanian authors team investigates the imperative of research-development and innovation in small and medium-sized enterprises in Romania. Finally, the issue includes a book review, bringing to the readers' attention the volume of Ana Maria Preoteasa (2018) "Multiple facets of precarious work in Romania, Bucharest", Pro Universitaria Publishing House.

We want to thank our authors who found in our review an appropriate forum of academic and research debate on the above topics, and to all those who contributed to Review of Applied Socio-Economic Research – Volume 20 / issue 2 / 2020!

Enjoy your reading!

Cristina Barna
Editor in Chief
Review of Applied Socio-Economic Research

An investigation into the management of change in private sector healthcare organizations in Bangladesh: A mixed-method inquiry based on the implementation of a new framework to support healthcare organizations

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Abstract. *The present research is focused on unraveling the complexities of and develop a framework for change management in the private sector healthcare organizations. This research has also sought to advance the understanding of the change management and change management process within the field of healthcare organizations in Bangladesh. The research method used in this research is a mixed methodology approach and seeks to start a collective voice of employees for the major debates of change management within the healthcare organizations in Bangladesh. Data collection was semi-structured interviews with purposive sampling to select respondents, which included top executives, human resource managers, CEOs, and line managers. A clustered probability sampling method has been carried out for the questionnaire survey and analyzed the data with computer software SPSS. The results show that the employees' understanding and perceptions towards change management plays an important role in change management success. Also, change communication and organizational culture significantly impact the change implementation process in healthcare organizations. The study also revealed that a high level of resistance to change does not always negatively affect the change implementation process.*

Keywords: Change management, change communication, culture change, resistance to change and overcoming resistance.

JEL Codes: L31, Q01, R12

1. Introduction

In a highly competitive and turbulent business world, the dynamism for any organization's changes became indispensable for greater success and excellence. This result is that in most organizations whether public or private, they have already known the phenomenon of change and often realize that if they cannot change, they will perish (Nohria and Beer, 2011). In a continuously changing business environment, change became the norm for most organizations in order to sustain their success and existence (Ackoff, 2016; Burnes 2016; Hailey and Balogun, 2012; Kotter, 2016; Mintzberg, 2013).

Therefore, change has become an everyday phenomenon in our life (Burns, 2016). It became one of the biggest challenges for organizations (Cowan-Sahadath, 2016) and, in today's management literature, clearly sends the message that organizations must change in order to survive (Oijako et al., 2018). Despite all the emphasis put on change management by management experts, and change management became a buzz word in all the top corporations, the brutal fact is that about two-thirds or more than 70% of change initiatives fail to be implemented (Burnes, 2016; Beer and Nohria 2011, P. 5). Likewise, Macredie et al., (2012) stated that very vibrant organizations in the future, whether public or private, must embrace the concept of change on a continuous basis or be ready to become extinct like dinosaurs. Meanwhile, Beer and Nohria (2011) found

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many organizations failed their change initiatives just because of a rush in the change process and thereby lost focus as well as becoming easily overwhelmed by the change initiatives in their organizations. Therefore, executing the change, whether public or private, is not easy to accomplish. Subsequently, the dilemma is for the need for change, which organizations can complete correctly. Change management experts like Burnes (2016), Kanter (2016), and Peter and Waterman (2011) proposed the argument that a lot of today's organizations, including private sector healthcare organizations are finding themselves in a volatile environment, whereby change management becomes the ultimate necessity.

In Bangladesh's context, healthcare organizations change management became an ultimate necessity because its management and delivery were so obsolete that it is unbelievable. But managing change is not an easy task (Burns, 2016); it is expensive, complex, and takes time to achieve success. The healthcare organizations need a perfect framework to make change successful, or the result becomes merely a response to the change initiative or is diluted by any resistance to change. Most organizations respond wrongly to stakeholder needs and thereby lose ground and often cease to exist (Hope, 2012).

Large scale change requires considerable activity across all healthcare industries (Maurer, 2017), but its lack of repetition and an effective model of change management means that effective change still remains very rare (Birken et al., 2018). With the highest amount of failure rate in the change management initiatives (Maurer, 2017), the ability to identify and implement the right change management framework frequently eludes most change managers. The genuine reasons for change failure are change resistance, poor change communication, top-down change management strategies, rigid workplace culture, and following the wrong change models (Kotter, 2016; Werkman, 2017). Top executives are often responsible for making the change successful (Hope, 2012), but some are lacking the ability to be change leaders (Kanter, 2016). Frequent change failure breeds change resistance among employees (Ford and Ford, 2014), and thereby organizations face demoralization effects and bad consequences.

In a business context, there is a recognition for the necessity of change in modern organizations. However, questions arise for different elements of change management processes and how procedures have been managed, and that still remains unanswered (Dawson, 2014). Generally, theorists on the change process have always argued that change management's basic purpose is to bring stability in the organization, which will happen with fewer change initiatives (Weisbord, 2009; Stacey 2016). Often this theory, guided by scientific inquiries and rational theory development, is based on the modernization process (Rickards, 2016). Accordingly, Burns (2016) states that modern times are characterized by the hierarchical and mechanistic structure, which was based on the extreme kind of labor divisions and human control systems that help suppress people's emotions and reduce independent individual actions. Clarke (2012) stated that the availability of modernistic belief in the organizational change process had dominated the top-down and pragmatic approach that gives step by step direction for the change managers.

Additionally, the ever-increasing pace of the world markets and governments pushes the need for organizational development and effective strategy on a continual basis (McHugh, 2013). Rather than putting too much importance on a hierarchical or mechanistic structure (Burnes, 2016, P.154) or top-down approaches (Clarke, 2012), Turner (2009), Lowendahl and Revange (2013) maintain that organizational strategies must go beyond testing how the internal and external organizational context interacts and must examine the basic assumption and systematic truths that are dictating organizational strategies.

Therefore, from the employees' perspective, any kind of organizational change can impact their life, whether directly or indirectly, as well as the nature of their work. The impact can be experienced by the employee from the changed working situation, personal benefits and their future aspiration. That is why it is important for every employee to understand the change process and analyze the effectiveness, their position in it and the influence of the factors affecting their lives (Fullan, 2013). Clarke (2009) stated a major portion of employees have not been given the opportunity to engage in the change management process. It is detrimental to an organization to not recognize their employees' observations and views in relation to the proposed changes

in respect to their working environment. The evidence comes from the private sector healthcare organizations in Bangladesh and its employees' through the feedback and data gathering process. Consequently, all employees' viewpoint in the private sector healthcare organizations has made a large contribution to this research study.

It is one of the major phenomena that its key stakeholders misunderstand the organizational change process, and the underlying cause is often assumed to be that there is not a ready-made guideline for understanding the change process. Most of the time, key stakeholders struggle to understand the complicated change process (Fullan, 2013). As a result, Dunphy and Stace (2016) emphasized the role of individual employee's influence that forces the change. Moreover, some private sector healthcare organizations malpractices are existent in the common norms of change management. As a result, the workplace has become more turbulent and unpredictable. On the basis of this problem, management needs to reconsider their change management approaches, directions, and motivation for all employees (Daft and Marcic, 2014). These approaches are very important because healthcare organizations might be moved away from the hierarchical to equitable labor division that encourages the democratic control system and independent work environment (Burnes 2016). Strategic tools such as process reengineering and downsizing might have effective implications to the financial, technical, and operational aspects of healthcare organizations.

2. Research elaboration

This research study 'An investigation into the management of change in private sector healthcare organizations in Bangladesh: A mixed-method inquiry' is set within Bangladesh's private sector healthcare organizations area. This research study's primary purpose is to unravel the complexities of and develop a framework for change management in the private sector healthcare organizations. In this context, some important references have been made to employees of some private sector healthcare organizations who were invited to share their views, perceptions, and experiences about current change and change management processes. This study has used a mixed methodology approach and seeks to start a collective voice of employees for the major debates of change management within the healthcare organizations.

Considering the disadvantages and advantages of the different prevailing research methods, a mixed-method approach is proposed for this study with the application of grounded theory (GT) methods. Grounded theory is often derived from the inductive approach from the phenomenon it represents. The researcher collected quantitative data through the survey questionnaires and qualitative data through the semi-structured interviews. This research study followed the mixed methodology, and the sampling strategy also took the mixed method of sampling. For the quantitative research, the clustered probability sampling method has been carried out amongst the private sector healthcare organizations employees within the different positions, age, gender, and educational level of the healthcare organizations employees. With clustered probability sampling, the researcher divided the population into separate groups, then a simple random sample of clusters was selected from the population. On the other hand, for qualitative research, the researcher used non-probability sampling techniques and carried out purposive sampling. The total participants were 10 for the semi-structured interviews used in this research. The population from which the sample was selected were mostly top executives, human resource managers, CEOs, and line managers.

3. Results and discussion

3.1 Quantitative results and discussion:

The reliability test used in this research study found that the reliability scale in the survey questionnaire rated very good. It shows a high consistency number .811 (Table 1) which means higher internal consistency across all the scales. Further, the reliability of the individual test was different than the overall scale. The individual scale varied from 0.811 to 0.813, which shows that survey questionnaire has high level of internal consistency. Therefore, the survey questionnaire can be used in order to examine the employees' understanding and perception about change management in the healthcare organizations in Bangladesh.

Table 1: Cronbach's alpha reliability statistics

Reliability statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.811	.813	21

Sources: SPSS output-Cronbach's alpha reliability statistics.

3.1.1 Spearman correlations coefficient analysis:

The correlation and coefficient variables often be used to show association between different variables. It is also often confused with regression analysis but become very basic differences. When an association is measured numerically that gives both the strength of the correlation coefficient and the direction of the relationship between two variables. The strength of the relationship is represented a positive, negative or no relationship. There are two more independent variables have been chosen for hypothesis testing and these are, understanding/familiarity with change management and competitive advantage. These two variables have positive relationships as well, as it is shown that understating/familiarity with the change management has a positive relationship with change and competitive advantage.

Table 2: Correlation coefficient between variables

		Familiar with Change Management	Change and competitive advantage
Familiar with Change Management	Pearson Correlation	1	.362**
	Sig. (2-tailed)		.000
	N	300	300
Change and competitive advantage	Pearson Correlation	.362**	1
	Sig. (2-tailed)	.000	
	N	300	300

** Correlation is significant at the 0.01 level (2-tailed).

The Spearman correlation test statistics $r=0.362$, $N=300$, $P<.001$ indicate that better of understanding/familiarity of change management will provide competitive advantage during change. There is positive relationship between these two variables. Where $p<.001$ it means the probability of getting correlation coefficient at least big a sample of $N=300$ people if the null hypothesis were true there was no relationships between these variables were very low. In fact, all the significance values are below the standard criteria of $p<0.05$ it means a statistically significant relationship exists.

Furthermore, this research study selected two more important independent variables, and these are cultural support and change implementation process. The cultural support and change implementation process have positive relationships and often positive culture supports the organizational change management process in implementing change successfully.

Table 3: Correlation coefficient between variables

		Cultural Support	Change Implementation Process
Cultural Support	Pearson Correlation	1	.497**
	Sig. (2-tailed)		.000
	N	300	300

Change Implementation Process	Pearson Correlation	.497**	1
	Sig. (2-tailed)	.000	
	N	300	300

** Correlation is significant at the 0.01 level (2-tailed).

The Spearman relationship test statistics $r=0.497$, $N=300$, $p<.001$ these results indicate that the relationships between the two variables is moderately positive. It means that where cultural support is available or flexible culture prevails, the change implementation process would be much easier, and less resistance would be faced. Where $p<.001$ it means the probability of getting correlation coefficient at least big a sample of $N=300$ people if the null hypothesis were true, there was no relationships between these variables were very low. In fact, all the significance values below the standard criteria of $p<0.05$ and it means a statistically significant relationship is existent.

One hypothesis has been developed about the relationship between communication and resistance to change. Now presented below are the relationships between the variables. Effective communication and least resistance to change have very strong positive relationships. The Spearman relationship test statistic $r=0.855$, $N=300$, $P<.001$ that indicates that least resistance to change has very strong relationships with the effective communication. It means if the effective communication increases then the resistance to change would be decreased.

Table 4: Correlation coefficient between variables

		Effective Communication	Least Resistant to Change
Effective Communication	Pearson Correlation	1	.855**
	Sig. (2-tailed)		.000
	N	300	300
Least Resistant to Change	Pearson Correlation	.855**	1
	Sig. (2-tailed)	.000	
	N	300	300

** Correlation is significant at the 0.01 level (2-tailed).

As the correlation coefficient value $r=0.855$ and is positive and $p<.001$ it means that the probability of getting a correlation coefficient at least as big in a sample of $N=300$ people, if the null hypothesis were true there was no relationship between these variables, was very low. In fact, all the significance values are below the standard criteria of $p<0.05$ and it means a statistically significant relationship existent. The variable change management process and resistance to change is positively related but this positive relationship is very weak. The variable change resistance result of $r=0.072$, $N=300$ and $p=0.212$ it indicated that there is a positive relationship between the two variables, but this relationship is very weak.

Table 5: Correlation coefficient between variables

		Change Implementation process	Change Resistance
Change Implementation process	Pearson Correlation	1	0.072
	Sig. (2-tailed)		0.212
	N	300	300
Change Resistance	Pearson Correlation	0.072	1
	Sig. (2-tailed)	0.212	
	N	300	300

** Correlation is significant at the 0.01 level (2-tailed).

As the correlation coefficient value $r=0.072$ and it is positive and $p>0.212$ it means the probability of getting correlation coefficient at least as big in a sample of $N=300$ people if the null hypothesis were true there was a relationship between these variables, was very high. In fact, all the significance values up the standard criteria of $p>0.05$ and it means a statistically significant relationship was not existent. It means high level of resistance to change will negatively affect change management process is not true.

Therefore, an examination of Chi-square test table will enable us to make sure whether the patterns developed in the cross-tabulation table are significant or not. In the following Chi-square test it can be noted that the Chi-square test is a non-directional hypothesis and that is indicated by the asymptotic significance (2 sided).

Table 6: Chi-square tests

Chi-square test			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	61.484a	4	.000
Likelihood Ratio	17.833	4	.000
Linear-by-Linear Association	39.078	1	.000
N of Valid Cases	300		
a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .05.			

In analyzing the above table output it is clear that one of the important assumptions of the Chi-square test has not been violated, that is the expected cell frequencies must not be the less than 5. The important thing in the Chi-square test is the value of Pearson Chi-square 61.484 with the 4 degrees of freedom, which is significant at the $p<.001$ level. So that it can be like,

$$X^2 = 61.484, df=4, p=<.001$$

The Chi-square test is usually used to determine whether the association in the cross tabulation is a significant one. In the above Chi-square table, the p value is less than $p<0.05$. However, to be statistically significant the probability value to be 0.05 or smaller. In this case, we have found that the p value is less than 0.05. Therefore, it can be concluded that there is significant relationship between two variables. Hence the hypothesis, better understanding of change management will provide competitive advantage, has a statistically significant association.

Therefore, an examination of Chi-square test table will enable us to make sure whether the patterns developed in the cross tabulation table are significant or not in the following table, it can be noted that the Chi-square test is a non-directional hypothesis and that is indicated by the asymptotic significance (2 sided).

Table 7: Chi-square tests

Chi-square test			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	128.348a	4	.000
Likelihood Ratio	91.335	4	.000
Linear-by-Linear Association	73.732	1	.000
N of Valid Cases	300		
a 3 cells (33.3%) have expected count less than 5. The minimum expected count is .44.			

In analyzing the above table 5.13, it is clear that one of the important assumptions of the Chi-square test has not been violated. That is the expected cell frequencies should not be the less than 5. The important thing in the Chi-square test is the value of Pearson Chi-square 128.348 with the 4 degrees of freedom, which is significant at the $p < .001$ level. So that it can be like,

$$X^2 = 128.348, df=4, p < .001$$

The Chi-square test usually is used to determine whether the association in the cross tabulation is a significant one. In the above Chi-square table, the p value is less than $p < 0.05$. However, to be statistically significant the probability value needs to be 0.05 or smaller. In this case we have found that the p value is smaller than 0.05. Therefore, it can be concluded that there is significant relationship between the two variables. Hence, the hypothesis that the better understanding of change management will provide competitive advantage has a statistically significance association.

However, an examination of the Chi-square test table enables us to make sure whether the pattern developed in the cross-tabulation table is significant or not. In the following Chi-square test table, it can be noted that the Chi-square test is a non-directional hypothesis and that is indicated by the asymptotic significance (2 sided).

Table 8: Chi-square test

Chi-square test			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	29.041a	8	.000
Likelihood Ratio	19.234	8	0.014
Linear-by-Linear Association	0.834	1	0.361
N of Valid Cases	300		
a 9 cells (60.0%) have expected count less than 5. The minimum expected count is .14.			

The analysis the above table output shows that one of the important assumptions of the Chi-square test has not been violated, expected cell frequencies should not be the less than 5. The important thing in the Chi-square test is the value of Pearson Chi-square 29.04 with the 8 degrees of freedom, which is significant at the $p < .001$ level. So that it can be like,

$$X^2 = 29.04, df=8, p < .001$$

The Chi-square test is usually used to determine whether the association in the cross tabulation is a significant one. In the above Chi-square table, the p value is less than $p < 0.05$. However, to be statistically significant, the probability value needs to be 0.05 or less. In this case we have found that the p value is less than 0.05. So that it can be concluded that there is significant relationship between the two variables. Hence, the hypothesis better understanding of change management will provide competitive advantage has a statistically significant association. Therefore, an examination of Chi-square test table will enable us to make sure whether the patterns developed in the cross-tabulation table are significant or not. In the following Chi-square test table, it can be noted that the Chi-square test is a non-directional hypothesis and that is indicated by the asymptotic significance (2 sided).

Table 9: Che-square tests

Chi-square test			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.226a	4	0.000
Likelihood Ratio	10.628	4	0.031

Linear-by-Linear Association	5.809	1	0.016
N of Valid Cases	300		
<i>a 3 cells (33.3%) have expected count less than 5. The minimum expected count is .19.</i>			

In analyzing the output from the above table, it is clear that one of important assumption of the Chi-square test has not been violated. That is the expected cell frequencies must not be the less than 5. The important thing in the Chi-square test is the value of Pearson Chi-square of 21.226 with the 4 degrees of freedom, which is significant at the $p < .001$ level. So that it can be like,

$$X^2 = 21.226, df = 4, p = < .001$$

The Chi-square test usually used to determine whether the association in the cross tabulation is a significant one. In the above Chi-square, table the p value is less than $p < 0.05$. However, to be statistically significant the probability value must be 0.05 or smaller. In this case it is found that the p value is smaller than 0.05. So that it can be concluded that there is significant relationship between the two variables. Hence, the hypothesis that a high level of resistance to change will affect negatively on the change implementation process has a statistically significance association.

3.2 Qualitative results and discussion:

Qualitative data is often described as approximation that characterizes nature. This data types non-numerical and often collected through observation, focus groups and/or interviews. This research used semi-structured interviews with 10 participants, who had been chosen by purposive sampling. The interviews were transcribed and analyzed. The qualitative data analysis (QDA) computer software Nvivo has been used to organize, makes sense of the data, theme developments and overall present the qualitative data sets from the research.

3.2.1 Interviews most common words:

Most common word or most cited word in all interviews are change, then after management and communication. These words are mostly cited in the interviews and developed following (Figure-5.27) themes using Nvivo. In any change management process, communication is vital, and without proper communication change management will definitely be unsuccessful. Some other words come after the communication and these are implementation, process, vision and culture and these all words are the important part of the change management process.

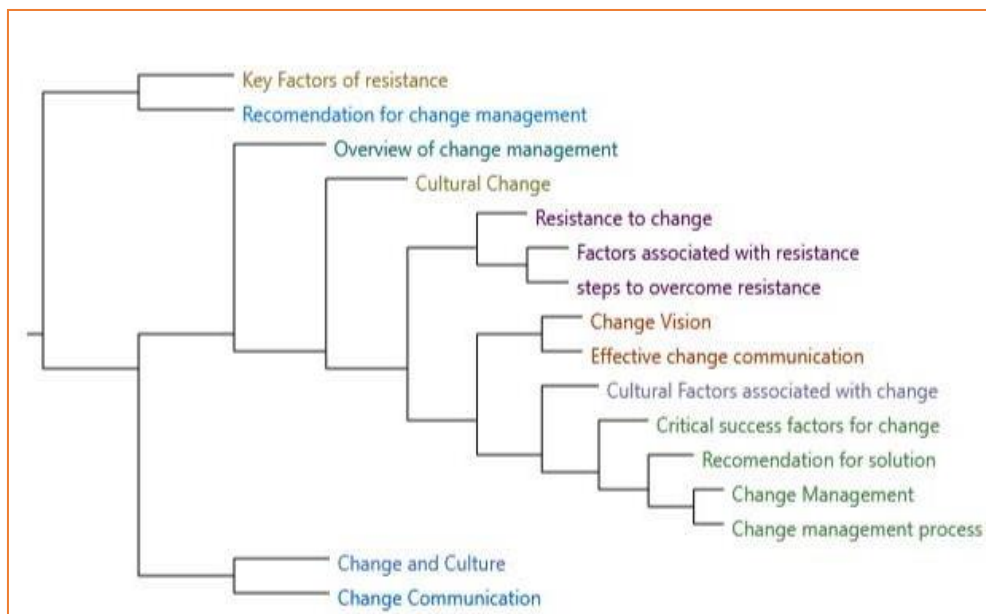
Fig. 1: Interviews most common words



3.2.2 Themes clustered by word similarities and differences:

The horizontal branching diagram shows similar words or items that are clustered on the same branch and what is different is in the other branch. The nodes that have a high similarity, based on the frequencies of this words have been shown together, and which nodes have lower similarity, based on the frequencies, are positioned in the dendrogram further apart.

Fig. 2: Themes clustered by word similarities and differences

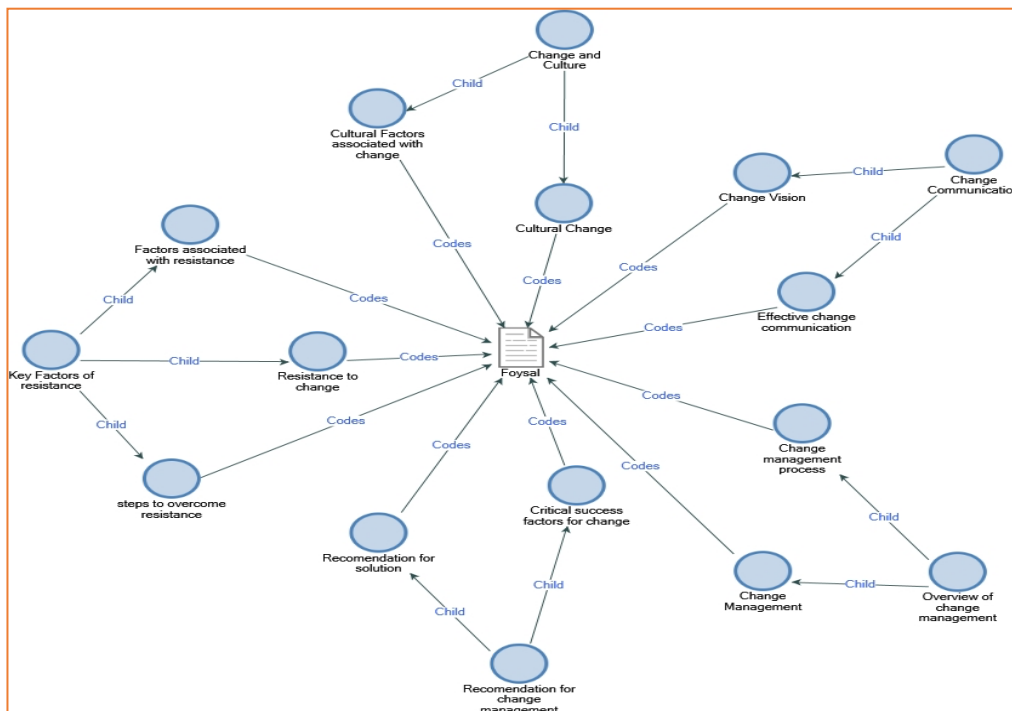


In the above dendrogram it is clear that the nodes key factors of resistance and the recommendation for change management have most similar words based on the frequencies used by the participants. The nodes 'change and culture' and 'change communication' also have very strong relationships based on the word frequencies participants used in the interview. On the other hand, the nodes 'change communication' and 'key factors of resistance' have a much lower degree of relationships shown in the graph. The nodes change 'management and change management process' are very closely related to each other and these two nodes have a very distant relationships to the nodes 'change and culture, change communication, key factors of resistance and recommendation for change management.

3.2.3 Project map-graphical illustration of themes and its connection:

The project map is used here to represent the graphical illustration of the different themes that have been used in this research. Especially representing the different connection among the all the nodes is based one participant. The following project map is a way of visually exploring the data used in this research and is based on the participant Foysal's interview. The different shapes of connection have been developed based on, for example, Foysal's provide opinion about change management and it has two sub-themes that are related with the themes change management and this project map shows it clearly. Another example is that the theme cultural change has been developed based on the participant interview. There are two more sub-themes under the theme cultural change. These themes are cultural factors associated with the change and change and culture, both have interrelationship.

Fig. 3: Project map-graphical illustration of themes and connection



4. Conclusions

Though change is constant in everyday life, it is not just a natural phenomenon, and it is a very difficult task to be handled in the organizations. Usually, change creates a crisis that is very critical to manage in organizations. Such an upheaval in the organization has a far-reaching impact on its key stakeholders and the organizations itself. Most academics plus practitioners are attempting to search for a best practice among a

repertoire of potential change drivers developed elsewhere, but every organization is best at their own adaptation and customization for its own unique blend. Sometimes what works well for one organization might not be suitable for others. That is why this study's approach to change management tends to assert this uniqueness. Further, this research has sought to advance the understanding of the change management and change management process within the field of healthcare organizations in Bangladesh. The scope of this research was to investigate the management of change in private sector healthcare organizations in Bangladesh. Based on the various reviews and extended literature of the study as well as theoretical perspective, an integrated conceptual framework has been developed in relation to employees' understanding and perception, change communication, cultural change, and resistance to change.

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Analyzing youth unemployment and digital literacy skills in Romania in the context of the current digital transformation

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Abstract. *Recent developments in the labour market, on the global scale and inside the European Union, reveal that youth unemployment represents a significant societal challenge of the twenty-first century. In this general context, Romania has a high percentage of young unemployed people when compared with the national unemployment (16.9% versus 5.3 % in June 2020 – Eurostat data). Besides, at the same time, it ranks 27th out of the 28 EU Member States in the European Union, according to Digital Economy and Society Index (2019). Considering this particular context, our article investigates the youth unemployment issues in Romania, and it also assesses Romania's digital competitiveness using relevant statistic tools, such as the EU Digital Economy and Society Index and Women in Digital Scoreboard. A critical analysis will be performed to find out and explain the various causes of youth unemployment and propose solutions and recommendations to equip young people with the skills required for the jobs in the current accelerated digital transformation we face due to COVID 19 crisis. Also, a systematic review of the public policies concerning digital skills and skills for innovation in Romania will be made. Moreover, examples of private sector initiatives enhancing youth digital skills will be analyzed in order to prepare the ground for future relevant interventions in digital education, which can lead to better integration of the young people into the labor market.*

Keywords: Digitalization, Digital skills, Youth unemployment.

JEL Codes: E24, J24.

1. Introduction

Today's young generation is facing diverse challenges of social, cultural, and work integration kind. More than ever labour market became more European than national, new job opportunities arose in different EU countries, and working force mobility seems to be the best way to fill the job vacancies that cannot be occupied by local young talents. Besides, young workers are the most vulnerable category in terms of unemployment. On the other hand, the rapid migration to digital technologies driven by the COVID 19 pandemic will continue into the recovery (Mc Kinsey Digital, 2020). This is a new and demanding challenge for the young generation.

The International Labour Organization (ILO) mentions in the report “Global Employment Trends for Youth 2020” that the labour force participation rate of young people (aged 15–24) has continued to decline and the continuing decline in young people’s engagement in the labour market reflects not only the increasing enrolment in education but also the persistence of the youth NEET challenge, especially among young women. Current ILO statistics show that young people are three times as likely as adults (25 years and older) to be unemployed. Globally, the youth is considered as a significant potential supply for the labour market, with regional variation. Still, one-fifth of young people worldwide currently have NEET status, which means they are neither gaining experience in the labour market, nor receiving an income from work, nor enhancing their education and skills. The ILO report also shows the young people's concerns about the possibility of their jobs being replaced by robots and artificial intelligence, despite being early adopters of new technologies. Worldwide, the increase in the demand for skills caused by the emergence of new technologies is welcome, as are the rising educational attainment levels among young people. Both would generate increases in

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productivity. New technologies are disrupting labour markets across the world by both destroying and creating jobs.

Besides, according to the findings of a survey conducted on a significant number of young people, employers and post-secondary education providers across eight countries consider that the main reason for youth unemployment is not, as expected, the scarcity of jobs lack of skills required by the employers. It is as if employers, education providers, and the young lived in parallel universes, unable to connect with each other (McKinsey Center for Government, 2012). The conclusions of the survey are in line with what other studies we have found. For example, an EU report highlights the skill shortage in Europe and mentions the strategies of certain employers to address it: on-the-job training and hiring people with potential rather than certified skills (EU Skills Panorama, 2016).

Looking at the causes of youth unemployment, only a few consistent studies have been published in Romania, but the findings were in line with the McKinsey survey concerning the mismatch between young people skills and what employers are looking for. Romanian young people entering the job market perceived their skills and competencies as adequate based on the grades they obtained during the school years. They hardly accept the fact that employers are looking for different kinds of skills, more applied ones. (Epure, M., Vasilescu, R., 2016). Mostly, it is about increasing the demand for new kinds of digital skills. This demand is even higher in the context of the COVID 19 pandemic. On the occasion of World Youth Skills Day 2020, the role digital technologies can play to mitigate the effects of youth crisis was highlighted. "Digital platforms enable students to pursue online learning, entrepreneurs to engage in e-commerce, and workers to earn income through online freelancing and microwork. These remote opportunities are particularly beneficial for young women and other vulnerable youth who have been disproportionately affected by the crisis". (Robinson D., Sani A., Aminu Z.R., 2020)

2. Research objectives and methodology

The first research objective of this article is to analyse youth unemployment issues in Romania as they have been identified by authors or highlighted by governmental institutions. A critical analysis will be performed to find out and explain the various causes of youth unemployment and propose solutions and recommendations to equip young people with the skills required for the jobs.

A second research objective is to assess Romania's digital competitiveness using relevant statistic tools, such as the EU Digital Economy and Society Index and Women in Digital Scoreboard. Also, a systematic review of the public policies concerning digital skills and skills for innovation in Romania will be made. Examples of private sector initiatives enhancing youth digital skills will also be analyzed to set the scene for future relevant initiatives in digital education.

The research methods that will be used are: initially, basic research focused on recent data collection concerning youth unemployment and digital skills, and finally, problem-oriented research will be conducted in order to understand the causes of the youth unemployment and the digital skills gaps in Romania and to propose relevant solutions and recommendations for enhancing youth employment in the context of the accelerated digitalization due to COVID 19 crisis.

3. Dimensions and causes of youth unemployment in Romania

According to the most recent Eurostat data, in June 2020, the youth unemployment rate was 17.3 % in the EU, while Romania was slightly below the European average with a youth unemployment rate of 16.9%. As we can see from Figure 1, Romania is characterized by a decreasing trend of youth unemployment, starting with the year 2014. However, the youth unemployment rate remains still extremely high in Romania, when it is compared with the national unemployment rate (16.9% versus 5.3 % in June 2020 – Eurostat data).

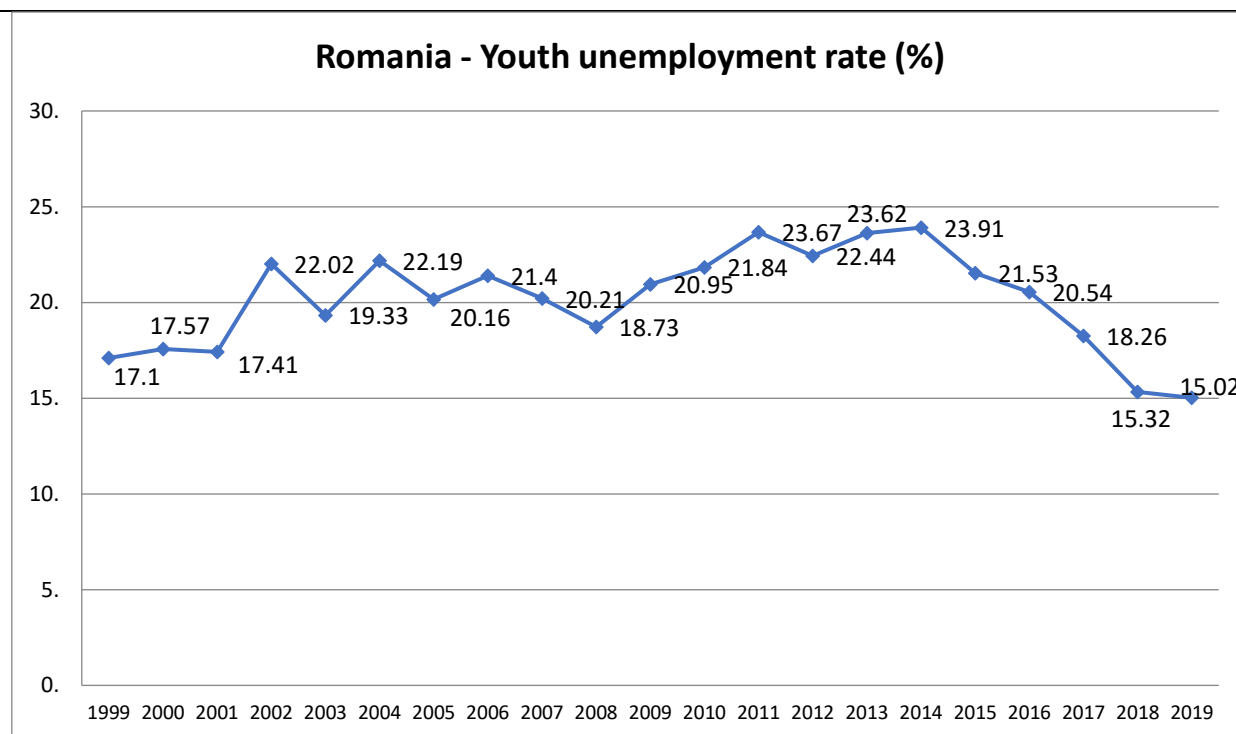


Fig.1 Romania- the evolution of the youth unemployment rate, period 1999-2019

(Source: World Bank, Survey name: World Development Indicators, worldbank.org, released at Dec.2019)

In a recent analysis provided by Business Review (Melenciuc S., 2019), some important trends and phenomena concerning youth unemployment are outlined. For example, this analysis highlights the findings of a recent study of the National Institute of Statistics: "The rate young people neither in employment nor in education or training in Romania signal difficulties in transitioning from the education system to the labour market and the problems connected to employment for the young population, outside the education system" (NIS, 2019). Moreover, the analysis outlines that the unemployment rate among young people in Romania aged 15-24 years maintains at a high level despite widespread workforce crisis suggesting difficulties in the transition from the education system to the labour market. The situation is even worse, considering the young people in Romania aged between 20 and 34 years. In Romania, 21.4 percent of youth aged 20-34 years were neither in employment nor in education or training in 2017, and the rate is higher in the case of women. The rate of young people neither in employment nor in education or training shows wide variations between Romania regions. In 2017, the highest value of the indicator for the young people aged 15-24 years was recorded in the southern Transylvania / Center region (22.3 percent), followed by Sud-Est (20.5 percent) and Sud-Muntenia (19.6 percent).

Youth unemployment causes are various. We summarize below some of the most important:

- Low flexibility of the labour market;
- Low interest for higher education and the temptation to leave the country without a diploma;
- Lack of early work experience for young people entering the labor market;
- Education. In Romania, education seems to be part of the problem, not part of the solution when we are studying youth unemployment (Mărginean S., 2014). Romania has the lowest percentage of tertiary education graduates from the EU, with 26.3% for the age segment of 30 – 34 years (Eurostat, 2018).
- The available skills are not keeping up with the needs of the labour market and future work patterns.
- The lack of basic competencies among the Roma and people in vulnerable situations do not allow them to fully benefit from economic expansion and gain a foothold in the labour market (EU Commission Communication to the EU Parliament, 2019).

- Insufficient supply of skills (e.g., digital skills) which also contribute to determining the quality of work, above-all through its impact on wages;
- Youth salaries, which are likely to negatively impact youth employment in as much as, the higher are the relative salaries of youth with respect to those of adults, the more incentives there are to employ adults as opposed to youth.
- Migration. Young Romanians think that leaving the country is one way to fight unemployment. Approximately 3.4 million Romanians live abroad. For example, in 2015, Romania entered the Top 20 countries that became the source of migration at the international level (UN, 2016).
- The level of the aggregate demand - for example, a fall in aggregate demand will lead to a fall in demand for labour in general and consequently for young labour as well as adult workers.

Youth need specific preparation to enter the labour market and is not about the professional skills and competencies that schools/universities provide through educational programs but mostly about the twenty-first century: digital literacy, ICT communication skills, etc. Unfortunately, youth Romanians tend to solve unemployment seeing the migration to western developed countries as a solution. Migration generates shortages in the workforce in some industries; therefore, Romanian employers import workers from outside the EU, especially from Asian countries like Vietnam, Bangladesh, India.

4. Romania in the Digital Economy and Society. Digital skills assessment.

As in all the other European countries, also in Romania, a strong digital economy is vital for innovation, growth, jobs, and competitiveness. The spread of digital is having a significant impact on the labour market and the type of new skills needed in the economy and society. In June 2016, the European Commission published a new Skills Agenda for Europe to strengthen human capital, employability, and competitiveness and present some actions and initiatives to tackle the digital skills deficit in Europe. This agenda sets out to improve skills formation's quality and relevance to make skills and qualifications more visible and comparable and advancing skills intelligence, documentation, and informed career choices. The European Commission has been monitoring Member States' digital competitiveness with the Digital Economy and Society Index (DESI)² reports since 2015.

4.1 Digital Economy and Society Index, Romania, 2019. Key figures.

According to Digital Economy and Society Index (DESI) 2019, Romania ranks 27th out of the 28 EU Member States in the European Union. Although Romania shows slight improvements in performance in almost all of the DESI dimensions measured, its ranking remained stable, because the overall progress was slow. Romania performs best in the Connectivity dimension, due to the wide availability of fast and ultrafast fixed broadband networks (especially in urban areas). However, digitization of the economy is lagging behind, more than one-fifth of Romanians have never used the Internet, and fewer than a third have basic digital skills.

As regards the Human capital dimension, Romania ranks 27th among EU countries, well below the EU average.

Only 29 % of people aged between 16 and 74 have basic digital skills (57 % in the EU as a whole), and 10 % have advanced digital skills (against an EU average of 31 %).

Despite the increase in the percentage of ICT specialists from last year, they represent a lower proportion of the workforce by comparison with the EU as a whole (2.1 % against an EU average of 3.7 %).

When it comes to ICT graduates, Romania is performing well, as the country ranks 6th among the EU Member States, with 4.9 % of all graduates.

As regards female ICT specialists, Romania ranks 16th, as they represent 1.3 % of Romanian women in employment, which is just slightly below the EU average of 1.4 %. Romania has the third-highest share of

² DESI covers 5G readiness, Above basic digital skills, At least basic software skills, Female ICT specialists, ICT graduates, People who never used the Internet, Professional social networks, Doing an online course, Online consultations and voting, Individuals selling online, Big data, Medical data exchange, and e-Prescriptions.

women among all ICT specialists (25.7 % in 2017, against an EU average of 17.2 %). Romania ranks 11th in terms of the gender pay gap, with a 16 % difference in pay.

Given that the number of ICT places at universities is limited and there is a lack of ICT graduates, there are several private companies investing in digital skills, offering IT specialization programmes. Several Romanian universities have started offering online courses (MOOC). The tax exemption provided for IT professionals in the country helps fill the high number of IT vacancies.

4.2 Women in Digital Scoreboard, Romania, 2019. Key figures.

Concerning gender balance, according to Women in Digital Scoreboard 2019, Romania is ranked 27 and scored 34.6 (EU: 50.0). Considering the use of the Internet and Internet users' skills, Romania is ranked 26, scored 34,7 (EU: 53,1), respectively, is ranked 28 and scored 24,5 (EU: 53,1). However, the situation is different when referring to Specialist skills and employment, where is ranked 13, scored 44,6 (EU: 43.9).

4.3. Public policies concerning digital skills and skills for innovation in Romania

A review of the main public policy initiatives in the field of digital skills and innovation has revealed the existence of a series of important national documents, initiatives, and platforms with relevant directions that could open the way towards digital skills advancement in Romania and a possible balance of the above gaps. We provide below a brief description of the most important ones:

- ***National Strategy on the Digital Agenda for Romania for 2020***

Romania adopted its National Strategy on the Digital Agenda for Romania for 2020 (SNADR) in February 2015. The SNADR is the steering document for all digital matters, including digital skills. The strategy focuses on providing ICT infrastructure in schools; developing pupils' and teachers' digital skills; using ICT in the learning process and in lifelong learning; updating the ICT skills of public administration staff, and ensuring e-inclusion by developing digital skills and e-skills.

- ***National Coalition for Digital Skills and Jobs***

Romania has a National Coalition for Digital Skills and Jobs - Skills4IT³. The Romanian National Coalition (Skills4IT) is an open platform that includes a variety of stakeholders: policymakers, ICT companies, associations, training providers, and NGOs involved in the digital transformation. The Coordinator is APDETIC - Association of Producers and Dealers of ICT equipment. The main partners are the Ministry of Communications and Information Society, Ministry of National Education, Union of IT teachers of Romania Informal School for IT, Association of Librarians, and Public Libraries (ANBPR), HP Inc. Romania, Maguay IBM, and Junior Achievement.

Activities are focusing on rolling out coding and IT classes in schools, organizing cybersecurity courses, and educational events. The coalition also provides training to upgrade the digital skills of the labour force. Romania actively participated in EU Code Week in 2018, a grassroots movement to encourage people of all ages to code. There were 458 activities organised around the country, with an estimated number of 25,400 participants.

- ***'Wireless Campus' - an integrated national platform***

In 2018, the Romanian Government launched the project entitled 'Wireless Campus' - an integrated national platform that provides wireless Internet in 4,500 state-run schools. The project's objective was to create an integrated national campus platform that will provide, with priority in middle schools, the service of wireless access to interconnected open data networks, including the Internet. The results provided by the project implementation are 4500 schools that will benefit from wireless equipment, one wireless campus platform installed, 54 persons trained for the administration and use of the infrastructure. The project was co-financed by the European Regional Development Fund through the Competitiveness Operational Program

³ More information available at <http://coalitiait.ro/>

2014-2020, Priority Axis 2 "Information and Communication Technology (ICT) for a competitive digital economy".

- ***The National Strategy for Research Development and Innovation (2014-2020)***

The strategy states the fact that Romania spends almost 20 times less than the European average on research and development and establishes as the objective for 2020, transforming Romania competitive at the regional and global levels through innovation fed by research and development, generating wealth for citizens. For the formal education system, the strategy is targeting education in science and technology and communication of science. This strategy is also highlighted on the EACEA website, National Policies, Skills for Innovation.

The strategy supports measures to attract young people to science, in formal education and beyond, through measures such as attracting talented young people to the research career by organizing competitions with prizes for innovative solutions, establishing a Science City in the proximity of an innovation cluster or major infrastructure, organizing tours, exhibitions, open days, to promote science to the public, and promoting interest in science and innovation in pre-university education. (EACEA, 2020)

4.4 Examples of private sector initiatives enhancing youth digital skills

Beyond the above public policy initiatives, a series of private-sector initiatives enhancing youth digital skills worth to be analyzed. They have the merit to have responded fast and directly to the challenge of the digital skills gap. We describe shortly some of them, which we consider being of high relevance:

- ***Google initiatives***

Google launched The Digital Workshop to help people develop their digital skills so they could advance in their careers or find a job. After this first initiative, Google is expanding the program to target software developers and will also set up a start-up incubator.

The Digital Workshop for Programmers was launched in collaboration with The University of Bucharest and universities from Cluj-Napoca and Timisoara. It was a premiere for a humanities-focused university to host and develop such a program, but as Mircea Dumitru, the Rector of the University of Bucharest, said: "today's digital technologies are not just about mathematics, but also about humanities." (quoted from Drăgan A., 2018).

Currently, in October 2020, Google is launching "Advancing AI", an acceleration program for local start-ups looking to build artificial intelligence products and scale their businesses.

- ***The Skill IT for Youth – Integrating Digital and Future Skills into Youth Work project.***

This project aims to increase youth work quality, combining higher levels of excellence and attractiveness in services, obtained through the digitalization of youth work, with increased opportunities for young people. Through this Erasmus + project, implemented in Romania by Danis Foundation, the partners' main goal was to equip youth workers with the digital knowledge, skills, and confidence to enhance young people's futures in the 21st century. In The Skill IT Romania National Report prepared by the Foundation Danis team, some important remarks about NGOs' role in developing digital skills in young people are outlined and analyzed. The report revealed that NGOs could intervene in teaching the professors new methods and tools for developing the right digital skills of young people, and they might also contribute with ICT equipment for schools by bringing in sponsorships from technology companies. NGOs can play mediators' roles among families, schools, and youth people and can validate or refine the skills that young people acquire elsewhere. Providing training for those who need improvement of digital skills (teachers, youth) looks like a contribution favored by many senior managers. According to the report, there are few programs and services that are intentionally developed for the purpose of enhancing digital skills among young people. Nonetheless, youth workers are aware of their role in digitizing the future generation and seem to be open to the idea of sketching and delivering in the future more programs and services aiming to develop young people's digital skills.

- ***JA Romania: Digital and Entrepreneurial Skills for Girls***

The Digital and Entrepreneurial Skills for Girls project aims to increase the number of young women interested in professions in fields dedicated to innovation and technology. During 2019, Junior Achievement, together with partner companies, organizes four such sessions dedicated to high school students. The program is supported by the European Institute of Innovation & Technology (EIT) and takes place in Bulgaria, Greece, Lithuania, Serbia, and Romania.

5. Conclusions

Romania still has a high percentage of young unemployed people, when compared with the national unemployment rate. At the same time, as we have already pointed, according to Digital Economy and Society Index (2019), Romania ranks 27th out of the 28 EU Member States in the European Union, and only 29 % of people aged between 16 and 74 have basic digital skills (57 % in the EU as a whole), and 10% have advanced digital skills (against an EU average of 31 %). This digital skills gaps are obviously correlated with the phenomenon of high youth unemployment.

As it is stated in a recent Europuls - Centre of European Expertise Policy Brief (2019), in this period of technological change and development, the education systems need to adapt and find innovative means to train the next generation of workers effectively. Some important points to address are outlined in this policy brief, that we also think they could solve the above imbalances. We quote from them:

- ✓ “While efforts are being deployed through the use of European funds and a national strategy that focuses on ICT in education and training, more sustained policies and actions are required.
- ✓ Very early in school, the curriculum should incorporate digital literacy, ICT and programming skills, and targeted extra-curricular activities, while teachers should be supported to adapt and retrain for this new curriculum.
- ✓ Romania should embark on an ambitious and committed journey of upskilling and reskilling its workforce, and the private sector should also contribute by actively driving this training.
- ✓ For a sustainable impact, the Romanian National Coalition for digital jobs should be endorsed at the highest political level, be supported to scale up and spread to other ICT-using industries.
- ✓ It is crucial that actors from both the private and public sector, civil society, NGOs, think-tanks, and academia focus on the imperative common goal of decreasing Romania's digital skills' deficit and retaining the ICT specialists who leave the country to work abroad”. (Europuls, 2019)

Youth unemployment is not a phenomenon specific only to Romania. Recent developments in the labour market, at the global scale and inside EU, reveal an ugly truth: youth unemployment is one of the most significant societal challenges of the twenty-first century. According to the most recent Eurostat data, in August 2020, 3.032 million young persons (under 25) were unemployed in the EU, of whom 2.460 million were in the euro area. Recently, EU Youth Strategy 2019-2027 has been introduced with 11 European Youth Goals, among them quality employment set as one of the objectives. Therefore, it is the time that every EU country, Romania as well, to make considerable efforts to achieve these goals. Young human capital needs to be "nourished", protected by appropriate policies, and empowered with skills and competencies that are matching the labor market requirements. Digital skills are, without a doubt, among the skills of the future.

On the other hand, young people need support in their efforts to look for employment, but the role of schools, universities ends at graduation. What happens next? It is the question that needs answers coming from various actors such as public authorities, employers, youth organizations, training providers, etc. In Romania, one in five young people is not in employment, not in education, or other training programs (NEET), which means that it is a waste of labor force that is not contributing to the country's GDP growth. Therefore, we believe that interventions to improve access to youth at the labor market are becoming imperative in order to reduce youth unemployment.

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Social financing as a driver for sustainable local development in EU Mediterranean countries. Spain, Portugal, and Greece in perspective.

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Abstract. *In the post-crisis EU landscape, EU Mediterranean countries are making steps in alleviating the burdens that citizens have carried at the individual and collective level by restructuring their economies and re-designing social protection measures. Social and solidarity economy (SSE) is also a sector that has also seen several impediments in its development, most notably regulatory and financial obstacles and uneven development of the sector despite its growth and positive impact towards vulnerable groups during the crisis among the EU countries. In this new landscape, endogenous local development and the sustainability of the sector relies not only on active social networks and generation of social capital but also on stable and recurring funding sources, as it is necessary to respond to the financial needs of social economy actors and operators, so as to sustain the emerging dynamic of SSE in the EU. This article's scope is to provide evidence-based on a literature review regarding the development of the field both in practice and in scientific discourse with a special focus at the EU Mediterranean countries of Spain, Portugal, and Greece. Among the findings is that Spain and Portugal have been mobilized and adapted faster in including and developing social investment and innovation strategies and consequently the development of supporting frameworks for their social economy sectors, contrary to Greece where despite the move towards advancing its legal framework, there is still lack of sufficient social financing instruments, as well as, little use of the EU financing and supporting framework towards financing its social economy sector. The article addresses the pivotal role of social financing in supporting social economy organizations endeavors and presents an overview of the different forms of development of the social financing initiatives that are taking place in Spain, Portugal, and Greece.*

Keywords: social entrepreneurship, social finance, social investment, social financing instruments, social finance market

JEL Codes: L31, O35

1. Introduction

According to the European Economic and Social Committee, there are 2.8 million social economy enterprises (SEE) and organisations in the European Union, which employ about 13,6 million people and account for 8% of the European Union's (EU) Gross Domestic Product (EESC, 2017:2). They operate and use market and non-market resources (human, land, financial, energy, services, capital) at the local level, generating growth and employment and "their financial viability depends on the efforts of their members and workers to secure adequate resources" (Defourny & Nyssens, 2010:239). The conceptualization of social finance in terms of supporting social enterprises (SEs) initiatives and local development in this paper, concerns SE "whose purpose is to achieve a social mission through the use of market mechanisms" (Ebrahim et al., 2014:82) and their distinguishing characteristic is the "primacy of the social mission" (Defourny &

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Nyssens, 2010:18) and the creation of social value than the generation and maximization of profit and the creation of economic value.

By the onset of the crisis onwards, SEs which are also known as “social business”, “social-purpose business” or “social-driven business” organizations (EASME, 2018:15) are promoted by the EU as a response towards correcting social and regional imbalances throughout Europe, whereas the social economy sector as a whole has been recognized as one that “has weathered the economic crisis much better than others and is gaining increasing recognition at European level” (Council of the EU, 2015:2) for its output. However, like all market operators, SEs need liquidity, financial support, and access to capital, so as to finance and sustain their commercial activities, production of services, and goods. In order to meet the increasing demand for financial support and services by SEs and their difficulty in accessing external finance sources, together with the shortage on the supply of debt and investment finance observed during the crisis, the EU has embarked during the last decade on a concerted effort to strengthen the operation of its internal market by setting up a regulatory framework together with the development of financial mechanisms and instruments, which target directly and specifically the social economy sector (SEE) and SEs in particular.

This paper aims at discussing the emergence of a social finance market in Europe as an outcome of the need, at the EU and member-state levels, to support sustainable local development as a coherent alternative in addressing the economic crisis, with a specific focus on the adopted initiatives and the development of financial instruments in EU Mediterranean countries that were hit hard by the crisis such as Portugal, Spain, and Greece. In doing so, the paper will, in the first part, review and address the theoretical underpinnings of the concept of social finance. At the second part, it will proceed by elaborating and providing evidence of the emergence and structuration of a social finance market providing a brief overview of the main social finance instruments that have been deployed, while in the third it will present the different instruments and social finance endeavors that have been utilized and implemented in the EU Mediterranean countries in perspective.

2. Research Elaborations

The main research question that this article aims at addressing is whether the development of social finance initiatives has supported the economic sustainability of social economy sector organizations and of endogenous development in EU Mediterranean countries that were hit mostly by the financial crisis, namely Spain, Greece, and Portugal. Overall, the article aims to provide evidence on the progress achieved regarding the development of social finance markets and instruments and whether that progress was also reflected in terms of the development and sustainability of social economy ecosystems. One of the issues, surfaced from this review is that few studies and papers, especially in English, covering the broader EU area and the EU Mediterranean countries address in scientific discourse the development of social finance as a concept, as well as, the development of social finance instruments and initiatives in the EU Mediterranean countries presented in this article. The article is based on a literature review, limiting searches in English speaking and Greek literature regarding the state of play of social finance initiatives and the development of social finance markets in the EU Mediterranean countries in perspective. The review elaborates data from 47 bibliographical sources out of 138 that were initially selected for review and which were found in various academic research databases covering social finance, social economy, social entrepreneurship, and social innovation, including 21 additional internet resources.

2.1 Financing Social Enterprises. The emergence of the concept of Social Finance.

Social Enterprises (SEs) have a landmark feature, an outstanding capacity to combine the social with the financial element (Noya & Clarence, 2007). What distinguishes them especially from private sector organizations and firms is that they aim at generating revenue, so as to use it for social causes, rather than to maximize it (distribution towards their target groups, share among members, reinvestment in further projects

or resources such as equipment or premises) for their stakeholders. Despite the fact that SEs may find themselves “at risk of losing sight of their social missions in their efforts to generate revenue, a risk referred to as mission drift”¹ (Ebrahim et al., 2014:82), they may also find themselves in conditions of “losing customers, selling at prices not covering the(ir) costs”, (Defourny & Nyssens, 2010:238, *parenthesis added*), “confronted by a decrease of public grants” (*ibid*, 2010:238) and “public subsidies and to the limits of private grants from foundations” (*ibid*, 2010:231).

In other words, they may experience severe and unexpected shortages of resources either financial or human and their overall activity and mission are at great risk to fail, especially in “times of fiscal constraint, (*where*) these sources may become more limited than in the past” (Moore et al., 2012:117, *parenthesis added*), as was the case witnessed during the recent economic crisis, where many SEs have ended or down-sized their operation, due to lack of resources and the non-existence of an enabling environment supporting their operation. Considering the identified gap in the financing of social enterprises’ activities, together with the rising demand for financial resources, as a result of the growth of the SEE and the emergence of new business models (functional/circular economy, sharing economy) during the last two decades and especially since the onset of the economic crisis, the EU has introduced a number of programs and mechanisms, in order to **i)** establish a supporting institutional and financial framework for SE and to **ii)** promote social entrepreneurship as a field which advances social innovation, active citizenship, employment (focusing particularly in vulnerable and marginalized groups) and sustainable development.

In fact, it may be argued that the difficulty that SEs have been witnessing in accessing capital and development finance from traditional financial institutions such as commercial banks and investment companies (demand side), together with the constraints on government-based funding especially during the crisis, has given rise to the so-called in the literature ‘finance gap’ of SE from the supply side of finance institutions, whereas at the same time the concept of *social finance* has emerged together with alternative funding initiatives and “social enterprise investment” (Nicholls, 2010:82)². The idea and practice of channeling financial resources towards the attainment of social goals isn’t a new phenomenon and may be attributed to numerous cases in modern history, which involve a form of lending organization from the one side (religious institutions, foundations, and non-profit institutions) and organizations or persons as beneficiaries on the other. However, financing social enterprises consist of a young field of research³ And no universal definition exists for the concept of social finance; it seems that most definitions stress and have in common the principle of the attainment of social, environmental and financial returns through the use of investment capital and financial resources.

Based on finance theory principles, social finance signals a notable departure from the traditional notion of allocation of capital to achieve profit maximization and financial return. According to Rizzi et al., *social finance* refers to “a set of alternative lending and investment approaches for financing projects and ventures, requiring to generate both positive impacts on society, the environment, or sustainable development, along with financial returns (Rizzi et al., 2018:805). On the other hand, Perilleux defines *social finance* as the domain of “financial institutions, products, or practices whose goal is not solely profit maximization but seeking other benefits such as social, ecological, or ethical outcomes. It involves a wide spectrum of initiatives ranging from large institutions such as social or alternative banks to small informal initiatives such as savings groups, and includes microfinance as well as collaborative finance (social crowdfunding)”

¹ Defourny & Develtere refer that, “co-operatives in the industrialised countries have in many instances changed so much that they are practically indistinguishable from mainstream private enterprises and that their ties with not-for-profit associations seem to have completely disappeared” (Defourny & Develtere, 1999:20). Their observation point out that mission drifts in social economy organizations isn’t a new phenomenon and maybe according to Conforth, the outcome of “market pressures and resource dependences” (Conforth, 2014:9), ‘commercialization’ of activities or even “through less visible changes to working practices or the nature and quality of the services the organisation provides (*ibid*, 2014:4).

² According to Torfs and Lupoli, rough estimates of the financing demand from the side of SEs in Europe, may rise up to 513, 1 million Euros per year (EIF, 2017:10).

³ or even a “sub-field of social entrepreneurship” (Kickul & Lyons, 2015:83).

(Perilleux, 2015:285). On the same ground, Moore et al. conceptualize *social finance* as “the deployment of financial resources primarily for social and environmental returns, as well as in some cases, a financial return” (Moore et al., 2012:116), which “addresses three separate but interconnected aspects of what we call the social capital market – the supply of capital, the demand for that capital, and the intermediaries that link the two” (Harji & Hebb, 2010:2). Heyman too, stresses the fact that social finance, in contrast with mainstream finance, set the realization of social and environmental goal as a priority (Heyman, 2013). Social finance encapsulates the notion of the investment of capital for the generation of social and financial value (*social investment*) and concerns capital raising towards social enterprises, impact investment funds and private sector companies and operators, as long as they aim at generating positive and measurable social impact, along with financial gain (*social impact investment*). It fundamentally encompasses the demand and supply functions and dimensions of the market, and it can thus be “demand-driven, growing out of the capital needs of social enterprises” (Harji & Hebb, 2010:3) or “supply-driven, with a focus on the investor as the primary actor” (*ibid*). Under the lenses of economic geography and cultural economy research, it might also be seen as “a relatively discrete and hybrid modality of marketization that makes possible the valuation and capitalization of the social economy to address collective social problems” (Langley, 2018:11). It might be quite early to discuss the establishment of a new ‘finance paradigm’ (Heyman, 2013). However, Rizzi et al. suggest that two forms of social finance, “social impact investment and ethical banking, guide the institutionalization and paradigm building process” (Rizzi et al., 2017:805) of social finance. What may possibly come out of the different understandings and meaning of social finance is that although it is a young field of research, it provides a new realization and conceptualization of the relations and the transactions of economic actors and organizations, challenging the traditional notion “whereby financial, social and environmental goals need be achieved independently” (Heyman, 2013:9). In post-crisis Europe and amidst the recent pandemic, social finance has a pivotal role in the promotion of social economy as it supports “social entrepreneurship and innovation directly throughout its development, adoption, and implementation stages” (Moore et al., 2012:116) and supports development that has at its core the promotion of society and the environment together with better living conditions and economic well-being.

2.2 The development of an EU social finance market and the EU financial framework for Social Enterprises

Among the key actions that the EU Commission has proposed in its 2011 Communication on the “Single Market Act. Twelve levers to boost growth and strengthen confidence” (Commission, COM/2011/0206, final) was the establishment of a European framework that will support the development of social investment funds and the channeling of funds towards the social economy sector. As mentioned in the previous section, a social capital market involves three inseparable and interconnected domains:

- a) The demand for capital,
 - b) The supply of capital and
 - c) The Intermediary organizations or “Intermediation”
- (Harji & Hebb 2010, Nicholls 2013).

Despite the lack of intermediaries in the EU social finance terrain (Spiess-Knafl & Scheck, 2020:19), intermediation is a key function of the market, which “bring lenders and borrowers closer together and stimulate reciprocity in lending relationships based on social values” (Perilleux, 2015:297).

During the last decade, the demand/supply gap of social enterprises has been among the main issues in the EU policy agenda⁴. It is roughly estimated between 514M to 1.388B per year across the EU (Spiess-Knafl &

⁴. Access to finance, access to markets, Better framework conditions, new technologies, and social innovation are the five pillars identified by the ‘Groupe d’experts de la Commission sur l’entrepreneuriat social’ – GECES, when it was first established as part of the EU Commission SBI on 2011, and its work continued from 2018 onwards. Improve access to finance and EU funding for social economy enterprises and organisations is the 5th among the 10 proposals included by Social Economy Europe organization in their Memorandum, towards EU political parties in May 2019 EU elections.

Scheck, 2020:21). Through its landmark, Social Business Initiative (SBI) that was implemented on 2011, the EU Commission "has placed the social economy and social innovation at the heart of its concerns" (Commission, COM/2011/0682 final) and set the foundation for the establishment of an institutional and regulatory framework that would efficiently support social economy organizations. SBI included eleven (11) key actions; however, special significance for the development of the social financing market are the following:

Action 1: It forwarded a European regulatory framework for *social investment funds* to facilitate access to the financial markets for social enterprises.

Action 2: It encouraged the development of *microcredit* in Europe, through the Progress Microfinance Facility, during the programming period 2007-2013⁵.

Action 3: It has set up the *EU programme for Employment and Social Innovation (EaSI)*, so as to provide easier access to funding for social enterprises.

Action 4: It fundamentally put social enterprises in the map of EU Structural Funds, by establishing the financing of social enterprises as an '*investment priority*' of the European Regional Development Fund (ERDF) and European Social Fund (ESF)⁶ (Commission, COM/2011/0682, final).

Despite the fact that "social investment markets are still under-developed in most EU Member States which lack a specific policy and a regulatory framework for supporting social enterprises" (EIB, 2016:7), evidence regarding the development of an EU-wide social financing infrastructure is in place. On the demand side for finance and support services are primarily social economy and third sector organizations such as Social Enterprises, Mutual Societies, Cooperatives, Associations, Foundations, Social Start-ups, and Charities⁷ (as well as enterprises and on the supply side are social, financial institutions such as Social Investment and Social Impact Funds, Cooperative and Ethical Banks, Venture Philanthropy Funds, Social Banks, Crowdfunding Platforms, and Community Development Financial Institutions. Supply-side institutions may also act as intermediary organizations, and they "focus on a social mission or include a social mission among other commercial activities" (*ibid*, 2016:14). The main function of financial intermediaries is the linking of "investors and final recipients and balance the trade-off between social responsibility, financial returns and sustainability" (IFISE, 2019:23) and may include Commercial banks, Credit unions, Savings Banks, Foundations, Social Equity Fund providers, specialised microfinance intermediaries and Government bodies or agencies (*ibid*, 2019:24).

There are substantial differences, however, both in theory and in practice regarding the financing of social economy organizations and enterprises. Modern portfolio theory assumes that an investor will take on increased risk only if compensated by higher expected returns; however, in a social investment, "investors might be willing to reduce their financial return expectation as they wish to support the social services provided by the social enterprise" (Spiess-Knafl & Jansen A., 2013:27). Besides and according to Spiess-Knafl & Jansen, 'traditional pecking order theory' might also not be applicable to social enterprises due to the conflicts in internal financing, occurring when public funding "lead to a reduction of private funds which is called the crowding-out effect" (*ibid*, 2013:28) or because of grants may be considered as 'not repayable' in terms of financial returns.

The supply side of social financing market in the EU has seen an expansion especially during the last decade, despite the slow-down of the economic activity due to the economic recession, both in terms of new supporting mechanisms, as well as, on the development of new financial instruments for financing SE

⁵ Support for finance through microcredit, continued in the framework of the EASI programme in the 2014-2020 period. However, the Interim Report of Progress Microfinance revealed that, while it "has clearly been effective in increasing access to and availability of microfinance for microenterprises, it has been less effective in doing so in the social economy" (Commission, 2015:55) with only 4% of participating micro-borrowers identifying their organizations as 'social enterprises' and with 14 participating intermediaries referring that "social enterprises represent less than 25 % of their portfolio" (Commission, *ibid*:54).

⁶ https://ec.europa.eu/growth/sectors/social-economy/enterprises_en, accessed 10/11/2019.

⁷ It is estimated that "early-stage social enterprises wishing to scale" their impact require funding between 100.000 to 500.000 Euros (Commission/OECD, 2016:12)

operations. A Financial Instrument is “a *form of support* that incorporates the use of the selected product, its combination with other forms of support such as grants, and the chosen implementation option” (IFISE, 2019:13). Main financial instruments established under the SBI and during the present 2014-2020 programming period include:

➤ **The EU programme for Employment and Social Innovation (EaSI)**

The EU programme for Employment and Social Innovation (EaSI) is managed by the European Investment Fund (EIF) and is an EU level financing instrument “founded in the context of the Europe 2020 strategy, to support the EU's objective of high-level employment, guarantee adequate social protection fight against social exclusion and poverty and improve working conditions” (EIF, 2017:12). Through its Microfinance/Social Entrepreneurship axis (3rd Axis), which accounts for 21% of the total budget of 919M€, that is 193M€ of the programme, it supports: **i)** the development of social enterprises by facilitating access to finance, **ii)** vulnerable groups who want to set up or develop their business, **iii)** micro-enterprises through loans and **iv)** microcredit providers (financial intermediaries) through guarantees. During the period 2015-2018, EaSI funded 13 projects with the specific task of supporting Member-States in strengthening their social finance markers by enabling, among others, “social enterprises to take on repayable finance for developing and scaling-up their innovative business model” (Commission, 2019:57).

Particularly for micro-credit providers, EaSI has developed the *EaSI Guarantee Instrument*, which is specifically dedicated to microfinance and social entrepreneurship. One of its key objectives is to increase [the availability of and access to](#) finance for vulnerable groups wishing to launch their own enterprises, micro-enterprises, and social enterprises, both in their start-up and development phases.⁸ By the end of 2016, twenty-five (25) guarantee agreements have been signed by financial intermediaries for social entrepreneurship for a total amount of 43,4 million, so as to cover subsequent loans towards SEs, for up to 500,000 (EIF, 2016:5). Until October 2019, 31 EaSI social entrepreneurship guarantees and counter guarantees have been provided to banks, involving 16 countries (Spiess-Knafl & Scheck, 2020:15).

➤ **European Social Entrepreneurship Funds (EuSEF)**

The European Social Entrepreneurship Funds (EuSEF) have been established so as to facilitate access to funding for social entrepreneurs. [Regulation \(EU\) No 346/2013](#) prescribes uniform requirements and conditions for managers of collective investment for the marketing of qualifying social entrepreneurship funds to eligible investors across the Union. However, “as of April 2016, only 5 EuSEF funds were notified to ESMA⁹” (EVPA, 2018:1) and this led to two consequent amendments of their regulation¹⁰.

According to the central database of managers of Social Entrepreneurship Funds, from May 2014 until November 2018, eleven (11) EuSEF European Social Entrepreneurship Funds have been established channeling funds towards the EU Member States, and they are based: 2 in the UK, 2 in France, 3 in Germany, 2 in Finland, 1 in Spain, 1 in Netherlands¹¹.

➤ **Social Impact Accelerator (SIA) instrument.**

The Social Impact Accelerator (SIA) is the first pan-European public-private partnership addressing the growing need for equity finance availability to support social enterprises. It operates as a fund-of-funds, managed by EIF, and invests in social impact funds, which strategically target social enterprises across

⁸https://www.eif.org/what_we_do/microfinance/easi/easi-guarantee-instrument/index.htm, accessed on 10/11/2019.

⁹ European Securities and Markets Authorities

¹⁰ **1st Amendment:** Regulation (EU) 2017/1991 of the European Parliament and of the Council of 25 October 2017 amending Regulation (EU) No 345/2013 on European venture capital funds and Regulation (EU) No 346/2013 on European social entrepreneurship funds.

2nd Amendment: Regulation (EU) 2019/1156 of the European Parliament and of the Council of 20 June 2019 on facilitating cross-border distribution of collective investment undertakings and amending Regulations (EU) No 345/2013, (EU) No 346/2013 and (EU) No 1286/2014 (Text with EEA relevance).

¹¹ https://registers.esma.europa.eu/publication/searchRegister?core=esma_registers_eusef, accessed on 12/10/2019.

Europe. The SIA has managed to raise until 2015, 243m Euros¹² and is principally channeling funds towards social impact financing aiming at achieving a measurable social and/or environmental impact.

➤ **EFSI Equity Instrument**

The European Fund for Strategic Investment Equity Instrument provides access to financing for SMEs, Social Enterprises, and Social Sector Organizations established or engaged in entrepreneurial activity in EU Member States during their entire lifecycle, from the pre-commercial phase up to their expansion and growth stage of development. Through EFSI, the European Investment Fund provides, for the first time, investments with the intention to generate a social impact, targeting social enterprises and social sector organisations, whereas the EFSI Equity Instrument is deployed in the form of the Expansion and Growth windows¹³.

The contribution of Investment Funds (EIF, EFSI) and instruments in the development and growth of SEs is becoming more evident during the last years. Beyond the emergence of new financial instruments and institutions in the social finance market, the Structural Funds of ESF and ERDF are pivotal in the channeling of funds and the development of financial instruments supporting social entrepreneurship and the development of the “social finance space” (Branch, 2019)¹⁴. ESF and ERDF support local development, social investment at the government level, and social entrepreneurship by providing financing and channeling funds through member states National Operational Programs (OP). They have achieved a substantial contribution of funding and development of financial instruments for social purposes amounting by the end of 2017 to “557 million Euros of Operational Programs in funding agreements in 7 Member States, of which 361 million of ESF come from ESF” (Commission, 2018:112).

ESF is also funding the landmark for research and innovation Horizon 2020 program, which channels funding for social innovation¹⁵, financing public, private and social entrepreneurs and third sector organizations. Another EU program, the Programme for the competitiveness of enterprises and small and medium (COSME) has also recently engaged in financing social endeavors. Following the European Social Economy Regions Pilot (ESER) in February 2018, aimed at raising awareness and build networks of social economy stakeholders, the EU Commission, through its Executive Agency for Small and Medium-sized Enterprises (EASME) has launched the “Social Economy Missions” calls for funding projects, that will accelerate the development and acknowledgment of particular aspects of social economy at a regional and local level and enhance its inter-regional dimension.

It can be argued that the social finance instruments and the institutions of a social finance and investment market that emerged in the European Union as a response to the ever-increasing demand and need for alternative finance methods brought up by international economic crisis and the emergence of new social business models are here not only to stay but running in parallel to the traditional finance market, to support new investment cultures and markets. “In most European countries, there is already a social enterprise and social finance market, however nascent or young” (Commission, 2016:6), with different social finance instruments, markets, cultures (TEPSIE, 2012) and social economy traditions (Spiess-Knafl & Scheck, 2020:7) and legal frameworks. It may be argued that the efforts for the establishment of an EU-wide common institutional and regulatory framework for the financing of social enterprises and social economy organizations through the deployment of social, financial institutions and instruments have led to the development of an EU “social enterprise financial ecosystem” (EIB, 2016:11) with actors (including all non-governmental and specialist support networks and organizations) along the demand/supply spectrum interacting and creating social and economic value, generating growth and employment and promoting sustainable development.

¹² https://www.eif.org/what_we_do/equity/sia/index.htm?lang=-en, accessed on 12/11/2019.

¹³ https://www.eif.org/what_we_do/equity/efsi/index.htm, accessed on 12/11/2019.

¹⁴ <https://www.pioneerspost.com/business-school/20191028/accelerating-change-eu-policy-maker-s-perspective-of-social-finance>, accessed on 9/11/2019.

¹⁵ <https://www.socialchallenges.eu/en-GB/community/4/About>, accessed on 10/11/2019.

2.3 Social finance and investment initiatives in EU Mediterranean countries

The proliferation of social financing instruments and mechanisms doesn't automatically imply neither that the supply/demand gap has been effectively encountered in the EU nor that social economy organizations have sufficient access to appropriate information about social finance opportunities on the one hand and the capacity to become recipients of the financing products (*investment readiness*) and services available on the other. Although EU regulations and establishment of financial instruments in the framework of the European Social and Investment Funds (EFSI) are common for all EU member states, there's diversity among the instruments and mechanisms used and deployed among EU countries, partly depicting the different regulatory frameworks, social policies, and the various social enterprise business models and forms of social economy organizations operating in each country. Particularly, regarding the three countries in concern, there's also a marking difference regarding the use of the available financing instruments such as the EaSI or the focus on certain aspects of social entrepreneurship such as social innovation. Whereas in Portugal, social innovation has seen a substantial focus and financing; in Greece, it is underfunded as most of the social economy sector.

Although the first laws establishing social economy organizations were enacted in countries of southern Europe and the Mediterranean, such as Spain¹⁶Portugal¹⁷, Italy¹⁸, and Greece¹⁹, "European countries where social investment markets are seeing the strongest emergence include Belgium, Germany, Netherlands, and the UK" (Commission, 2015:90), with another study placing France and Italy among the leading countries (Rizzi et al., 2018:805). In the following section, a brief reference on the different instruments and programs used in financing social enterprise activities in three European Mediterranean countries will be presented, namely Spain, Portugal, and Greece, in order to highlight the variations of methods and mechanisms of financing SEs and provide an overview of the development of the social finance markets in Southern Europe.

Spain

According to the Spanish Social Economy Employers' Confederation (CEPES), there's as of 2018, about 42.140 social economy organizations in Spain, of which 281 are Social Integration Enterprises, 670 Sheltered Employment entities, and 19.954 cooperatives, which undoubtedly consists a strong feature of Spanish economy²⁰. It is estimated that the social economy sector accounts for 10% of Spain's GDP. However, despite the fact that there's a growing number of impact investment funds in the country, the "supply of capital for impact investment in Spain is still limited and as a result, the financing needs of social enterprises are often left unfulfilled" (Ruiz de Munain, 2019:11), and the use of instruments such as "Social Impact Bonds and Pay-by-Results are (*also*) limited" (*ibid*, p.12, *parenthesis added*).

Although social economy organizations have during the crisis "faced a drastic reduction of 11 percent on average in public subsidies" (Lopez-Arceiz, 2017:2) and the finance gap for "microfinance and social entrepreneurship combined has been estimated at about 700-750million Euros" (de la Mata, 2019:4), initiatives and the development of financial instruments form the supply side confirm the emergence of a rising social finance and investment market. According to de la Mata, "Spain is the EU member state where the EaSI Guarantee Instrument has been most used, with 6 transactions signed with 4 intermediaries, 3 in the field of microfinance and 3 focusing on social entrepreneurship" (de la Mata, 2019:4). In addition to the EaSI Guarantee Instrument, other social finance tools and programs employed in the Spanish social finance market include:

¹⁶ 'Social initiative cooperative' (1999)

¹⁷'s Social solidarity cooperative under Cooperative Code (Law No. 51/96), adopted in 1997

¹⁸ 'Law on social cooperatives' (381/1991)

¹⁹ 'Law 2716/99 (article 12) creating Limited Liability Social Cooperatives' (Koi.S.P.E.)

²⁰ https://www.cepes.es/social/statistics&e=number_institutions_evolution, accessed on 13/11/2019.

♦ **Solidarity Mutual funds (SMFs)**

Solidarity Mutual funds (SMFs) are financial products that have as an investment goal of their savers and investors, the implementation of a specific social mission or fund a social impact project, together with the generation of profit for them and the facilitating bank or credit union. There are at present eight (8) SMFs in Spain, which support the economic and social activities of 951 social economy organizations (Lopez-Arceiz et al., 2017:7).

♦ **The Project “MARES - Resilient urban ecosystems for a sustainable economy”** is a 5.999.509million Euros project, with the EU’s European Regional Development Fund contributing 4.799.607million Euros, through the “Urban Innovative Actions” Initiative for the 2014-2020 programming period. The project is deploying the models and values of the social economy to generate economic activity, create jobs, and improve employability among the unemployed and people at risk of social exclusion²¹.

♦ Cooperative banks such **Caza Laboral Popular- CLP**, supporting the Mondragon Network²² funding needs and the development of new cooperative organizations and **Cajamar Caja Rural** as the largest agricultural cooperative bank in Spain with more than 40.000 employees, providing and contributing at local development in Spain's regions are key players in channeling funds and enable the development of the Spanish social economy sector.

Portugal

Despite the fact that in Portugal, the "Social Economy Law" (June 2013), excludes market-oriented organizations and thus social enterprises, from being considered part of the Social Economy Sector, there are significant developments regarding the deployment of social finance instruments providing financing solutions to social economy organizations (SEOs). There’s an estimate of “55.000 SEO’s in Portugal with around 216 social entrepreneurship (until February 2015) initiatives” (IES-Social Business School, 2016:16)²³, whereas the funding needs of the social economy sector in Portugal is estimated at net 750m Euros (Portuguese Social Investment Taskforce, 2015:4). In December 2014, Portugal pioneered "in the use of ESF for financing the full life cycle of social innovation and social entrepreneurship projects" (EIB, 2018:7), and the establishment of the Social Innovation Initiative (SIB). The Portuguese SIB is “allocating 150 million (from) ESF with two main goals: to finance social innovation and social entrepreneurship projects and to promote the necessary ecosystem for its future sustainability, creating a social investment market” (EIB, *ibid*:9, *parenthesis added*). It includes the development of four social finance supporting instruments:

♦ **Capacity-building for Social Investment**

It is a financing instrument that aims to improve the organisational and management competencies of organisations and teams directly involved in social innovation and social entrepreneurship projects. It provides grant support up to EUR 50 000 (in the form of vouchers) to finance small capacity-building plans. (EIB, *ibid*:11).

♦ **Partnerships for Impact**

It is an ESF grant structured as venture philanthropy financing, leveraging other social investments to support high potential and high impact projects. It provides grant support of at least 50.000 Euros to finance, during the first one to three years, projects that intend to further develop proven social innovation concepts – innovative products, platforms, or services to help to solve societal problems (EIB, *ibid*:13).

♦ **Social Impact Bonds (SIBs) program**

Portugal is the first country in the Mediterranean that utilized a Social Impact Bond. In February 2015, the first SIB pilot was launched by Calouste Gulbenkian Foundation so as to tackle primary school retention in

²¹ https://ec.europa.eu/regional_policy/en/projects/europe/supporting-growth-in-madrids-social-economy, accessed on 13/11/2019.

²², comprise the largest worker cooperative in the world (102 cooperatives and 261 companies in total). It has 67.000 employees in Spain, about 82.000 in Europe in sum (2018), and has invested about 28m Euros towards activities with a social impact (2018).

²³ Law No 18/2015 4 March, relating to 'Venture Capital, Social Entrepreneurship and Specialised Investment (Venture Capital Law)' made it possible "for the first time in Portugal to use retail social investing to catalyse private funding towards social enterprises", <https://evpa.eu.com/nexus/portugal> accessed on 13/11/2019.

Lisbon (Portuguese Social Investment Taskforce, 2015:18). The Social Impact Bonds program consists of grant support to pay for *validated* outcomes achieved by specific social innovation projects in an area of public policy - Employment, Social Protection, Justice, Health, and Education (EIB, *ibid*:14).

♦ **Social Innovation Fund**

Portugal is one of the first countries in the world to set up a fund for Social Innovation²⁴. SIF provides “access to finance for Social Economy organisations (SEO) and social start-ups involved in social innovation and social entrepreneurship projects” (EIB, *ibid*:16) Debt finance and Equity²⁵.

Other programs and instruments in the Portuguese social finance market include:

♦ **Social Investment Lab**

The Social Investment Lab is the first social finance intermediary in Portugal, founded in October 2013. It is a social investment intermediary that brings together social organizations, investors, and the public sector towards finding innovative solutions for social problems (Miguel, 2016:13).

♦ **Social Invests program**

The Social Invests program²⁶ is 12,5 million Euros program funded by ESF and implemented by CASES - António Sérgio Cooperative for Social Economy and addressed to:

i) Private institutions of social solidarity, ii) Mutuals, Cooperatives, iii) Local development associations and iv) Other social economy non-profit entities.

It provides up to 100.000€ with up to 1,85% interest rate.

Greece

Like many EU countries, there is a supply/demand gap concerning financing the social economy sector in Greece and SEs in particular. Lack of finance is considered “one of the main hindering factors for the development and growth of social enterprises in Greece” (Commission, 2016:17) and of the social economy sector, as well as a fragmented and disorganized civil society, where the private non-profit sector operates as the ‘shadow economy’ (Tsobanoglou, 2012:109). However, indications of an emerging social finance market for SEs are evident. According to the General Registry of Social and Solidarity Entities, as of October 2019, there are about 1.303 active social enterprises in Greece²⁷, which having in mind the recent economic turbulence that hit the country, they find it extremely hard to scale and grow their activities. Beyond the very limited development of financing mechanisms and instruments in the country, SEs find themselves “also largely excluded from access to mainstream public support schemes (*which is*) aimed at SMEs in general” (*ibid*, 2016:17, *parenthesis added*). According to a British Council survey, financing for social enterprises is more likely to come “from the private sector than the state or local authorities” (British Council, 2017:62). In contrast, Greek social enterprises “are more likely to receive donations, project-based grants or in-kind donations than receive repayable loans and mortgages” (*ibid*, 2017:63).

Recent developments in establishing supporting financial structures and instruments for the financing of social economy organizations and SEs in Greece include:

♦ A 7,5million Euros **Microfinance Guarantee Agreement** signed on May 2016, between the European Investment Fund (EIF) and the Cooperative Bank of Thessaly (CBT) under the EaSi program, facilitating financing in the form of loans for up to 25.000 Euro micro-entrepreneurs, including cooperatives and social enterprises²⁸. EIF is also supporting the **SEE GR project**, whose main objective is “to develop and establish the Greek Social Enterprise Guarantee Fund that suits the needs of social enterprises in Greece”²⁹.

♦ **EU Structural Funds**

²⁴ <https://www.fis.gov.pt/en/what-is-the-sif/>, accessed on 13/11/2019.

²⁵ <https://www.fis.gov.pt/en/sif-debt-how-it-works/>, accessed on 13/11/2019.

²⁶ <https://www.cases.pt/programas/social-investe/#>, accessed on 14/11/2019.

²⁷ [https://kalo.yeka.gr/\(S\(asmz4b1qbfgykflsbbpfkaj\)\)/login.aspx?ReturnUrl=%2f](https://kalo.yeka.gr/(S(asmz4b1qbfgykflsbbpfkaj))/login.aspx?ReturnUrl=%2f), accessed on 10/11/2019.

²⁸ https://ec.europa.eu/commission/news/eu75-million-eu-financing-micro-entrepreneurs-greece-under-juncker-plan-2018-jul-04_en, accessed on 13/11/2019.

<https://bankofkarditsa.com/site/index.php/el/proionta-ypiresies/easi>, accessed on 13/11/2019.

²⁹ <http://www.see-gr.eu/site/index.php/en/>, accessed 13/11/2019.

Through the ESF and ERDF about 164,5million Euros have been assigned and channelled towards social and solidarity economy organizations for the period 2014-2020, for the provision of grants, the development of supporting structures, and establishment of financial instruments and institutions (Commission, 2016:72). According to Law 4430/2016 (article 10), a ‘Social Economy Fund’ has been instituted, whereas the ESF funded action “Centres Supporting Social and Solidarity Economy”, will channel 11,3 million Euros towards social enterprises for in 2019-21³⁰.

♦ **Third sector microfinance initiatives**

- **Action Finance Initiative** is a microfinance provider organization in Greece targeting the combat against social and financial exclusion, providing loans up to 10.000. It was founded in 2014, by Action Aid Hellas and Adie³¹.

- **The People’s Trust** is a non-profit organization, which supports entrepreneurs who do not have access to other sources of funding. It provides micro-grants to entrepreneurs who wish to either create a new business or grow an existing business, with grants up to 10,000 Euros as starting capital³².

♦ **Crowdfunding**

Give and Fund is a crowdfunding initiative with a substantial record of funded projects through its OneUp platform³³. It is an online hub for individuals, start-ups NGOs, and companies active in CSR initiatives who wish to raise capital in an economical, safe, and transparent way for people and organizations with a social cause.

♦ **Cooperative Banks** in Greece consist of key actors for local and regional development providing solidarity financing and loans towards entrepreneurs. Chania Cooperative Bank recently became a member of the European Federation of Ethical and Alternative Banks and Financiers (FEBEA)³⁴. The seven (7) operating Cooperative Banks in Greece, despite their rapid development, only hold a small percentage of the Greek credit market.

♦ Establishment of the **Hellenic Development Bank**, (replacing the National Entrepreneurship and Development Fund), Law 4608/25.04.2019, where in Article 1, par. 3 among its 10 goals, goal no (9) is “the promotion of social and solidarity economy”.

♦ The **Hellenic Fund for Sustainable Development (ETVA)** is the only mutual fund in Greece dispensing investment funds based along with financial, social, and environmental criteria.

3. Results and Discussion

Recovering from an economic crisis hasn't been an easy path, regardless of how strong or weak one's economy was during its outbreak and evolution. For countries that have sought for external funding and support, as was the case for the three EU Mediterranean countries in perspective, reversing high poverty (including child poverty and material deprivation), unemployment and youth unemployment rates³⁵ (including NEETs rates)³⁶ And reducing social inequalities has and still is an ongoing challenge that needs to be met. During the crisis, SEOs have conducted to "preserve employment in traditional sectors, create new employment in emerging sectors, and provide structure to new professions that are at risk of informality and exploitation" (ILO, 2017:16). However, the institutional arrangements and the development of supporting

³⁰ <https://www.espa.gr/el/Pages/ProclamationsFS.aspx?item=4009>, accessed on 14/11/2019.

³¹ <https://www.afi.org.gr/en/funding>, accessed on 14/11/2019.

³² <https://www.thepeoplestrust.org/en/what-we-do>, accessed on 14/11/2019.

³³ https://www.oneup.gr/giveandfund/homepage?request_locale=en, accessed on 14/11/2019.

³⁴ <http://www.epixeiro.gr/article/127835>, accessed on 14/11/2019.

³⁵ Greece has the highest youth unemployment (under 25ys) rate among the EU 28 member states rising to 33,2% during the 2nd quarter of 2019, followed by Spain 32,8% and Italy 28,7%, while in Portugal it is 19,4% (Eurostat).

³⁶ As of 2018, among the three EU Mediterranean countries, Spain's 16,7% NEETs rate has a 7,3% reduction since 2013, where it has reached each peak during the crisis with 24%. Respectively, Portugal 9,9% NEETs rate has a 7,2 reduction from 17,1%, while Greece has the highest reduction of its 30,8% rate in 2013, with 8,5% ranging at 22,3% (Eurostat).

mechanisms for their financing differ from country to country and lead to the development of an EU social finance market with no homogeneity and easy access to finance, where it is needed more: towards the small and medium-sized SEOs.

In this paper, beyond the analysis on the emergence of social finance in scientific discourse and its practical application at the EU setting, a brief overview and reference to social financing initiatives and tools was displayed, which included three EU Mediterranean countries that were hit by the crisis and implemented measures to support their social economy sector especially regarding its financing. Among the three countries reviewed in this paper, in Portugal and Spain, there is a larger use and deployment of EU instruments than in Greece, as well as a larger number of financial tools developed in funding SEOs. The state and the EU are the main social finance providers, with private investors and institutional actors such as commercial banks, increasing the volume of their participation. It seems that during the crisis, both Spain and Portugal have been mobilised and adapted faster in including and developing social investment and innovation strategies and consequently, the development of supporting frameworks for their social economy sectors, contrary to Greece where despite the move towards advancing its legal framework and public procurement procedures for SEs³⁷. "There is still a lack of sufficient social financing instruments, as well as little use of the EU financing and supporting framework. It is noted that in Spain, "the job losses in the social economy have been 6,5% lower than the rest of business", in the midst of the crisis (European Parliament, 2016:103), signifying at a large degree the resilience of the SE sector in large systemic financial crisis.

During the last decade, a great rise in numbers and proliferation of social financial instruments, as well as a significant volume of allocated capital for ventures with social objectives and impacts, has been witnessed across the EU, signifying an institutional and structural change both in terms of the functioning of the EU internal market and in terms of a change in the EU socio-economic model of development. Since the establishment of the SBI in 2011 and during the current 2014-2020 programmatic period, the EU, through the European Structural and Investment Funds, has unfolded its strategy for a more inclusive EU, by specifically supporting the growth and development of the social economy sector. Social enterprises (SEs) and social business organizations have been at the center of the EU efforts for promoting sustainable development, where the cooperation among corporations and private firms with social enterprises and non-governmental organizations has been consolidated as a feature in this new era of development, which has at its core the attainment of a social and environmental goal, along with financial benefits.

Although social finance markets follow a different pace and path of development in EU countries, with marking differences in scope and breadth even in crisis-hit EU Mediterranean countries, which are generally considered as nascent social investment markets, it is evident that they contribute towards the establishment of enabling conditions for SEs to grow and expand their activities and operations. The rapid development of social finance instruments and institutional framework for social investments in the EU has, among others, surfaced the growing concern of the lack of alternative measures and mechanisms in cases of public fiscal constraints in leveraging and supplying funding and private sector reluctance to invest. In this framework, the response at the EU level is conducting to evidence of an emergence of an EU social finance ecosystem that provides enabling conditions for sustainable development, balancing between the public and the private interest in favour of the general interest and well-being.

4. Conclusions

Despite the rising volume of capital and services that they distribute and provide, social finance markets are nascent markets. Both the concept and the field of social finance are considered young in their epistemology and theory formation. In every part of the world, social finance initiatives develop in different socio-economic conditions forming different models, practices, and traditions. Among the findings of this review is that social finance institutions and market formation differ from one setting to another, even within an EU single market perspective, and that also applies to the EU Mediterranean countries under review. Even

³⁷ Law 4412/2016 "Public procurement of works, supplies, and services

within the EU, different social finance markets develop depending on each member-state's regulatory status and capacity to use and promote the instruments provided, as well as the financial needs of its social economy sector and the degree of its embeddedness in the EU member-states social and public policies.

Social finance is linked to knowledge-based entrepreneurship and social innovation and contributes to sustaining local development and social economy endeavours. During the recent pandemic, the need for social interventions rises significantly, and so does the need for facilitating the distribution of resources for addressing social needs. Further research is required, particularly for interdisciplinary analyses, in order to surface more aspects of social finance, both in the EU and the EU Mediterranean countries, as well as for contributing to the framing of the worldwide mosaic of social finance. Despite the research limitations in this review, the paper has identified the recent development of social finance markets both in Europe and in part of the EU Mediterranean countries, as well as their contribution in supporting local development, especially in Spain and Portugal, when compared with Greece, together with evidence on the establishment of social finance as a young field of research, which conceptualizes that financial, social and environmental goals could be achieved all together and not independently, as the traditional finance paradigm presupposes.

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An educational paradigm shift: Technology-enhanced adaptive and hybrid education

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Abstract. Barnett R. (2000) argues that educational institutions need to prepare students for "super complexity", where "the very frameworks by which we orientate ourselves to the world are themselves contested" (p. 257). Learning to think through practical methods develops critical thinking skills for dealing with super complexity since the frameworks the students use to consider when learning is contested and likely to change. There are some questions about whether educational institutions actually shape graduates prepared for practical and ethical engagement with their scholarly, professional, and personal worlds. The overall aim of this research paper is to provide the reader with insights through the review and exploration of various current and emerging new technologies that might be adapted and used in high school education in order to help the development of a better educational system which is aligned with the requirements of the jobs market. Additionally, based on this research's results and further improvements based on new developments, a competitive business value proposition has been created, and together with several educational organizations, a proposal for a public policy on the topic will be developed in order to generate a qualitative paradigm shift and technological (r)evolution by reaching the attention of key decision-makers and stakeholders in the high school education in Romania's environment.

Keywords: Artificial Intelligence, digitalization, hybrid education, technology, Romania.

JEL Codes: I00, I21, P46

1. Introduction

"We cannot educate the citizens of tomorrow based on the requirements of yesterday."

— Abhijit Naskar, Every Generation Needs Caretakers: The Gospel of Patriotism

"If we are going to succeed in education, we must do more than everyone else."

— Aaron L. Smith, Ph.D., Blank Check: What Would You Do If You Were Asked to Reinvent Public Schools?

These educational technology approaches have evolved from early uses and one-to-many types of pre-digital learning (of audiovisual aids to individual and networked computers) into various forms, intended for regular use at a single location (immobile) or to smart portable technologies (mobile), as well as virtual, augmented or mixed realities, avatar-based immersive environments, wearable, and location-aware devices and cloud computing. Different terms have been utilized en-route to allude to educational technologies, such as learning advances and environments and instructional-systems innovations. It is

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specifically within the scope of an overview that this paper is naming these technologies and exploring them to present a wide translation to cover instructional frameworks, learning techniques, and software and hardware. The view is that anything that reliably can bolster learning and guidance can be considered as an educational model of technology innovation. Few educational technologies are basic and have existed for a long time now; others are mind-boggling, and new ones are finding their way into instructive educational settings daily. Educational technology alludes to the utilization of tools, apparatuses, procedures, processes, techniques, assets, and methodologies to improve learning encounters and experiences in an assortment of settings, for example, in formal and non-formal learning, lifelong learning, need related learning on request, work environment learning, and just-in-time as well as just-in-case learning.

Educational technology approaches evolved from early uses of teaching tools and have rapidly expanded in recent years to include such devices and approaches as mobile technologies, virtual and augmented realities, simulations and immersive environments, collaborative learning, social networking, cloud computing, flipped classrooms, and more. Instructive innovation approaches advanced from early employments of showing apparatuses and have quickly extended as of late to incorporate such gadgets and approaches as portable advances, virtual and expanded real factors, recreations and vivid conditions, collective learning, long-range informal communication, distributed computing, flipped study halls, and that's just the beginning. Educational technology is an umbrella term that includes a variety of technological tools and resources and their use through procedures and approaches that aim to enhance learning experiences in a number of different settings, including formal and informal learning. Educational technology is often characterized as a 'game changer' because it is considered as a tool that has the power to positively impact the current pedagogical approaches to teaching and learning (Selwyn, 2016; Vaughan and Beers, 2017), starting even from early childhood. With the advent of such advanced technologies as the ones that will be presented below, it can also become a one-to-moment learning delivery (Cognizant, 2018, p. 5).

Educational technologies such as Artificial Intelligence (AI), Robotics, the Internet of Things, Augmented, Virtual, and Mixed Reality (AR, VR, respectively MR) have been raising the eyebrows for the past decade and are considered as key components for fostering the investments in the Information and Communication Technology (ICT) and for emphasizing on the study of educational technology in order to facilitate the learning and the improvement of performance by shaping, using and managing the appropriate type of technologies in terms of resources as well as processes. The ICT investment occurs in both "classical" Information Technology (IT) as well as in Telecommunication Services. The forecasted investment in this industry is supposed to jump from \$4.3 trillion in 2016 to \$5.6 trillion by 2021. Therefore, as a society, we are witnessing a considerable increase in spending on new technologies, overall, in various domains, including education, for the future of the classroom. Whereas the investment in the more traditional Information Technology is stagnating or even decreasing, it is expected that the investment in the emerging new technologies will be about three-quarters of the total Information and Communication Technology by next year (Dignan, L., 2017). The amount that is spent globally on technology in education is expected to increase by US\$ 342 billion by 2025 (Goodwin, J., 2020). This does not necessarily mean it is precisely the technology itself that improves learning. Various digital solutions to introducing technology in education only reinforce bad habits and obsolete practices.

As a research field, Artificial Intelligence was conceptualized already 75 years ago, with eloquent work done to show whether machines can feature human-like behavior. It was 70 years ago when English mathematician Alan Turing delivered his test of whether machines can think. About 65 years ago, Artificial Intelligence became a distinct field of research in Computer Science (Southgate, E., et al., 2019, p. 18). Artificial Intelligence's initial years, however, can be considered as deceiving in terms of progress. Although hardware achievements progressed even more, so did the ones in Artificial Intelligence, eventually. About 50 to 40 years ago, humanity was already talking about Knowledge-Based Systems (KBS-s). Artificial Intelligence was presented 30 years ago as a mixed form of automatic translation, natural language processing, voice recognition, and also game theory. That was it, back then. Nowadays, however, the

Artificial Intelligence moniker encompasses almost everything related to the use of science and technology combined. For instance, the scientific community considers other research fields from 30 years ago, e.g., Computer Vision and Image Processing, Pattern Recognition, Neural Networks, Fuzzy Algorithms, Bayesian Approach, Kalman Filtering, as actually merged with Artificial Intelligence. under the Machine Learning moniker.

Artificial Intelligence (AI) is a computer's ability to reason, learn from experiences, and solve tasks as if it were an intelligent being. However, in practice, this ability will not give the powers to outrun or be smarter than its creator. Millions of years of evolution in a continuous non-digital environment cannot be beaten by their truncation on a finite number of bits in a digital system.

Artificial Intelligence can be commonly classified into three categories, such as the following:

Type	Position	Short description
Weak	1. Narrow	Single Task - Reality with no uncertainty or diversity
	2. General	Perception of mind theory and self - awareness
Strong	3. Singularity	Hypothesized and abstract only, uncertainty accepted but
Super-intelligence		classified as temporary in a search for absolute answers

Source: Retrieved from ThinkAutomation.com

Augmented Reality (AR) is a virtual interface between the user and the real world that enables the user experience with otherwise missing capabilities. It is now extendable from its “classical” form of tech gadgets onto devices such as smart goggles, high-definition 3D screens etc.

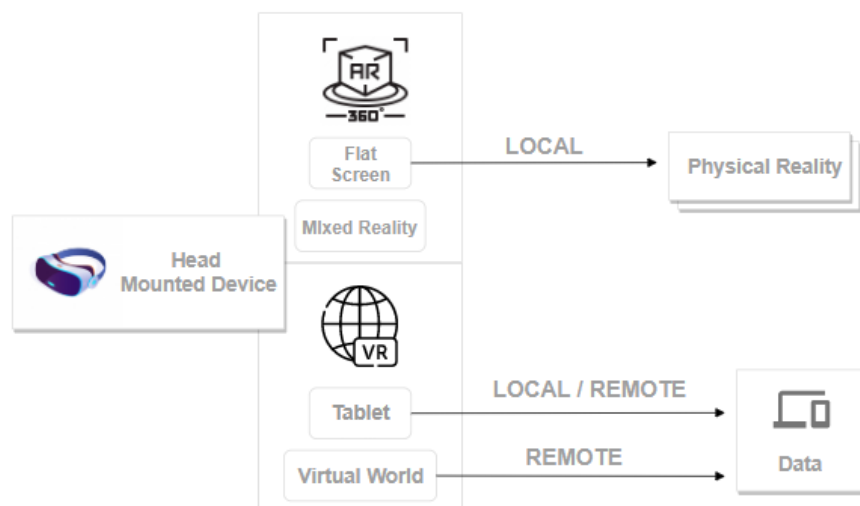
Virtual Reality (VR) is the human experience’s immersion into a simulated environment and uses computer technology to create something similar or completely different from the real world. Unlike traditional user interfaces, Virtual Reality places the user inside an experience. Instead of viewing a screen in front of them, users are immersed and able to interact with 3D worlds.

Mixed Reality (MR) is a hybrid reality which forms between Virtual Reality worlds and the real world with the scope to produce new environments and visualizations, where physical and digital objects co-exist and interact in real time.

Needless to say, the design and the user experience of these four technologies are rather different. Whereas Artificial Intelligence is an inbuilt software, the other technologies actually augment or even replace the real environment with virtual objects, backgrounds, and information. However, all four (AI, AR, VR, and MR) can be combined and merged into one; one such emerging technology may be called augmented hyperreality, defined as "the generation by models of a real without origin or reality referent" (Baudrillard, 2015); in which entertainment, information, and communication technologies provide intense experiences by involving scenes of ordinary everyday life, as well as the codes and models that structure everyday life. It is a combination of Artificial Intelligence, Augmented Reality, Virtual Reality, and Mixed Reality. Others, however, use the moniker extended reality (Marr, B., 2019). From the perspective of these types of technologies used in education, educational technology could be translated and understood as the use of emerging and existing technologies with the scope to improve learning experiences in a variety of instructional settings, such as formal learning, informal learning, non-formal learning, lifelong learning, learning on demand, and just-in-time learning. This research paper, as previously stated, will briefly cover only the formal as well as informal learning within the high-school cycle in Romania.

Figure 1 illustrates a possible environment applicable for classroom interaction that combines the aforementioned technologies.

Figure 1. Technology-based Classroom Interaction Environment



Source: Interpreted and adapted by the author from *Virtual Technologies Trends in Education*

However, the "intrusion" of these technologies in day-to-day life raises various philosophical, social, and economic natures. In the education industry, in particular, an adequate amount of time is needed in order for both teachers and sometimes also the students to get properly skilled and knowledgeable regarding the integrative use of such technologies. Section 1 of the paper provides literature and historical overview, key definitions and principles, various perspectives, and representative developments, all of which will be explored and elaborated in the subsequent paragraphs. Sections 2 and 3 will help explore a bit in-depth the potential curriculum reform based on the perceptions and reflections of the descriptive questionnaires' respondents regarding the future of the high school classroom in Romania.

The expected findings of this research paper consist of reinforcing the assumption that there is a fundamental and technological need to improve the quality of learning and teaching within Romanian high schools in order to have better-skilled youngsters who can properly meet the 21st-century workforce requirements, tackling the school dropping and the migration phenomena because of the lack of the educational act' appealing as well as the practicality of the curriculum. There is definitely a "war of talent" undergoing, in view of the strong demand for highly innovative employees, but how could this need be met, considering that the current educational system is not accelerating innovation, does not emphasis the use of new technology and does not effectively collaborate with the main Business Industries and the Civil Society?

2. Research objectives and methodology

This research paper systematically reviews some of the most important achievements in bringing advanced technology into the classroom, implicitly into the educational process, and for learning purposes. Case studies of the technological revolution in educational reforms in several EU countries are being reviewed. The research methodology used consisted of descriptive questionnaires and a comparative case study based on Romanian high school students' and teachers' reflections and projections on the future classroom through digital technologies. This research paper's expressed mission is to promote the understanding and the enabling of innovative use of theoretical and practical principles of digital technologies in teaching and learning, and the improvement and sharing of interactive and future of skills-

oriented practices throughout Romania. To achieve this, a number of primary aims and objectives have been defined, one of which focuses on the improvement of curriculum and practices, another on increasing public understanding of technologies testing, integrating and effective implementation of technology into the classroom. Before embarking on conducting these two surveys, it is relevant to mention that a focus group analysis with participants from both parties was planned to take place, but it was postponed because of the COVID-19 pandemic. This showed that the topic tackled is even more pressing and current in the context of closed educational institutions and the emphasis on online schooling. Consequently, these questionnaire surveys were carried out as a more independent study than initially intended. That is why the surveys have had several open-ended questions to identify values and beliefs that are decisive when discussing a potential high school educational reform, contributing greatly to the understanding of public attitudes and the crafting of relevant conclusions as proposals for several solutions.

The research covers a slightly significant and wide range of public opinions on Romanian high school education from the direct beneficiaries as well as the providers, and begins with a summary of the key findings drawn from each survey analysis, followed by a comparative analysis of the explored different experiences, followed by the main conclusions and the identified strategic recommendations for communication and possible actions, based on the highlighting of some good practices. This research's scope was to collect responses from a number of Romanian high school students and teachers on educational teaching and learning assessment and practices, overall, as a system as well as individually, in order to describe and analyses the results from two survey questionnaires circulated among these two societal categories as part of an elaborated dissertation thesis for the master programme of Business Administration within The University of Bucharest, UNESCO Chair.

3. Results and Discussions

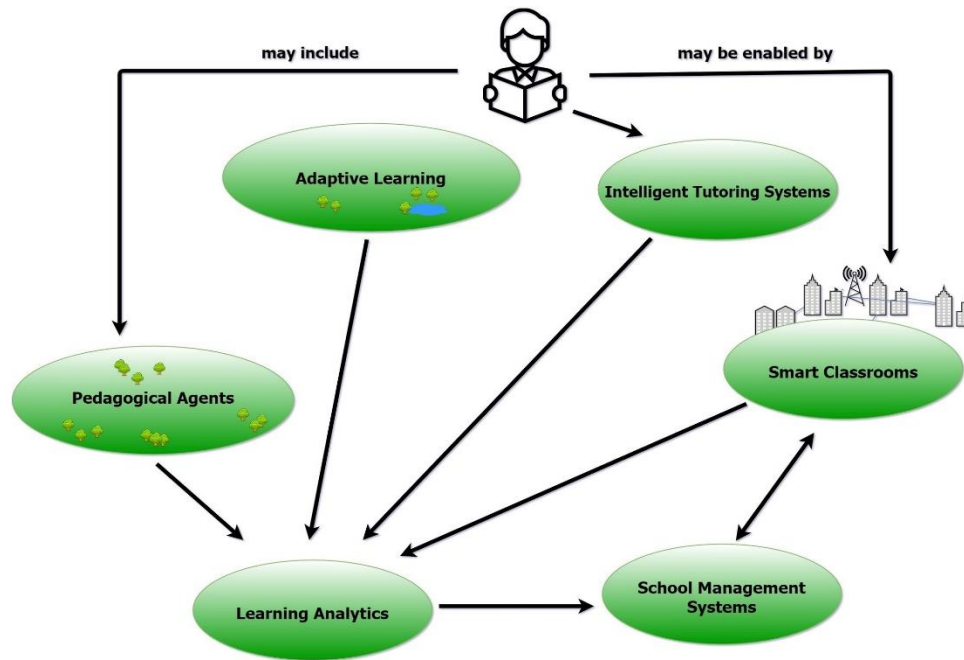
3.1 Artificial Intelligence in Education

We review below elements of advanced technology that are already used or that could be used for educational purposes. Particular attention is given to the possible issues that this use can raise, especially related to ethical and practical concerns. The advent of advanced technology into education was not a smooth or carefree one. In practice, multiple concerns are raised and need to be addressed. For instance, care should be taken in selecting the appropriate technology for educational purposes, as to respond to the following selection criteria (Huang, R., et al., 2019, pp. 60-66): be appropriate, be genuine, have a reasonable cost, be of interest, be organized and balanced, and be effective.

In various parts of the world, Artificial Intelligence in Education occurred even as early as the 1970-s, as a need to bring together technology, teaching, learning, and instructional processes. In this respect, it was desired first to automate tedious tasks like assessment, evaluation, testing, etc. This was based on the assumption that, true or false, automatic feedback could help parents as well to monitor the educational progress of their children.

Current achievements in Artificial Intelligence in Education according to (Southgate, E. et al., 2019, pp. 26-34), include: Intelligent Tutoring Systems – simulate one-to-one human interaction, Pedagogical Agents – virtual characters that are integrated into educational environments in order to facilitate instruction, Smart Classroom Technologies – based on the Internet of Things, and Adaptive Learning – an important instructional goal. A possible relationship among them is shown in Figure 2. Achievements of Artificial Intelligence in Education (AIED). Furthermore, in the following, we provide a brief presentation of each of them to offer a broader view.

Figure 2. Achievements of Artificial Intelligence in Education



Source: Interpreted and adapted by the author from *Artificial Intelligence in Education*

3.1.1. Intelligent Tutoring Systems

Intelligent Tutoring Systems (ITS-s) have been envisaged because, whereas tutoring is very highly effective instructional, in practice, students never take full advantage of the potential interaction with a human instructor/teacher. Before Intelligent Tutoring Systems, however, there was also Computer-Aided Instruction (CAI), which was capable of giving only a limited and conditional form of feedback to students, namely only after they answered the required questions. Intelligent Tutoring Systems consist of several types of scientific model: An expert model; A pedagogical model; A student model; A communication interface. In practice, Intelligent Tutoring Systems are highly effective and generally used within well-defined domains because of their simplicity with both pedagogical and student models but are not widespread yet. This is still a new development area within computer science and still raises some ethical issues, although it could still be, however, also a useful tool for teachers.

3.1.2 Pedagogical Agents

Pedagogical Agents (PAs) are lifelike virtual characters built into learning technologies to facilitate instruction. This was a step towards fostering the human-machine interaction in a more human-like direction. These are fully instructional to users through multimedia learning environments. PAs are not just conversational agents (such as chatbots) like in other fields of activity, but they can also have navigational functions and offer guidance because they are defined in relation to the context of their employment as

"learning partners" or "virtual tutors" in educational software. In practice, the educational systems can have multiple PAs that implement various roles: motivator, expert, coach, mentor, tutor, peer. An interesting feature of theirs is that, whereas they are generally designed as learning companions, PAs can become subjects to instruction. Opinions on their effectiveness as learning tools, however, vary. Views are mixed even on which way PAs are more effective – in speech or in writing. PAs are yet to be "taken advantage" of in their full purpose and capacity. However, if the emphasis is placed on their visual appearance instead of their instructional capabilities, then their meaning and significance are out of their intended scope.

3.1.3 Smart Learning Environments and Smart Classrooms

Smart Learning Environments are physical environments that are augmented with digital devices in order to foster better and faster learning (Huang, R., et al., 2019, p. 160). Key features of a Smart Learning Environment are Showing, Manageability, Accessibility, Real-Time Interaction, and Testing. Smart Classrooms (SCs) can be viewed as technology-rich, IoT-based customizations of smart environments which are aimed at: analyzing student learning behavior, facilitating student engagement, feedback to the teachers about how they are working, evaluating the impact of the curriculum activities, and research and development regarding smart environments for instructional purposes. However, it is still at an early stage, and it is not spared by ethical issues either.

3.1.4 Adaptive Learning

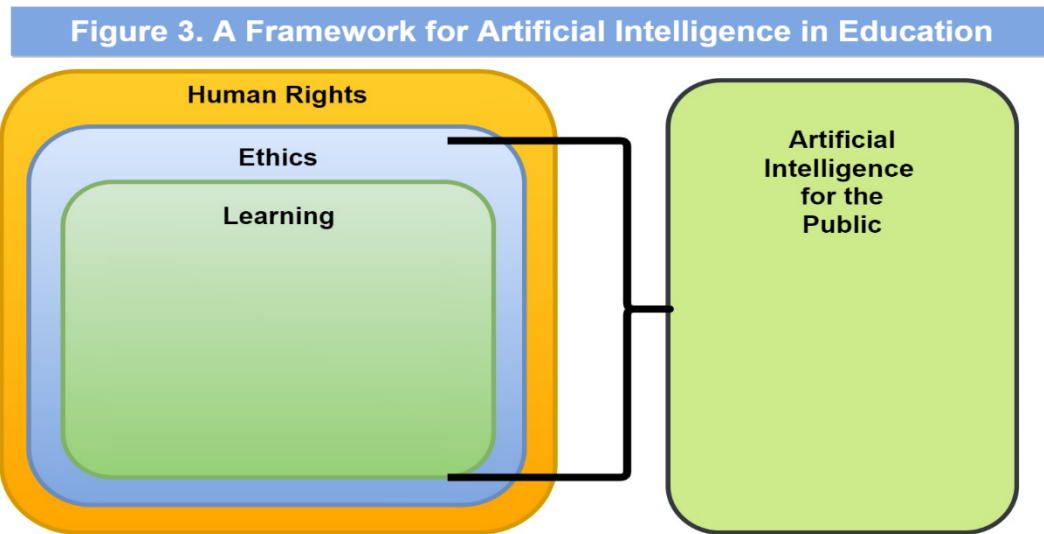
Adaptive learning is a customized instructional method aimed at developing the previous components of Artificial Intelligence in Education. Whereas Intelligent Tutoring Systems and Pedagogical Agents are rather user interfaces, Adaptive Learning consists mostly of invisible processes that run in the background rather than be witnessed as actions. It alters the way of teaching to tailor it according to the learner's needs and is also gradual as to be able to reach stages from hint-giving to the stage of competence acquisition. A particular detail and perhaps a drawback in the performance of such learning environments is that they rather use a large volume of data and visuals, witnessing the development of an educational data mining approach. Whereas the field is still growing, it has the potential of offering useful insights related to individual learning processes and to which approaches are better suited.

3.2 Artificial Intelligence in Education and Ethics

Artificial Intelligence in general and Artificial Intelligence in Education in particular, are not spared with regard to ethical questions. Those questions generally revolve around: Is Artificial Intelligence / in Education allowed to make decisions concerning human lives? What will be the impact? Will this do any harm? What values will be used to this end?

Various considerations on the ethical implications of AI or AIED usage spans several decades already; thus, the major questions that are to be addressed concerning ethics are: What means for Artificial Intelligence to decide? What are the consequences of these decisions? Is AI accountable for its actions or not? Is AI still controllable if its learning process brings its system into states that barely resemble their original setup states? How is such a development properly regulated? The ethical concerns about Artificial Intelligence are increasing and require considerable attention, especially with respect to the large collecting of data. A growing such concern is: what if the algorithm that influences the human decision eventually causes harm as well? By nature of their roles, educators are mandated to act in students' interest, so they should also become engaged in shaping the public trust in the new technologies that are used. Such a trust

can be built upon the Artificial Intelligence system's capability of providing equal, fair opportunities of learning for the students, as well as to guarantee their well-being. Artificial Intelligence in Education requires immediate attention to ensure that the technology is used not detrimental to all those involved: e.g., for the benefit of students and not as a Big Brother for monitoring teachers' performance. Also, Artificial Intelligence in Education should be designed to enhance performance, not to bring performance to that same level for everybody. Ethics should be inbuilt into the curriculum in order to avoid faults of Artificial Intelligence in Education like, e.g., fake news or deep fakes. Also, AIED should not be used to force or coerce people's choices. Therefore, a possible Ethical Artificial Intelligence in Education (EAIED) framework could look like in Figure 3. (Southgate, E., et al., 2019, p. 40).



Source: Interpreted and adapted by the author from *An Integrative Framework for AI Education*

Artificial Intelligence in Education is, in fact, a pedagogical project aimed at developing a formal curriculum in an accessible manner yet considering all of its possible implications. It involved both sharing AI knowledge and ensuring that checkpoints are established to prevent misunderstanding or even misuse of technology. The main questions that should be addressed are the following: What can AI do? What was it trained for? What is it based on? Is there evidence of the efficiency of its use on students? Is there a need for data harvesting? Is there compliance with ethical principles? Are rights respected? Is there full disclosure of both all potential benefits and harms?

There is also a possibility that Artificial Intelligence in Education will disrupt the educational world and, contrary to what was actually intended, to bring in social inequality in learning opportunities. On the other hand, as in social media, humans that use Artificial Intelligence in Education also get digital identities, a fact that also brings in a whole lot of new issues in education too. One of these, and perhaps just a minor one, is the overloading of the student with the digital burden (login, credentials, timing, etc.), which defies itself the purpose of education. Last but not least, as already stated before, a machine is not smarter than its creator. As such, it is possible that the AI system has a bias, having inbuilt in itself various forms of discrimination like, e.g., racism, profiling, sexism, etc., which, of course, is itself a fact that needs to be cut off at an early stage of design already. It should always be possible to find out why an Artificial Intelligence in Education system took a particular decision, especially when that decision may have possibly caused harm. Especially wherein people in education are involved, one cannot rely on the assurances of an industry that usually does not open up to customers too with respect to its design. Such designs are usually "black-box"-ed, and it is not uncommon that their developers do not always fully understand them. These facts can be looked upon by: Traceability – the technical inspection of the implemented norms, Verifiability – via mathematical proofs, Honesty – the accurate and non-deceiving representation of what the system can do, and Intelligibility – the ability of the system to explain itself to a user in the case of confusion, and this at an appropriate level of human understanding.

The distributed development of Artificial Intelligence in the Education system makes it also difficult to check specifically who was responsible for an action that was taken, particularly when the action was harmful. It should be widely accepted that the accountability of the development is not just a set of standards. In Table 1, explicitly stated are some of the guidelines for implementation, along with questions that need to be addressed regarding the design (Southgate, E., et al., 2019, pp. 48-49).

Table 1. Ethics of Artificial Intelligence in Education

Type of principle	Design	Implementation	Governance
Awareness	Manufacturers engaged with the education?	Students, parents, caregivers aware of data harvesting?	Parental consent and student assent before system deployment?
Explicability	The system explains to students, parents, teachers its purpose, design, and outcomes?	Artificial Intelligence in Education information shared and discussed?	Policy, procurement, school leaders can advise on Artificial Intelligence in Education?
Fairness	Is bias addressed and documented?	Are there inequality, unfair burden, and surveillance involved?	Are there adequate policies and procedures in place to guarantee the non-exacerbation of bias effects?
Transparency	Is the system designed and implemented according to the above four principles?	Can Artificial Intelligence in Education systems be inspected by human users that can respond to them?	Does procurement ensure the above four principles before purchase and during implementation?
Accountability	Are responsibilities of the use of Artificial Intelligence in Education	Procedure for reporting and responding to Artificial Intelligence in Education is harmful?	Early warnings of harm occurrences that can trigger impactful actions?

	stated clearly and understandable?		
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Source: Interpreted and adapted by the author from *The Institute for Ethical AI in Education's* research and secondary articles, interpreted and adapted by the author

3.3. Artificial Intelligence in Education within several EU countries

A summary of what other EU countries, including the EU itself as an executive and legislative body, proposes and accomplishes in Artificial Intelligence, Augmented Reality, and Virtual Reality is synopsised in the following table.

Table 2: Synopsis of undertaken actions on AIED in EU countries

Country	Undertaken Actions
Austria	<ul style="list-style-type: none"> → Developed and integrated platform with free textbooks study materials → A national mobile application with personalized advisers for local communities of parents and children
Bulgaria	<ul style="list-style-type: none"> → 90% of the students are involved in an e-learning system for 6 studying hours per day → An educational call-center created for offering student support
Croatia	<ul style="list-style-type: none"> → Free Internet cards for underprivileged children
Czech Republic	<ul style="list-style-type: none"> → National platform and television course - lectures
Estonia	<ul style="list-style-type: none"> → An integrated online educational system → Free access to the Estonian "99math" educational platform, also for all the EU member states (the Republic of Estonia, 2020) → Webinars and support for parents and teachers
Finland	<ul style="list-style-type: none"> → All the educational curricula were adjusted to an online format → Physical education classes use trackers → Teacher support for homework in an integrated way
France	<ul style="list-style-type: none"> → Tablets for underprivileged children → Virtual workspaces for teachers and students → Online monitoring and support for homework accomplishments
Germany	<ul style="list-style-type: none"> → National mobile application for online education → Online resources and support offered by institutions
Greece	<ul style="list-style-type: none"> → Free access to educational platforms → Data traffic at zero cost for educational purposes
Italy	<ul style="list-style-type: none"> → Implementation of online educational platform → Twinning system for school - teacher peer support

	→ Webinars support for teachers
The European Union as a body	→ A European platform of educational resources for teachers and students

Source: Information collected from various secondary articles and from the works cited in the Reference List

During 2006 and 2012, there were more computers per student in classrooms in Sweden, Norway, and Denmark than in Italy and in Greece (Avvisati, F. et al., 2013, p. 28). Most common for Italy during that time was to have computers in the computer lab, whereas Lithuania, Spain, and Portugal were the ones with the most computers in classrooms. Italy and Romania had fewer data projectors in classrooms at that time, whereas this type of equipment in classrooms was the norm in Finland, Slovenia, Sweden, Estonia, and Ireland. Italy, Romania, and Turkey had the least number of digitally equipped schools at that specific time. For instance, smart boards were introduced in the United Kingdom as of 2003. A company that developed them (named Smart Technologies, nowadays Nureva) existed in Calgary, Alberta, Canada, as early as the late '90s, with a subsidiary in Ottawa, Ontario, Canada. In 2012, the Netherlands and Australia already had about half of their classrooms equipped with smart boards. Denmark was not far behind, introducing smart boards in municipal primary and lower secondary schools in 2006. There were plans to introduce them at that time in Portugal, Mexico, and Turkey. During the crisis of about a decade ago, Portugal, Spain, France, and Slovenia still continued to invest in ICT. In contrast, the UK reduced the support for ICT in schools and closed down its agency for educational technology development. Furthermore, in 2019, Slovenia had the highest number of AI researchers per capita in the world (UNESDOC, 2019, p. 13).

Another good initiative and practice in education consist of prizes and awards for innovative teaching. A few such examples are (Avvisati, F. et al., 2013, p. 52): *Journées de l'Innovation* – A contest for French annual pedagogical innovation projects; five of them are awarded therefore each year via the Expérithèque website; *Instituto Nacional de Tecnologías Educativas y de Formación del Profesorado (INTEF)* in Spain – Annual Award for learning material developed by teachers, non-profit organisations or schools; *Innovo en Clases Integrando Tecnología* in Chile – a competition for best teaching practices in the form of a short videos' competition.

By 2013, as an average, about 40% of the teachers would have reported that students use ICT frequently or for all or nearly all lessons (OECD, 2016, p. 73), although this figure would differ per group of countries. For instance, more than half of them would report that in Australia, Chile, Denmark, Mexico, New Zealand, Norway, and Abu Dhabi (the United Arab Emirates), whereas less than a quarter of them would report that in countries such as Croatia, Finland, France, Israel, Japan, Malaysia, Serbia, and the Shanghai area of China. Alarming, nonetheless, is that, in several European countries, there is already a shortage of teachers in ICT-related fields, for instance, in science, technology, engineering, and math. (EC, 2019, p. 9)

As of now, there are no coherent plans yet to introduce Artificial Intelligence in Education into the National Information Communication Technology plans (UNESDOC, 2019, p. 14). Countries are at different stages of development. For example, South Sudan, which is a relatively still new country, introduced an ICT plan in 2018 but lagged behind in embracing Artificial Intelligence. In the following, the Italian experience in Information Communication Technology (Avvisati, F. et al., 2013) as of at least a few years ago will be detailed.

3.4. Technology-enhanced education within Romania

Previously to the joining of the European Union, Romania's education system was at a crossroads (World Bank, 2007). In particular, there were some curriculum changes undertaken. In addition, student assessment as well as teacher training needed to be reevaluated in order to continue the improvement of the educational outcomes. Furthermore, Romania's joining the EU has posed new educational demands. In spite of educational

reforms, student performance was still low by the EU standards. This was particularly worrying when referring to the low levels of enrolments in secondary and post-secondary education. Worrisome was also the gaps between rural Romania and urban Romania. At that time, it was

thought that the uneven spread of the resources could cause those differences. Staffing was considered too high, and the decline in student enrolment would also cause a decrease in the student and teacher numbers ratio. Teacher workloads were considered as being low, but so were their remunerations.

However, Romania's education changes took place over a decade (EC, 2019b), even though public spending on education was still low compared to other EU countries. There is still a need for better support for teachers. Although, as already stated that one decade ago there were too many teachers. Nowadays, there is a social and career-wise shift, as fewer and fewer people want to become teachers, according to the reviewed literature and statistics. According to the European Commission's reports, the considerable discrepancies with respect to the rural and urban areas are still present and have not been tackled. Teachers' preparation in view of their career - the choice is found still poor and sometimes even obsolete. There seems to be a real and consistent challenge in regard to modern and technological teaching approaches. The early school leaving rate in Romania is unfortunately still high, calculated at an all-time low in 2019 - 15.7% (from 16.4% in 2018 and 18.1% in 2017) in the context of the 2020 Strategy (Eurostat, 2020). The acquirement of digital skills sometimes poses various problems because of lack of sufficient funding as well as due to lack of technological infrastructures. In the fourth section, we have observed what other European Union countries did lately in the fields of Artificial Intelligence, Augmented Reality, Virtual Reality, and Mixed Reality. In particular, an overview for Romania, consisting of what has been done in the previous school year, is shown in Figure 4, below.

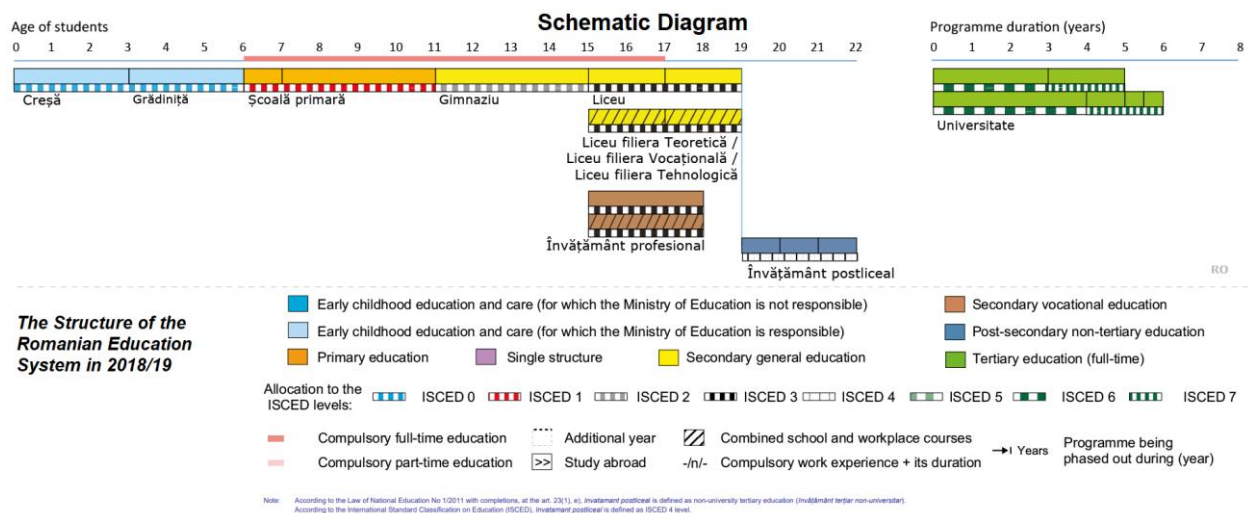


Fig. 4: "The 2018/19 Structure of the Romanian National Education System"
Schematic Diagram, Source: Eurydice 2018/19

It needs to be mentioned that a possible strategy for the integration and automation of Artificial Intelligence in the educational system in Romania is briefly outlined and proposed in (Ion, M., 2019).

4. Conclusions

The educational crisis that was generated by the COVID-19 pandemic and the thereof adjustments did not occur without inherent issues. For instance, there are technologically challenged teachers as well as blank and disconcerting times for both teachers and students during virtual classes. Moreover, and more seriously,

many Romanian students cannot afford the home technology that is required to pursue online education, which would have otherwise been pursued only in the classroom environment. According to an IRES study, 12% of the children in Romania stay out of networks, and 32 % cannot afford technology devices. Therefore, state intervention is required to improve on this major drawback. Otherwise, there is the risk of an increase of illiteracy in an era in which functional illiteracy is already being witnessed in various fields of activity, as a result of a precarious education that occurred for various reasons in its time already. Whereas literacy is seen as a precondition in several societies, digital literacy is also becoming a workforce and a societal requirement. This is contradictory to the fact that most teacher respondents in several conducted surveys during the pandemic time admitted they were caught unprepared by both pandemic waves and the adjustment process to new circumstances of teaching (EXPERT FORUM, 2020; SOCIOUMANE, 2020).

The COVID-19 pandemic impact on education is well captured in a recent analysis (Burgess, S., and Sievertsen, HH, 2020; Rae, J., 2020). The main lessons that are to be learned about education in a post-COVID-19 world (if any), can be summarized as follows (SCOONEWS, 2020): Citizens will have to be educated in an interconnected world and with emphasis on the interconnectedness of all nations toward quality (UN, SDG 4) and technological education; The role of the educator needs to be redefined as well as the teaching techniques; Reiterate on practical soft and hard skills as well as on teaching the life skills of the future; Technology has to be in the service of education rather than vice versa. In particular, the lessons post COVID-19 to be learned in international education can be outlined as follows (Burquel, N., and Busch, A., 2020): Education, as well as other industries, had to follow an as of yet never seen path of lockdown, implicitly restricted mobility; There will be an economic collapse, unemployment and a time of recession; Educational institutions will be reopening but with regulations for social distancing; New forms of personalized education will emerge; About 40% of the international students are changing plans of studying abroad, because of the pandemic crises; Business schools may not be fit enough for the education of the future and therefore, even deemed for possible closure.

Education is a fundamental human right, and currently, 1.2 billion people are deprived of this right because of the COVID-19 pandemic (Normandin, A., 2020). It caught many unprepared or underprepared; therefore, further actions for future improvements are needed. Customized blended and experiential learning is suggested as an educational approach in a post-COVID-19 world (if any) together with technology-enhanced learning (Khan, S., 2020; Warriar, BS, 2020). There are, however, other ways in which the pandemic could also change the face of education as we know it (Luthra, P., and Mackenzie, S. 2020): Drawbacks should be changed into opportunities for success, the pandemic-related educational disruption gives educators time to rethink their field and practices (Kanoria, J., 2020; Henry, G., and Agbadi., M. 2020); This niche just started being filled in by technology too (Lim-Lange, C., 2020). In Malaysia, for instance, concerns were addressed too, and effects were investigated, along with envisaged measures as follows (Education International, 2020): There will be a move towards online teaching and learning (Barton, J., 2020); There already are several concerns over the latter above; Couple public exams were canceled (an issue that is currently under ongoing evolution in Romania as well); Mental health issues need to be addressed; The Sarawak (a Malaysian province) Teachers' Union will begin to be home-based.

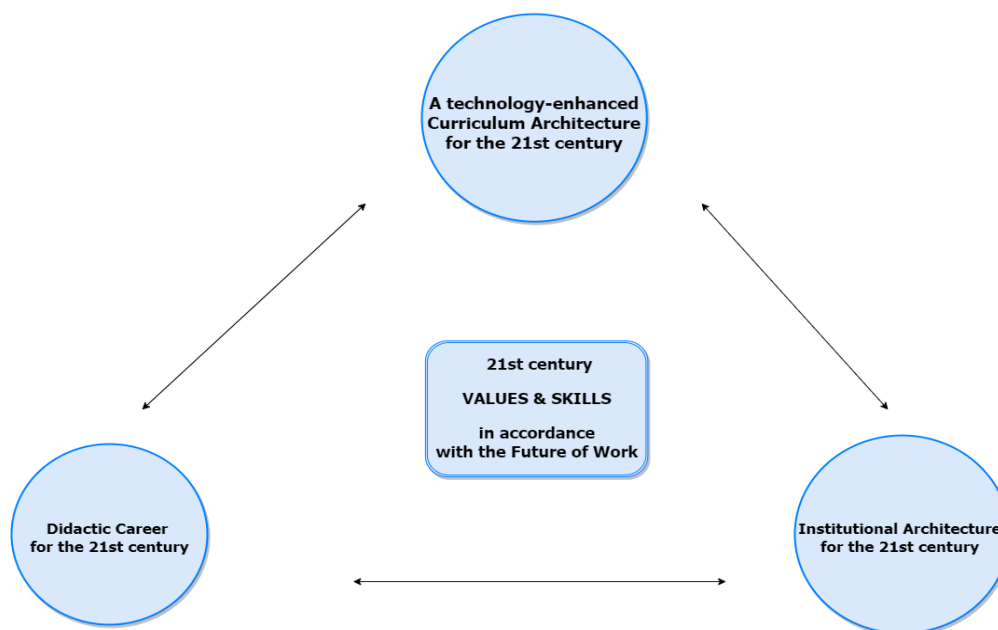
Research conclusions of key findings from both case-study surveys

Table 3: Research questions key findings extracted from the surveys' analysis

Research question(s)	Key findings
What are the differences and similarities of students' opinions in developing a new high school curriculum and starting an educational reform?	<ul style="list-style-type: none"> • Similar responses and a generally agreed need for reform • No significant difference in response between disciplines and technological development in education was mentioned. • There is a dramatic situation in the educational system, which fails to keep up with reality.
Which is the extent to a needed progression if not reform in the curricular development through digital technologies?	<ul style="list-style-type: none"> • Similar opinions of both students and teachers concerning the implementation of technology in education • There is a reticence on behalf of teachers and students, but they are open to change and improve. • Teachers and students agree that they do not get a fair chance to demonstrate their performance and skills-built.
How might variations in and of educational technology improve high schoolers' experiences in the classroom?	<ul style="list-style-type: none"> • There are various understandings regarding a Practical Educational Framework and significant differences between the levels of agreement concerning the betterment of the high school curriculum and system, although the COVID-19 pandemic has highlighted the need for modern technological implementation in terms of shaping the future of education and skills closely linked with the developments of the new future of work.
Which digital technologies would be appropriate for use in enabling their innovative use for education fit for 2030 and beyond, with emphasis on qualitative and interactive blended teaching and learning?	<ul style="list-style-type: none"> • The main revealed and agreed idea from the two survey's results is that bringing ourselves to the present needs thinking about the future. • This leads us to the validation of the statement given to both students and teachers - "21st-century children are taught by 20th-century adults, using the 19th-century school calendar and techniques," citing Tom Hierck, author & educational policy consultant. • Therefore, an eventual educational reform for the high school system in Romania would need to respond to the demand for an updated curriculum based on tomorrow's requirements and not those of yesterday, both from an industry-oriented perspective and a life-skills perspective. • Furthermore, independent of the chosen digital technologies, Interactive videos, and webinars, Virtual and Augmented Reality, Artificial Intelligence or Intelligent Applications, it is the manner they are being integrated into the educational reality and the beneficial objectives which will set the path towards a more inclusive, cohesive, qualitative and societal needs-based teaching and learning, therefore personalized learning as the ultimate goal in the field of education, globally.

Fig.5: Envisioning a possible strategic framework for educational reform through the enabling of current and new digital technologies

Figure 5. A possible strategic framework for a paradigm shift in Romanian education through New Tech enablement



Source: Interpreted and adapted by the author from various articles, especially from *Approach to Artificial Intelligence for Education and Training*

In conclusion, Figure 5 suggests a possible strategic framework for an educational reform by enabling current and new digital technologies, which would require a thorough and substantial joint-research effort to be sustainably developed and applied.

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Determinants of the Obesity of Adults in Turkey: An Empirical Study

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Abstract. Obesity is a rapidly increasing health problem in Turkey. In this study, it was aimed to determine how adults who are obese in Turkey are affected by variables such as age, gender, marital status, education, income, as well as health status, physical activity time, adult diabetes, emotion, depressive, exercise, walking, cycling. The used econometric model is a two-stage Heckman model. While the probit model in the first stage of the model is estimated for specifying the variables which affect the probability of adults being obese/overweight, the Tobit model in the second stage is estimated to determine the effects of these variables on the adult body mass index (BMI). Data from Health Surveys of the Turkish Statistical Institute for the year 2016 are used in the study. The results show that the probability of being obese and BMI increase in age at a decreasing rate. On the other hand, the level of education decreases the probability of being obese and body mass index. Males are more likely to be overweight and obese than females, whereas the BMI of overweight-obese females is higher than the BMI of overweight- obese males. In addition, being married being middle or high income, being diabetic, being depressed and feeling worthless increase the probability of being overweight-obese and cause an increase in BMI level, while physical activities such as daily exercises and taking regular walks cause a decrease in the likelihood of being overweight-obese and BMI in Turkey.

Keywords: Body mass index, Health, Heckman Model, Obesity, Physical activity, Sample selection bias, Socio-economic factors, Turkey

JEL Codes: C24, C25, D01, D91, I12

1. Introduction

The recent (current) changes in nutrition habits with the changes in social structure, the decline in real food prices in combination with the machine in agriculture has led to an increase in total calorie intake worldwide, and richer food consumption in terms of cholesterol and saturated fats (Lakdawalla and Philipson, 2007). With the rapidly changing eating habit, increased growth of business types requiring lower physical activity, increased urbanization rate, sedentary lifestyle, and time spent on computers or television has also increased the incidence of obesity (Yıldırım et al., 2008).

The World Health Organization describes obesity as a treatable disease that occurs as "abnormal or excessive fat accumulation in the body to the extent that it disrupts the health," because energy taken into the body through nutrients, in general, is more than the energy consumed by the human body (World Health Organization (WHO), 2019). Obesity causes the emergence of diseases such as diabetes, cardiovascular, insulin resistance, type II diabetes, coronary artery disease, polycysticover syndrome, liver lubrication, and

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shortening life expectancy (Yıldırım et al., 2008). From this perspective, it is stated that deaths related to obesity disease worldwide came in second place after smoking in the preventable death ranking (Turkish Endocrinology and Metabolism Association, 2019).

The World Health Organization measures obesity in general with its body mass index (BMI). BMI is obtained by dividing the individual's body weight (kg) into the square (m^2) of the height of the individual (WHO, 2019). The values of BMI and the classification corresponding to these values are given in Table 1. Accordingly, those with a body mass index (BMI) below 18.49 are considered "weak", those between 18.50-24.99 are "normal weight", those between 25.00-29.99 are considered "overweight" (pre-obese), and those with 30.00 or higher are evaluated in the "obese" class.

Table 1. Body Mass Index

Classification	BMI (kg/m²)
Weak (Low Weight)	<16
Extreme Weakness	<16.00
Moderate Weakness	16.00-16.99
Mild weakness	17.00-18.49
Normal	18.50-24.99
Pre-obez	25.00-29.99
Obez	≥ 30
1st Degree	30.00-34.49
2nd Degree	35.00-39.99
3rd Degree	≥ 40.00

Source: Turkish Ministry of Health "Turkey healthy eating and moving life program 2014-2017.

According to World Health Organization data, 1.9 billion adults (ages 18 and over) are overweight in 2016, and more than 650 million adults are obese in the World (WHO, 2019). Obesity in Turkey has a similar appearance to the world, and the incidence of obesity is increasing day by day in Turkey. According to the 2016 Turkish Health Survey data, 19.6% of individuals in Turkey are obese, 34.3% are overweight. Also, 23.9% of women are obese, 30.1% of women are overweight, and 38.6% of men are obese, and 38.6% of men are overweight in Turkey (TurkStat, 2019a).

Food and soft drinks account for 14.6% of the total consumption expenditure of households in the highest 20% income group and 28.6% of total consumption expenditure of households in the lowest-income group according to the 2017 Income and Living Conditions Survey (TurkStat, 2019b). While the share of carbohydrate-weighted foodstuffs is high in the low-income group's food consumption pattern, the consumption of ready-made foodstuffs is higher in the food consumption pattern of the high-income group (Şengül, 2004). It can be said that this type of diet also causes obesity.

In recent years, it has been observed that there have been numerous studies on obesity in the international literature. In these studies, many economic and environmental factors are listed among the causes of obesity as well as genetic heritage, and it is suggested that the multi-story structures that increase with urbanization, inadequate green areas, unhealthy living conditions formed together with physical mobility, trigger many

diseases as well as increasing obesity. At the same time, the level of social awareness between countries and individuals and the different socio-economic conditions are also expressed as an important factor in the spread of obesity (Gupta et al., 2012; Gil and Takourabt, 2017; Yen, 2012; Yen et al., 2009).

In this study, it is aimed to show how obesity and overweight in adults in Turkey affect variables such as age, gender, marital status, education, income, as well as variables such as health status, physical activity duration, adult diabetes, feeling worthless, depressed, exercising, walking, cycling. The findings may contribute to the realization of the right health policies aimed at reducing obesity in Turkey.

2. Related Literature

As the incidence of obesity increases, there has been a significant increase in obesity-related studies in the literature. Some of the studies on obesity have been about identifying socio-economic and environmental factors that affect obesity. One of these studies, Demir et al., (2018), in the study of the determinants of obesity in adults in Turkey were estimated by the bivariate probit model, and the study found that obesity increased with age and decreased with education. Beyaz and Koç (2011) identified socio-economic variables affecting obesity prevalence in Antalya using a logistic regression model. The authors determined that gender, marital status, age, education, and car ownership variables affect obesity. Yumuk (2005) discussed the problem of obesity in Turkey through two surveys conducted in 1990 and 2000. In the study, the incidence of obesity increased from 18.6% in 1990 to 21.9% in 2000, and the problem of being overweight was more severe in men and women. Erem (2015), covering the years 1990 and 2010, stated that the incidence of obesity in Turkey increased over the years, from 18.8% in 1990 to 36% by 2010. In the study of Tansel and Karaoğlu (2017), they tried to determine the determinants of obesity in adults in Turkey by quantile regression method using the Turkish Health Research Survey data for 2008, 2010 and 2012. They got the body mass index as an indicator of obesity.

Tansel and Karaoğlu (2014, 2019a and 2019b) studies on health behaviors and obesity in Turkey examined the impact of education on obesity using the Turkish Health Survey Data conducted by TurkStat in 2008, 2010, and 2012. These studies have also covered health behaviors in the form of smoking consumption, alcohol consumption, consumption of fruits and vegetables, and regular activity. Villar and Domeque (2009) examined the relationship between household income and the state of being obese in the European Union member states. Data obtained from Eurostat were used in the study. The study found that the effect of income on obesity differed between men and women. Kain et al. (2003) found that in Latin American countries, the incidence of obesity in poor families was higher than in developed countries. The authors stated that the most important factors affecting obesity are factors such as nutrition opportunities (especially in children) before and after birth, socio-economic status of families, physical activity, and education level.

3. Data, Econometric Models and Variables

The 2016 Turkish Health Survey data used in this study was obtained from TURKSTAT. This recent survey was applied to 23,606 individuals in Turkey. The scope of the study included the individual aged 15 and older because the 2016 Turkish Health Survey did not include data such as the height and weight of individuals in the (0-14) age group. The number of observations is 17,242 for individuals aged 15 and beyond. Turkish Health Survey includes data from a wide range of variables related to age, gender, education status, income, daily activity, physical activity, health status, etc.

When studies related to obesity are examined, it is observed that the variables affecting obesity are generally age, gender, income, educational status, marital status, the situation at work, family type, settlement, daily movement time, frequency of physical activity, healthy eating, etc. (Wang and Lim, 2012; Shrewsbury and Wardle, 2008; Sobal and Stunkard, 1989). In this study, the variables that determine obesity in Turkey were selected in light of previous studies, as presented in Table 2. These variables are the gender of the individual, the age of the individual, the square of the age of the individual, whether the Social Security Institution meets the health costs, the level of education of the individual (examined in 5 categories), the marital status of the individual (examined in 3 groups), the way the individual works, the income level of the household (divided into 5 categories), whether the individual is diabetic, whether the individual is depressed, whether the individual is feeling valuable or not, whether the individual is in daily physical activity, whether the individual is feeling or not. Variables that indicate whether the individual walks for 30 minutes or more per day, indicating whether the individual rides 30 minutes or more daily.

Table 2. Variables and Definitions

Variables	Definition
BMI	<i>Body Mass Index (Calculated as the weight of the individual(kg) / Square of the individual's height.(m²)</i>
BMII	<i>If the individual is overweight or obese 1, otherwise 0</i>
Age	<i>Age</i>
Age square	<i>Age square</i>
Gender	<i>If the individual is male 1, otherwise 0</i>
SGK1	<i>If health care costs are covered by the Social Security Institution 1, if not covered, 0</i>
Educ1	<i>If the primary school has not finished or illiterate 1, otherwise 0 (reference)</i>
Educ2	<i>If primary school graduates are 1, otherwise 0</i>
Educ3	<i>If the secondary school, vocational secondary school graduate is 1, otherwise 0</i>
Educ4	<i>If high school graduate is 1, otherwise 0</i>
Educ5	<i>If university graduates,1, otherwise 0</i>
Single	<i>If never married,1, otherwise 0</i>
Married	<i>If married,1, otherwise 0</i>
Divorced	<i>If divorced or his spouse is dead, 1, otherwise 0 (reference)</i>
Occup1	<i>If paid, salaried or generalized,1, otherwise 0</i>
Occup2	<i>If the employer is 1, otherwise 0</i>
Occup3	<i>If adult works on its own account, 1, otherwise 0</i>
Occup4	<i>If a free family worker or unemployed,1, otherwise 0 (reference)</i>
Work type	<i>If it works full-time 1, otherwise 0</i>
Income1	<i>If household income is 1264 TL or less 1, otherwise 0 (reference)</i>
Income2	<i>If household income is between 1265-1814 TL, 1, otherwise 0</i>
Income3	<i>If household income is between 1815-2540 TL, 1, otherwise 0</i>
Income4	<i>If household income is between 2541-3721 TL, 1, otherwise 0</i>
Income5	<i>If household income is above 3721 TL, 1, otherwise 0</i>
Diabetes	<i>If adult diabetic,1, otherwise 0</i>
Depression	<i>If an adult had depression in the last 12 months, 1, otherwise 0</i>
Worthless	<i>If an adult hasn't felt worthless in the last two weeks,1, otherwise 0</i>
Daily exercise	<i>If adult exercises daily,1, otherwise 0</i>

Walk	<i>If an adult walk for 30 minutes or more per day, 1, otherwise 0</i>
Bicycle	<i>If an adult rides 30 minutes or more daily, 1, otherwise 0</i>

a. Econometric models

The model of the study is the two-stage Heckman model. The probit model is estimated in the first stage of the Heckman model. The dependent variable in the probit model is 1 in case the adult is overweight or obese, and 0 in the other (normal or weak). In the first stage, it determined how the independent variables in the model affect the probability that individuals are overweight/obese.

In the second stage of the Heckman model, the Tobit model is estimated that the dependent variable value is equal to the value of BMI if the individual is overweight or obese, and in other cases, censored with a value of zero. The Tobit model also determines the effect of the independent variables included in the model on the BMI. Therefore, the Heckman selection model allows you to obtain the information that both probit and tobit model offers separately at the same time, showing both the effects of descriptive variables in the model on the likelihood of being obese, as well as how the changes in independent variables affect BMI. This is the advantage of the Heckman selection model.

The first and second equations of the Heckman selection model are presented in equation 1 and Equation 2, respectively. If the adult is overweight or obese in the first equation, y_{1i}^* is equal to 1, if not 0, and y_{2i}^* equals the value of the body mass index if the adult is overweight or obese in the second equation, otherwise is zero.

$$y_{1i}^* = x_{1i}\beta_1 + u_{1i} \quad u_{1i} \approx N(0,1) \quad (1)$$

$$y_{2i}^* = x_{2i}\beta_2 + u_{2i} \quad u_{2i} \approx N(0, \sigma^2) \quad (2)$$

Here:

$$y_{1i} = \begin{cases} 1 & y_{1i}^* > 0 \text{ ise} \\ 0 & y_{1i}^* \leq 0 \text{ ise} \end{cases} \quad y_{2i} = \begin{cases} y_{2i}^* & y_{1i}^* > 0 \text{ ise} \\ 0 & y_{1i}^* \leq 0 \text{ ise} \end{cases}$$

β (β_1 and β_2 in 1st and 2nd equations respectively) shows parameter vectors, while x_1 and x_2 show the matrix of arguments in both equations.

These models were estimated to be the maximum likelihood estimator in equation 3 (Heckman, 1979; Greene, 2012). In equation 3, $\phi(\cdot)$ and $\Phi(\cdot)$ show the probability density and cumulative distribution functions of the standard normal distribution, respectively. U_1 and U_2 are the error terms that show bivariate normal distribution. ρ is the correlation coefficient.

$$\text{LogL}(\beta_1, \beta_2, \rho, \sigma | x_1, x_2) = \sum_{y_{1i}=0} (\log 1 - \Phi(x'_{1i}\beta_1)) \sum_{y_{1i}=1} -\log(\sigma) + \log \left(\phi \left(\frac{y_{2i} - x'_{2i}\beta_2}{\sigma} \right) \right) + \log \left(1 - \Phi \left(\frac{-x'_{1i}\beta_1 + \rho \left(\frac{y_{2i} - x'_{2i}\beta_2}{\sigma} \right)}{\sqrt{1-\rho^2}} \right) \right) \quad (3)$$

The probit model estimated in the first stage calculates the Inverse Mills Ratio in Equation 4. to correct sample selection bias. Inverse Mills Ratio is used as an instrumental variable in Equation 2. In this case, Equation 2 turns to Equation 5.

$$\lambda_i = \frac{\phi(x'_1\beta_1)}{\Phi(x'_1\beta_1)} \quad (4)$$

$$y_{2i}^* = x_{2i}\beta_2 + \rho\sigma\lambda_i \quad (5)$$

b. Summary Statistics of Variables

The mean values and standard deviations of the variables used in this study are given in Table 3. 9,862 of the adults included in the survey were in the overweight or obese group, while 7,380 of the adults were in the normal or underweight group. In other words, 57.20% of adults in Turkey are in the overweight or obese group; 42.80% of them are in the weak or normal weight group. For all observations, the mean of the adult body mass index was 26.40. The age mean of individuals was 43.74.

For all observations, 20.8% of adults are single, 69% of them are married, and 10.1% of them are in the group of divorced or their spouses are dead. In addition, the proportion of adults with chronic diabetes is 10.9%, and the proportion of adults who have been depressed in the last year is 8.2%. Similarly, the proportion of individuals who are immobile in their daily work is 48%, while the proportion of individuals who are active in their daily work is 52% in Turkey. 62.6% of individuals walk less than 30 minutes per day, while 97.6% of them ride (bicycle) less than 30 minutes per day. Finally, 84% of all adults have a household income below Turkish Liras (TL) 3,721, while 16% have a household income above TL 3,721 (Table 3).

With the summary statistics of adults whose body mass index is 25 or higher (overweight or obese) in Turkey, the average body mass index is about 30 (1st degree obese). The average age of the individuals in this group is 48.67, and 79.3% of them are married. 44.3% of the individuals in this group are male, while 55.7% of them are female. 27.2% of them are at least high school graduates, and 32.3% of them have a household income of at least TL 2541 in Turkey (Table 3).

The average body mass index for adults below 25 (adults who are weak and normal weight) is about 21.88. 55.5% of the normal or weak weights adults have an average age of 37.15. 40.4% have high school and higher education levels (Table 3). 44.7% of the individuals in this group are male and 55.3% of them are female in Turkey.

Table 3. Descriptive Statistics

Variables	All Observation		Positive Observations (BMI>24.99)		BMI<25	
	mean	std. deviation	mean	std. deviation	mean	std. deviation
BMI	26.401	5.140	29.996	0.063	21.888	2.194
Age	43.745	17.855	48.674	15.705	37.152	18.424
Age square	2232.225	1703.793	2369.158	4.005	1719.683	1712.809
Gender	0.445	0.497	0.443	0.497	0.447	0.497
SGK1	0.841	0.366	0.864	0.343	0.811	0.392
Educ1	0.154	0.361	0.182	0.386	0.115	0.319

Educ2	0.345	0.475	0.423	0.494	0.241	0.428
Educ3	0.173	0.378	0.122	0.328	0.240	0.427
Educ4	0.180	0.384	0.150	0.357	0.220	0.415
Educ5	0.148	0.356	0.122	0.328	0.184	0.388
Single	0.208	0.405	0.088	0.283	0.367	0.482
Married	0.690	0.462	0.793	0.405	0.555	0.497
Divorced	0.101	0.302	0.119	0.324	0.078	0.268
Occup1	0.464	0.499	0.457	0.498	0.473	0.499
Occup2	0.017	0.131	0.020	0.139	0.015	0.120
Occup3	0.090	0.286	0.105	0.306	0.071	0.257
Occup4	0.429	0.244	0.418	0.261	0.441	0.216
Work type	0.599	0.490	0.618	0.486	0.575	0.494
Income1	0.213	0.409	0.211	0.408	0.215	0.411
Income2	0.273	0.446	0.277	0.448	0.268	0.443
Income3	0.183	0.387	0.189	0.392	0.174	0.379
Income4	0.172	0.376	0.170	0.376	0.171	0.377
Income5	0.161	0.367	0.153	0.360	0.171	0.377
Diabet	0.109	0.312	0.156	0.363	0.046	0.210
Depression	0.082	0.274	0.093	0.290	0.067	0.251
Worthless	0.218	0.413	0.229	0.421	0.202	0.401
Daily exercise	0.520	0.499	0.500	0.500	0.547	0.498
Walk	0.374	0.484	0.347	0.476	0.410	0.492
Bicycle	0.024	0.154	0.017	0.131	0.033	0.179
Sample size	17242	%100.0	9862	%57.2	7380	%42.80

Adults who are overweight or obese are about 11 years older than adults who are weak or normal weight, and those married in this group are 25% more than those who are weak or underweight. Among adults who are overweight or obese, those with diabetes are approximately 3.5 times more than adults who are normal or underweight. This actually raises the expectation that those with diabetes are more likely to be obese (Table 3).

4. Results and Discussion

Parameter estimates of the Heckman selection model are presented in Table 4. Most of the parameters of variables in both equations have been obtained statistically significant and consistent with expectations.

Table 4. Parameter Estimation¹

Variables	Selection Model	Output Model
	Coefficients	Coefficients
Age	0.1002***	0.4965***
Agesquare	-0.0009***	-0.0046***
Gender	0.1732***	-0.5224***
SGK1	0.1317***	0.7789***
Educ2	-0.0523	-0.1757
Educ3	-0.1509***	-0.8193***
Educ4	-0.2424***	-1.3594***
Educ5	-0.3516***	-2.0432***
Single	-0.3436***	-1.3426***
Married	-0.0143	-0.3072*

¹ (*), (**), (***) significant level of %10, %5 and %1 respectively.

Occup1	-0.1890***	-0.6594***
Occup2	-0.1855**	-0.4555
Occup3	-0.2001***	-0.5441**
Worktype	0.0234	0.0494
Income1	0.0366	0.3805**
Income2	0.1281***	0.6601***
Income3	0.1297***	0.6334***
Income4	0.1096***	0.3924**
Diabet	0.4341***	2.2568***
Depression	0.0896**	0.3165*
Worthless	-0.0244	0.1401
Dailyexercise	-0.0477**	-0.6810***
Walk	-0.0931***	-0.5680***
Bicycle	-0.0705	0.0177
Constant	-2.0991***	15.1223***
Lambda	5.2516**	
Rho	0.9758	
Sigma	5.3819	

The selection model is the model in which the dependent variable takes 1 if the adult individual is overweight or obese, otherwise 0. The output model in which the dependent variable takes its own value in case the adult's body mass index is 25 or higher than 25, and the body mass index is less than 25 model, which takes a value of 0. λ (inverse mills ratio) has been statistically significant. Namely, parameter estimates will be biased and inconsistent if zero observations are excluded from estimating the model.

Coefficients of age and age square variables in the selection model; In Turkey, adults with age are more likely to be overweight or obese, but this increase tends to decrease after a certain point. Another important finding of the study is that the likelihood of being overweight or obese is higher in men than in women. According to the data used in this study, the proportion of overweight or obese men in Turkey is 44.30%, while the proportion of overweight or obese women is 55.7%, but women are less likely to be obese in Turkey.

This result can be interpreted that women are less likely to be obese. Because women tend to diet, exercise, and therefore lose weight and care for their physical appearance, with their increasing and changing roles in society in Turkey. It has been found to be lower in adults with high levels of education who are more likely to be overweight or obese. As in developed countries in Turkey, the more education increases, the less likely it is to be obese.

In Turkey, a single adult was found to be less likely to be overweight or obese than married or divorced/widowed adults. Paid-duty workers are less likely to be overweight or obese than free-paid family workers in Turkey. The effect of full-time works on the likelihood of being obese was found to be statistically meaningless.

One of the important findings of this study is that as income increases in Turkey, adults are more likely to be overweight or obese, but in the last income group, this possibility appears to fall in a bit. Because of the different levels of social consciousness in developed and developing countries, the effect of socio-economic status on obesity also varies. With the increase in income, one of the key determinants of socio-economic status, obesity has increased in developing countries, and obesity has decreased in developed countries

(Gupta et al., 2012; Gil and Takourabt, 2017). Therefore, it can be said that income growth increases obesity in Turkey, which is a developing country.

Those who have diabetes in Turkey were found to be more likely to be obese than those who are not depressed. Similarly, the likelihood of an adult who does not feel worthless (feeling valuable) is less likely to be overweight or obese (although statistically meaningless) than the adult who feels worthless. When you look at the effect of physical activity on obesity, adults regularly daily exercise, 30 minutes or more of regular walking, and cycling for 30 minutes or more per day reduces the likelihood of being overweight or obese. This negative effect is more in adults walking for 30 minutes or more daily in Turkey.

When the Tobit (output) model, where BMI is censored for individuals who are weak or normal weight (for values 24.99 and below), was found to be statistically significant, much of the coefficients of the independent variables in the model were found to be statistically significant. The coefficient of the gender variable was found to be negative in this equation, contrary to the selection model.

This finding shows that although men in Turkey are more likely to be obese or overweight than women, the body mass index value of men is lower than the value of women's body mass index. According to the body mass index of 28.94 for men and 30.44 for women in Turkey, women are more obese than men. According to the output model, the higher the educational status of the individual, the lower the value of the body mass index, in other words, the higher the education, the relative weight of individuals can be said to decrease. BMI was found to be 1.34 lower than those who had never been married. This result shows that married individuals will be more overweight than single individuals. And the BMI of paid workers and workers who are self-employed are lower than free family workers and unemployed.

BMI values of individuals with higher household incomes were found to be higher. When looking at household income, BMI of adults with household income between 1,265 and 1815 TL is 0.38 points higher than BMI of adults in other income groups, and BMI is 0.66 points higher than adults with a household income of 1,815-2,541 TL compared to adults in other income groups. As income increases in Turkey, it can be said that the body mass index in adults, and therefore obesity, increases. Many studies on obesity have been noted that the effect of income on obesity in developing countries is positive (Kain et al., 2003).

The BMI value of individuals with diabetes was found to be 2.25 higher than non-diabetic individuals. The body mass index of depressed adults in the last 12 months was found to be higher (with a value of 0.315) than adults who were not depressed. The coefficient of the depression variable was also positively effected and statistically significant. This is more likely to be obese in Turkey than those who are not depressed. The effect of the adult's lack of feeling worthless on BMI is statistically insignificant but affect positively.

When the variables related to physical activity are examined in the model; according to the individual who does not exercise daily, the individual who walks for 30 minutes or more per day will have a lower body mass index than the individual who do not walks for more than 30 minutes per day in Turkey.

5. Conclusions

In this study, it was determined how socio-demographic and economic variables and daily exercise, diabetes, depressive, inability to feel worthless, and health status affect the likelihood of being overweight/obese and body mass index of adults in Turkey. Obesity is one of the important health problems in all the world and in Turkey. Determining the causes of obesity in Turkey will help design national health policies aimed at reducing obesity in the country.

In Turkey, men are more likely to be obese or overweight than women. However, men's body mass index value is lower than the body mass index value of women. While the likelihood of being obese and body mass index increases with age in Turkey, the increase in the body mass index is higher, and the likelihood of being obese and the increase in BMI tends to fall after a certain age (after the age of 45-54).

Considering the negative impact of education on obese/overweight and on the body mass index of adults in Turkey, individuals should be aware of obesity through education.

When the effect of the marital status on obesity in Turkey is examined, adults who never married are less likely to be obese than married people, adults who are married and divorced, or whose spouse is dead. At the same time, the body mass index of adults who never married is lower than those married, divorced, or the adult whose spouse is dead. Marriage and increasing age, lifestyles of individuals between work, children, and home increase obesity. It can be said that focusing on activities that improve the lifestyles of individuals in this group will reduce obesity.

For this reason, accessible daily exercise areas for adults, and walking paths should be made near the settlements, and measures should be taken to promote an active lifestyle.

In this study, it was determined that adults are more likely to be obese/overweight and that their BMI increases. An adult with a household income of 3,722 TL or more in Turkey is more likely to be obese or overweight than adults with low household income. A similar situation is seen in the body mass index, and as household income increases, BMI of the adult's increases in Turkey. In this case, it can be said that Turkey is a developing country in terms of obesity.

Adults with lower educational levels were more likely to be obese, so it will be effective in reducing obesity to training programs related to balanced and adequate nutrition in Turkey. Lastly, when adults exercise daily, walking 30 minutes or more a day, such as physical activity, is less likely to be obese, and the effect on the body mass index is negative. Therefore, one of the most important results of this study is that physical activity is very important in reducing the risk of obesity. In this case, it can be said that policies should be followed to promote physical activities in order to reduce obesity in adults in Turkey or to prevent being obese. Individuals should be encouraged to perform physical activities by making safe walking paths and bicycle paths in Turkey, and increasing green areas (such as city parks). It appears that increasing the level of education, informing the public on the health risk of obesity, and increasing the number of public exercise areas such as parks, bike, and walk trails could be vital for decreasing obesity in Turkey. More research should be done to examine the socio-economic inequality of obesity among adults and determine effective programs aimed at reducing obesity in Turkey.

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Research-development and innovation in small and medium-sized enterprises in Romania

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Abstract. *Within the withdraw of the welfare state from its classic functions of providing a decent quality of life for citizens, the individual's role in supporting their living standard is increasing. Personal accountability in the current socio-economic context marked by labour force mobility, economic competitiveness, international economic exchanges, demographic challenges, active aging, and the emergence of some new and atypical employment forms (part-time work, teleworking, self-employment, etc.) reconfigure the role that accessing and maintaining a job plays. The article analyses private small-and medium-sized Romanian enterprises' capacity to integrate research-development and innovation (RD&I) elements within their ordinary activity. The research hypothesis is that despite these actions taken by Romanian SMEs the innovation process as a whole is still not well represented within their current activities in the meaning of limited openness towards the innovation process. The research methodology is based on a secondary analysis of the data collected within the 2004-2018 White book of SMEs in Romania. 15 yearly editions collected data were focused on SMEs' innovations and characteristics of SMEs digitalization process. In terms of findings, the openness of Romanian SMEs towards innovation can be characterized by innovation activities and ways of achieving innovation. Investment in Romanian SMEs' innovation is rather the desired direction as it only occupied the top position in 2007. The main information sources for SMEs' innovative processes are "customers and consumers, own organisation, and journals and specialized magazines". As a promising track is recorded in Romania in the last years towards integrating RD&I in ordinary SMEs' activities, medium, and long term complementary national public policies should welcome and further push these sustainable development directions.*

Keywords: digitalisation, innovation, small- and medium-sized enterprises, Romania

JEL Codes: O32, O35, M15,

1. Introduction

Acknowledged at the European Union' level, innovation was promoted by the Lisbon Strategy as well as Europe 2020 Strategy. Besides, the year 2009 was proclaimed as the European Year of Innovation and Creativity at the level of EU member states. Current international established goals (e.g. UN Sustainable Development Goals or European Green Deal) emphasize the key role played by research-development and innovation (RD&I) strategies in achieving economic and social goals as reducing poverty or clean environment-related actions in order to stop global warming.

The article assumes as a starting point that modern society "is characterized by innovation institutionalization, respectively by the expansion of systematic activities of searching, generating, applying and disseminating at as high paces as possible the innovation in all sectors of the social system" (Vlăsceanu, 1993, p. 302).

The emphasis on promoting innovative elements triggered the research question of the present paper: to what extent the Romanian small and medium-sized enterprises are open to the innovation process. In order to answer this question, secondary analyses based on information about innovation in SMEs, and the

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characteristics of SMEs' digitalization, according to the 15 editions of the SME White Book in Romania was accomplished. The yearly research initiative of Romanian SMEs enterprises is welcome by the academic area as it benefits by the support of the Romanian National Council of Small- and Medium-Sized Enterprises in partnership with the former Ministry for Business Environment, Commerce and Entrepreneurship (current Ministry of Economy, Energy, and Business Environment).

In terms of structure, the first part of the article approaches the concept of “innovation”. The second part of the paper details the main results related to RD&I elements as perceived by the Romanian representatives of SMEs. The last part brings a series of conclusions and recommendations for improving the future integration of innovation-related elements.

2. Research Elaboration

The research methodology consists of secondary data analysis of 15 yearly editions of “White book of small and medium-sized enterprises in Romania” for the 2005-2018 period conducted by the National Council of Private SMEs in Romania in collaboration with both public and private stakeholders. For example, the 2018 edition was run in collaboration with the Romanian Ministry of Business Environment, Trade, and Entrepreneurship, while private actors supported different stages of the research process.

Based on both research of the “innovation” concept and data-based evidence, the paper explores innovation activities within SMEs, ways of achieving it, investments in innovation, incomes obtained by renewing products and services, financing sources for investments in RD&I in SMEs, the optimum period for unfolding an RD&I projects, the optimum duration for recovering the investments realized in RD&I projects, main sources of information for the innovative processes in the SMEs, barriers in unfolding RDS activities, use of information technology in SMEs – the structure of IT components used in SMEs, and use of Internet/ Intranet in SMEs and purpose of using it.

3. The innovation concept

The academic research interest in studying innovation does not emerge “as a stage in the logic of cognitive reflection, but as a reflex of the emergencies born in the dynamics of collectives” (Zamfir, 2009, p. 8). Innovation is closely related to the term of discovery and of invention, which in turn includes elements of novelty but incorporated at different levels: “discovery and invention, at the level of final products, innovation at process level” (Stănescu, 2009, p. 19). In sociology, the concept of innovation has a rather broad meaning and signifies a “change resulting from the initiative of one or several individuals that affects, as the case may be, economy, politics, science, or even culture” (Bejin, 1996, pp. 136-137). Innovation might be defined either as “an idea, method, or technical products with novelty characteristics as a result of the creative individual or collective activity”, or as “change generated within a system (technical, economic, social, and cultural, etc.) as result of implementing some new discoveries” (Vlăsceanu, 1993, p. 301). The stages of innovation pursue the following succession: “developing a corpus of hypotheses, recourse to experimenting, transiting to production, and finally the consumption of the new products” (Ferreo, 1995, p. 93).

The specific approaches of (social) innovation lead to social development defined as “orientation of a community/institution towards achieving a desirable state established as objective to be accomplished by a process planned over time, the result of a set of conjugated actions” (Zamfir, 2007, p. 173). In this respect, with reference to innovation in the field of social work, Arpinte underpinned the fact that “it has an essential role by promoting those changes required for development and adjusting services to the needs of the beneficiary” (Arpinte, 2009, p. 91). At the same time, not the volume of innovation determines “the development and efficiency of the system of social assistance. Important is the way in which the innovation is used, and how it is absorbed at the level of the programs and permanent services of social assistance” (Arpinte, 2009, p. 99). Whether we refer to the economic, technological, or social field, “innovation is a condition for evolution and means a readjustment, or better adjustment of the individuality” (Hideg, Neamțu, 2019, p. 1). Regarding the link between innovation and entrepreneurship, Drucker emphasizes that an innovative business presupposes “that innovation itself be organized as a systematic activity. It requires that the business itself be

organized to be a successful innovator. It requires both a discipline of innovation and a discipline of entrepreneurship that is a discipline of how to make innovation effective in the market place" (Drucker, 2007, p. XV). Various innovation sources are mentioned: the unexpected success and failure, incongruities, process need, industry and market structures, demographics, changes in perception, and new knowledge (Drucker, 2007, p. 33-117). Alongside, Drucker refers to three key conditions: 1. "innovation is work (...), 2. To succeed, innovators must build on their strengths (...), 3. Innovation is an effect on the economy and society" (Drucker, 2007, p. 125-126).

Joseph Alois Schumpeter, the father of innovation, as considered by economists, defines innovation as "a new combination of production factors" (Schumpeter, 1982, p. 244). This implies combining production factors to produce new goods and services, applying new production methods, discovering new ones, markets for resources and raw materials, new technologies, increasing managerial and marketing skills, etc.

The Organization for Economic Cooperation and Development (OECD) defines innovation as "the result of implementing new or significantly improved products or new processes, new marketing methods, or new methods of managing the organization. Business practices, workplace or external relations" (OECD, 2005). Seven priority areas were identified in 2014 at the EU level, among which specific investments in research and innovation can have a positive impact on the well-being and health of the population (EU, 2020).

4. Innovation elements in small- and medium-sized enterprises from Romania

This part is based on processing 2004-2018 editions of the White Book of the SMEs in Romania (CNIPMMR 2004-2018). Depending on the capacity to continue this impressive national research, the specific research tools applied to the various items regarding some aspects are pursued for longer or shorter time intervals. We recommend a slight change of questions within the questionnaire as for academic purposes; it would be very useful to comparatively continue to analyze the available data. The following aspects are taken into account: Innovation activities within SMEs; ways of achieving innovation; investments in innovation; incomes realized by renewing products and services; financing sources for investments in RD&I in SMEs; the optimum period for unfolding research-development projects; optimum duration for recovering the investments realized in RD&I projects; main information sources for innovative processes within SMEs; barriers in unfolding RD&I activities; use of information technology in small- and medium-sized enterprises – a structure of used IT components within SMEs; and use of Internet/Intranet in SMEs – the purpose of using Internet/Intranet in SMEs. We present the situation below comprehensively for each of the above indicators, as in line with the above-mentioned White Charters consulted. For more information, also the appendixes by the end of the article might be consulted.

4.1. Innovation activities in SMEs

The inquired elements as regards the innovative actions undertaken by SMEs have included prospecting following elements: "new products", "new technologies", "modernization of the information system" (except 2010-2012 "informatics system"), "new management and marketing approaches", and "training human resources" (since 2007).

Regarding the ranking of the first three innovative activities for the period 2004-2017, we find the constant presence of four options: "new products", "new technologies", "new management and marketing" approach, and "modernization of the information system". The constant, but the modest concern of respondent SMEs for the IT system coincides with the intensified commercial presence in the virtual environment, but also to the potential risk represented by cyber-attacks, and the rigors of complying with the (inter)national regulations such as the newly launched General Data Protection Regulation (GDPR) at the level of the EU member states. The magnitude taken by the concerns regarding the information aspects specific to the development of SME activities' is noticeable. We find that even by 2006, only 1% of the SMEs showed interest in the modernization of the information system.

Save for the year 2007, in the period 2004-2017, “new products” were ranked in the first place as an innovative activity. “New technologies” were placed in 2007 in the first position. The maximum value was achieved in the year 2006 (“new products”, 41%), while the minimum value was in 2014 (“new products”, 28%). The detailed analysis shows that the results from 2006 reflect higher interest for realizing some innovative activities among SMEs active for a period of 10 to 15 years from the region of development south, and represented by small enterprises organized legally as Limited Liability Companies from the field of industry (CNIPMMR, 2006, pp. 316-319). At the same time, the SMEs from the year 2014, which undertook the smallest innovative efforts, had ages between 5 and 10 years and were localized in the development region North-West, and most are micro-enterprises organized legally as joint-stock companies and were active in the field of tourism (CNIPMMR, 2014, pp. 272-277). In the second position were placed most frequently “new technologies” (eight times), followed by “new management and marketing approaches” (four times). We notice that in 2004, these two items had equal values by 18%. In 2007, in the second position was placed “new products”. The maximum value was recorded in 2007 (“new products”, 33%), while the minimum value was registered in 2014 (“new technologies”, 14%). In the third position, as regards the frequency of innovative actions were placed with equal frequencies (three times) both “new technologies”, and “new management and marketing approaches”. Another item recorded twice was “modernization of the information system”. The maximum value was recorded in 2007 (“new management and marketing approaches, 25%), while the minimum value was in 2004 (“modernization of the information system, 10%).

From the viewpoint of the distribution of innovative actions in the ranking regarding the first three positions, leaving aside the effective values obtained, we notice similar profiles for the years:

- 2006, 2008-2011, 2013, 2014, 2016: “new products”, “new technologies” and “modernisation of the information system”,
- 2005, 2012 and 2015: “new products”, “new management and marketing approaches” and “new technologies”,
- 2004 and 2017: “new products”, “new technologies”, and “modernization of the information system”.

For this bulk of items were also recorded “it's not the case” answers (2004 – 2006, and 2010 – 2017) and “do not innovate” (2007 – 2009). The minimum value for “it's not the case” was by 16% in 2014, and was exceeded constantly in the subsequent years, and reached 45% in the year 2014. As future research direction, we consider as useful identifying the profile for these SMEs and analyzing in-depth their reasons in a qualitative study. It would be interesting to pursue their development in time: do they constantly remain against innovative actions? Are there new SMEs that thicken their ranks? If yes, for what reason?

4.2. Ways of achieving innovation

The four options included in the SMEs research were: “adjustment and changing novelty elements developed initially by other organisations”, “taking over integrally elements of novelty developed initially by other organisations”, “unfolding individually of research-development activities”, and “cooperation with other organisations as regards the unfolding of research-development activities”.

Due to the changes registered in the process of developing the research tools, we find that this bulk of questions was implemented only by 2012 so that our analysis is based on data gathered for the period 2012-2018. From the perspective of ranking the ways by which innovation is achieved within the SMEs from Romania, we find that in the first place is ranked most frequently, “adjustment and changing novelty elements developed initially by other organisations” (2013-2016, and 2018). It is followed by “unfolding individually research-development activities” (2012), and “taking over integrally the novelty elements developed initially by other organisations” (2017). The maximum value for the first position was registered in the year 2015 (“adjusting and changing novelty elements developed initially by other organisations” 48%), while the minimum value was in 2017 (“taking over integrally elements of novelty

developed initially by other organisations” 38%). On the second position was placed most frequently “unfolding individually research-development activities” (2013-2016), followed by “adjusting and changing novelty elements developed initially by other organisations” (2012 and 2017), and by “taking over integrally novelty elements developed initially by other organisations” (2018). The maximum value was recorded in 2017 (“adjusting and changing novelty elements developed initially by other organisations”, 33%), while the minimum value was in 2015 (“unfolding individually research-development activities”, 25%). On the third position of the ranking was placed for six out of the seven years of analysis, “taking over integrally novelty elements developed initially by other organisations” (2012-2017), followed by “unfolding research-development activities individually” (2018). The maximum value was recorded in 2013 and 2014 (“taking over integrally novelty elements developed initially by other organisations”, 25 %) while the minimum was in 2015 (“taking over integrally the novelty elements developed initially by other organisations”, 20%).

4.3. Investments in innovation

From the viewpoint of values for the first position, it is surprising that in 13 out of the 14 analyzed years, the SMEs had no innovation investments. Only in the year 2017, in the first position was placed the percentage investment by 5.1-101% in innovation, and in 2009 the percentage by 0.1-5%.

For the first top position, the maximum value was recorded in the year 2014 (no percentage for innovation as stated by 49% from the respondents) while the minimum value was registered in 2009 (“0% equal as value with the share by 0.1-5% which was the answer for 20% from the ones surveyed). On the second position are found only two percentages of investments in innovation: 0.1-5%, and 5.1-10%. We notice that for the year 2005, these have recorded some value. At the same time, comparatively, the percentage allotted by 0.1-5% for investments is found in 10 out of the 14 analyzed years (2004-2007, 2010-2014, and 2016), while the percentage by 5.1-10% in five years (2005, 2008, 2009, 2015 and 2017). The maximum value was registered in 2012 (“0.1-5%” answered 26 % of the SMEs), while the minimum value was in 2009 (“5.1-10% for 18 % of the respondents). In the third position, we remark with priority the share by 5.1-10% dedicated to innovation in 8 out of the 14 years of analysis: 2004, 2006, 2010-2014 and 2016. On the third position, as well, follows the share by 10.1-20% dedicated to innovation registered for the respondents in three years, respectively 2005, 2008, and 2015. For only one year, were also recorded the following shares of investment dedicated to innovation: 0% in the year 2007, 0.1-5% in 2015, and 20.1-50% in 2009. The maximum value was registered equally in the years 2006 and 2008 (“5.1-10%” and a share by 10.1-20%” for 19% of the respondents), while the minimum value was in 2011 (“5.1-10% for 13% of the respondents).

4.4. Incomes obtained by renewing products and services

On the first position in the top is placed the share by 0% resulting from incomes obtained by renewing services and products in 11 out of the 14 years included in the study. The share by 5.1-10% follows that was recorded in the years 2008 and 2009, and the share by 10.1-20% in the year 2007. The maximum value was recorded for three consecutive years 2010-2012 (no share for 46% of the respondents), while the minimum value was registered in 2006 (no share for 21% from the respondents). In the second position were placed the shares by “0.1-5%” for half of the analysed years: 2010-2014, 2016 and 2017. After that follows the share by “5.1-10%” for the years 2006, 2007 and 2015, and the share by “10.1-20%” for the years 2004, 2005 and 2009, and by 0% for the year 2008. The maximum value was recorded in 2016 (“0.1-5%” according to 23% from the respondents), while the minimum value was recorded in 2010 (“0.1-5%” for 17% from the respondents). On the third position of the ranking were placed, as follows: the share by “5.1-10%” from the incomes generated by renewing products and services in eight of the studied years: 2004, 2005, and 2009-2014. Then follows the share by “10.1-20%” for the incomes in the years 2006, 2008, and 2016. In one single year were recorded the following shares: 0% in 2007, “0.1-5%” in the year 2015, and “20.1-50%” in the year 2017. The maximum value by 19% for respondents was recorded in five different years: 0% in 2007, “0.1-5%” in the year 2015, “5.1-10%” in the year 2009 and “10.1-20%” in the years 2006 and 2008.

4.5. Financing sources for investments in research-development and innovation in SMEs

The items taken into account were: “own resources”, “loans, bank credits”, “EU funds”, “funds from local public authorities”, “funds from central public authorities”, and others. According to the available data for the period 2012-2018, the main financing source of investments in the RD&I process for Romanian SMEs was represented by their own sources. Maximum values by 89% of the respondents were recorded constantly in the period 2012-2014. The lowest value (67%) was found for the year 2017. We remark on the discrepancy between the years 2014 (89%) and 2015 (71%), a period that coincided with the elections for the current President of Romania in November 2014. In the second position, but the significant difference is placed the answer “loans, bank credits” with a maximum threshold of 21% recorded in 2015. At the opposite pole, the lowest value was in the year 2018 by only 8%. Three types of funds were prospected as representing financing sources for R&DI in SMEs: the European Union (EU), the local and central public authorities. The highest values were recorded in the case of those made available at the community level, respectively 6% in 2012 and 2% (2013-2015). Second, as share are the ones accessed from central and local public authorities. In the third position are placed the “funds from the EU” (2012-2017), and “others” (2018). The maximum value was registered in the year 2012 (“funds from the EU” la UE” according to 6% from the respondents), while the minimum value was registered in the years 2013-2015 (“funds from the EU” as stated by 2% from the respondents).

4.6. The optimum period for unfolding a research-development project

This relevant element for the innovation activity within SMEs from Romania was implemented in the research instruments only in the year 2013. The items suggested for the evaluation of the period considered as optimum for unfolding a research-development project were of “up to 6 months”, “6 to 12 months”, and “1 to 2 years”. In the first position were ranked: the period “1 to 2 years” (2013-2015), “up to 6 months” (2017 and 2018), and “6 to 12 months” (2016). The maximum value was recorded in the year 2018 (“up to 6 months” for 51% from the respondents) while the minimum value was recorded in 2014 and 2017 (“1 to 2 years” and “up to 6 months” for 36% of the interviewed persons). In the second position, we found two items present: “6 to 12 months” (2014, 2015, 2017, and 2018) and “up to 6 months” (2013 and 2016). The maximum value was registered in the year 2016 (“up to 6 months”, replied 36% of the respondents) while the minimum value was in the years 2015, 2017, and 2018 (“6 to 12 months” for 22% from the respondents). On the third position were placed the following: “1 to 2 years” (2013, 2014 and 2015), “up to six months” (2017 and 2018), and “6 to 12 months” (2016). The maximum value was recorded in the year 2016 (“1 to 2 years” answered 33% from the SMEs), while the minimum value was in 2018 (“1 to 2 years” for 19% of the respondents).

4.7. The optimum duration for recovering the investments realized in research-development and innovation projects.

The answers to this question were: “up to 6 months”, “6 to 12 months”, “1 to 2 years”, “3 to 5 years”, “6 to 10 years” and “over 10 years”. We find that the period was changed correspondingly to the research tools, so that in the period 2013-2015 was recorded a single category, respectively, “over 5 years”. As of the year 2016, it was differentiated into two categories: “6 to 10 years” and “over 10 years”. On the first position were placed: “1 to 2 years” (2013-2016), “3 to 5 years” (2017), and “up to 6 months” (2018). The maximum value was recorded in the year 2014 (“1 to 2 years” answered 47% from the representatives of the surveyed SMEs), while the minimum value was in 2017 (“3 to 5 years” answered 29% from the respondents). On the second position were placed: “3 to 5 years” (2013-2015), “up to 6 months” (2016-2017) and “1 to 2 years” (2018). The maximum value was recorded in the years 2016 and 2018 (“up to 6 months”, respectively “1 to 2 years” replied 28% of the respondents). At the same time, the minimum value was in 2014 (“3 to 5 years” replied 19% from the surveyed ones). On the third position were placed: the period “6 to 12 months” (2014, 2016 and 2018), “up to 6 months” (2013 and 2015), and the period “1 to 2 years” (2017). The maximum value was recorded in the years 2013 and 2017 (“up to six months”, respectively “1 to 2 years” replied 19% of the respondents). The minimum value was in 2015 (“up to 6 months” for 15% from the surveyed individuals).

4.8. Main sources of information for the innovative processes in the SMEs

The research instruments for the White Charter of SMEs were applied as of the year 2004. In time, these were improved as to allow for implementing some new aspects regarded as relevant for investigating the situation of SMEs from Romania. From this perspective, as of the year 2013, were collected data about the main sources of information for the innovative processes within the SMEs. The respondents were asked to answer this question with the following options, respectively “own organisation”, “customers and consumers”, “suppliers of equipment, materials”, “journals and specialised magazines”, “direct competitors and/or indirect ones”, “exhibitions, fairs, conferences, etc.”, “employers' organisations and other professional associations”, “consulting, private research organisations”, “universities”, “government and/or public research institutions”, and “others”. Save for the year 2018, on the first position was ranked the option “customers and consumers” (2013-2017). In 2018, on the first position was placed the option “own organisation”. The maximum value was recorded in the year 2014 (“customers and consumers”, for 73% from the respondents). The minimum value was in 2018 (“own organisation”, for 42%). On the second position was placed preponderantly “own organisation” (2013-2017), followed by “customers and consumers” (2018). The maximum value was in 2014 (“own organisation”, for 52% from the surveyed individuals), while the minimum value was registered in 2013 (“own organisation”, considered 33% of the respondents). On the third position in the ranking was placed the option preponderantly “journals and specialized magazines” (2013-2017), followed by “suppliers of equipment, materials” (2018). The maximum value was recorded in 2015 (“journals and specialized magazines” stated 37% from the respondents), while the minimum value was in 2018 (“suppliers of equipment, materials” answered 21% from the respondents).

4.9. Barriers in unfolding research-development and innovation activities

The options to this question included the following answers: “the high costs of research activities”, “own insufficient funds”, “uncertainty regarding demand for innovative products”, “lack of medium-, and long-term forecasts about the evolution of the sectors of activity”, “difficulty in finding partners in view of cooperating as regards research-development activities”, and “the lack of adequate human resources”. The main barrier was considered “high costs of research activities” for the entire period 2013-2018. The maximum value was recorded in the year 2015 (58%), while the minimum value was in 2016 (33%). The second and third position was disputed between the options “own insufficient funds”, and “uncertainty regarding the demand for innovative products”. “Insufficient own funds” was placed on the second position in all the years, save for 2017 when it was replaced by “uncertainty regarding the demand for innovative products”. The maximum value was recorded in the year 2013 (41%), while the minimum value was in 2018 (28%). “Uncertainty regarding the demand for innovative products” was on the third position of the ranking in all years, save for 2017 when it was replaced by “own insufficient funds”. The maximum value was recorded in the year 2013 (39%), while the minimum value was in 2018 (18%).

4.10. Use of information technology in small- and medium-sized enterprises – the structure of IT components used in SMEs

The options to this question were “computers”, “Internet”, “email”, “own site”, “Intranet”, “online sales/purchases”, “none of the above”, “others”, and “IT not used”. In the ranking of the first three options as frequency were counted: “computers”, “Internet”, and “email”. Save for the year 2014 (“Internet”), on the first position was placed the option “computers”. The minimum value was in the years 2007 and 2009 (“computers” replied 83% from the representatives of SMEs). On the second position was placed preponderantly “Internet” save for the years 2014 (“computers”) and 2017 (“email”). The maximum value was registered in the year 2013 (“Internet” for 83% from the respondents), while the minimum value was in the years 2005 and 2017 (“Internet”, respectively “email” by a 64%share). The third position was taken by “email” for the period 2005-2016, next to “Internet” (2017). The maximum and minimum values were recorded for “email” in 2010 (75% from the respondents), respectively, the year 2005 (57% from the respondents).

4.11. Use of Internet/Intranet in SMEs – the purpose of using Internet/Intranet in SMEs

The options in answering this question included the following: “communication with suppliers or customers”, “obtaining information about the business environment”, “facilitating communication inside the company”, “transactions, contracts, payments”, “for promoting products/services”, and “not connected to the Internet”. On the first position of the ranking as regards the first three options were counted with priority “communicating with suppliers or customers” (in 12 out of the 13 years analyzed: 2006-2017). Also, on the first position was placed “obtaining information about the business environment” in 2005 and with a value equal to the first option in 2008. The maximum value was recorded in the year 2009 (“75 %”), while the minimum value was in 2005 and 2006 (“59 %”). On the second position were placed “obtaining information about the business environment” (2006-2007, 2009-2014), “for promoting products/services” (2015-2017), “facilitating communication within the company” (2008), and “communication with suppliers or customers” (2005). The maximum value was recorded in 2013 (“obtaining information about the business environment”, 67%) and the minimum value in 2008 (“facilitating communication within the company”, 29%). On the third position were placed “facilitating communication within the company” (2005-2007, 2009 and 2010), “transactions, contracts, and payments” (2006-2007, 2009 and 2010), “obtaining information about the business environment” (2015-2017), and “for promoting products/services” (2014). The maximum value was in 2013 (“transactions, contracts, payments”, 51%), while the minimum value was in 2008 (“transactions, contracts, payments, 25%).

5. Conclusions

The article emphasized the main RD&I elements in Romanian SMEs as in line with the yearly 2004-2018 White Book of Romanian SMEs. The main 2004-2017 innovation activities in SMEs were: "new products", "new technologies", "new management and marketing approaches", and "modernization of the information system". The main way of achieving innovation, according to the available data for the period 2012-2018, is "adjustment and changing novelty elements developed initially by other organizations. In the period 2004-2018, only in 2007 in the first position was recorded the investment in innovation. In all other years, in the first position was registered the investment zero in innovation. The situation is somewhat better in the case of incomes achieved by renewing products and services. In 11 out of the 14 years analyzed, the value of zero incomes is in the first position, while the other positions are shares by 5.1-10% (2008 and 2009) and 10.1-20% (2007). The main financing sources of investments in RD&I within SMEs for the period 2012-2018 were their own sources, loans, and bank credits, and funds at the community level. Both the optimum period for unfolding a research-development project and one of recovering the investments for RD&I projects is – according to the opinion of SMEs representatives from Romanian – of 1 to 2 years. The main information sources for innovative SMEs' innovative processes are "customers and consumers, the own organization, and journals and specialized magazines". According to the data available for the period 2013-2018, the main barriers in unfolding insufficiencies were the high costs of research activities, "insufficient own funds", and "uncertainty about the demand for innovative products". Regarding the use of information technology in small- and medium-sized enterprises, the structure of SMEs' IT components places in the first three positions: computers, the Internet, and email. In the first position as regards the use of Internet/Intranet in SMEs – the purpose of using the Internet/Intranet in SMEs is "communication with suppliers or customers", next to "obtaining information about the business environment".

Further research could assess to what extent these above-mentioned elements support the achievement of international and UE established goals (i. g. Millennium Development Goals or European Green Deal) within the context of managing large natural resources and concern for preserving the biodiversity (Barna, 2008; Botan, 2015). Besides, innovative SMEs such as social enterprises could represent an asset in emphasizing the key role played by Research Development and Innovation related strategies in accomplishing economic as well as social purposes (Stănescu *et al.*, 2013; Neguț, 2014; Barna, Vameșu 2015; Rebeleanu, 2016; Lambru, Petrescu, 2019; Mihalache, 2020).

In the context of the contemporary driven knowledge-based economy, the shared concern for implementing innovation-based elements within Romanian SMEs is an integral part of their development strategy on the medium-and long-term towards both increasing their competencies to successfully activity on the labor market and rationale use of generally available resources (Vasile, Zaman 2005; Nicolae, 2007; Zaman, Gherasim 2007). The current Romanian Ministry of Economy, Energy, and Business Environment, through its designed national policies, could play a valuable role alongside other private and public (inter)national stakeholders.

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7. Appendixes

7.1. Appendix 1: Ranking of innovative activities in the period 2004-2017

No.		2004	2005	2006	2007	2008- 2011	2012	2013-2014	2015	2016	2017
1.	First position	New products			New technologies	New products					
2.	Second position	New technologies/new management and marketing approaches	New management and marketing approaches	New technologies	New products	New technologies	New management and marketing approaches	New technologies	New management and marketing approaches	New technologies	
3.	Third position	Modernisation of the information system	New technologies	New management and marketing approaches			New technologies	New management and marketing approaches	New technologies	New management and marketing approaches	Modernisation of the information system

Source: CNIPMMR 2004-2017 White Charter of SMEs in Romania

7.2. Appendix 2 Ranking regarding ways of achieving innovation

		2012	2013	2014	2015	2016	2017	2018
1.	First position	Unfolding individually research-development activities	Adjusting and changing novelty elements developed initially by other organisations				Taking over integrally novelty elements developed initially by other organisations	Adjusting and changing novelty elements developed initially by other organisations
2.	Second position	Adjusting and changing novelty elements developed initially by other organisations	Unfolding individually research-development activities				Adjusting and changing novelty elements developed initially by other organisations	Taking over integrally novelty elements developed initially by other organisations
3.	Third position	Taking over integrally novelty elements developed initially by other organisations						Unfolding individually research-development activities

Source: CNIPMMR 2012-2018 White Charter of SMEs in Romania

7.3. Investments in innovation

No.		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1.	First position	0%			5,1-10%	0%									
2.	Second position	0,1-5%	0,1-5%/ 5,1-10%		0,1-5%		5,1-10%		0,1-5%			5,1-10%	0,1-5%	5,1-10%	
3.	Third position	5,1-10%	10,1-20%		5,1-10%	0%	10,1-20%	20,1-50%		5,1-10%			0,1-5%	5,1-10%	10,1-20%

Source: CNIPMMR 2004-2017 White Charter of SMEs in Romania

7.4. Incomes achieved by renewing products and services

No.		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1.	First position	0 %			10,1-20%	5,1-10%		0 %							
2.	Second position	10,1-20%		5,1-10%		0%	10,1-20%	0,1-5%				5,1-10%	0,1-5%		
3.	Third position	5,1-10%		10,1-20%	0%	10,1-20%	5,1-10%					0,1-5%	10,1-20%	20,1-50%	

Source: CNIPMMR 2004-2017 White Charter of SMEs in Romania

7.5. Financing sources of research-development investments within SMEs

No.		2012	2013	2014	2015	2016	2017	2018
1.	First position	Own sources						
2.	Second position	Loans, banking credits						
3.	Third position	EU Funds					Others	

Source: CNIPMMR 2012-2018 White Charter of SMEs in Romania

7.6. Optimum period for unfolding a research-development project

No.		2013	2014	2015	2016	2017	2018
1.	First position	1-2 years			6-12 months	Up to 6 months	
2.	Second position		6-12 months		Up to 6 months	6-12 months	
3.	Third position	6-12 months	Up to 6 months		1-2 years		

Source: CNIPMMR 2013-2018 White Charter of SMEs in Romania

7.7. Optimum duration for recovering investments realised in research-development and innovation projects

No.		2013	2014	2015	2016	2017	2018
1.	First position	1-2 years				3-5 years	Up to 6 months
2.	Second position	3-5 years			Up to 6 months		
3.	Third position	Up to 6 months	6-12 months	Up to 6 months	6-12 months	1-2 years	6-12 months

Source: CNIPMMR 2013-2018 White Charter of SMEs in Romania

7.8. Main sources of information for innovative processes in SMEs

Nr.		2013	2014	2015	2016	2017	2018
1.	First position	Clients and customers				Own organisation	
2.	Second position	Own organisation				Clients and customers	
3.	Third position	Journals and specialised magazines				Suppliers of materials, equipment, etc.	

Source: CNIPMMR 2013-2018 White Charter of SMEs in Romania

7.9. Barriers in unfolding research-development and innovation activities

No		2013	2014	2015	2016	2017	2018
1.	First position	High costs of research activities					
2.	Second position	Insufficient own funds			Uncertainty about demand for innovative products		Insufficient own funds
3.	Third position	Uncertainty about demand for innovative products			Insufficient own funds		Uncertainty about demand for innovative products

Source: CNIPMMR 2013-2018 White Charter of SMEs in Romania

7.10. Use of information technology in small-, and medium-sized companies – structure of IT components used in SMEs

No.		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1.	First position	Computers									Internet	Computers		
2.	Second position	Internet									Computers	Internet	Email	
3.	Third position	Email												Internet

Source: CNIPMMR 2005-2017 White Charter of SMEs in Romania

7.11. Use of Internet/Intranet in SMEs – purpose of use

No.		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1.	First position	Obtaining information about the business environment	Communication with suppliers or customers		Communication with suppliers or customers / Obtaining information about the business environment	Communication with suppliers or customers								
2.	Second position	Communication with suppliers or customers	Obtaining information about the business environment		Facilitating communication within the company	Obtaining information about the business environment						For promoting products/services		
3.	Third position	Facilitating communication within the company	Facilitating communication within the company / Transactions, contracts, payments		Transactions, contracts, payments	Facilitating communication within the company		Transactions, contracts, payments		For promoting products/services		Obtaining information about the business environment		

Source: CNIPMMR 2005-2017 White Charter of SMEs in Romania

Book review: Preoteasa A. M., *Multiple facets of precarious work in Romania*, Bucharest: Pro Universitaria Publishing House, 2018, ISBN 978-606-26-0883-5

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Abstract. *This book review is written for the volume Ana Maria Preoteasa (2018) Multiple facets of precarious work in Romania, Bucharest: Pro Universitaria Publishing House. The book addresses precarious work through its characteristics as atypical employment. Simultaneously, in-depth quantitative and qualitative analysis focus on the main sources of vulnerability for the rural population, youth, Roma minorities in general, and Roma women in particular. The book's added value is the mix of quantitative and qualitative research methods in emphasizing employment-related factors for one of the most vulnerable groups in inserting in the labor market in Romania: youth from the social protection system, Roma population, and Roma women.*

Keywords: precarious work, vulnerable groups, employment policies, Romania

JEL Codes: Y3

1. Introduction

The main drivers of labour market vulnerability are low incomes, low job offer, kind of labour contracts, their duration, and general living and working conditions (Cace *et al.* 2010, Stănescu 2011; Ilie and Preoteasa, 2017). From this perspective, identifying vulnerable groups and their survival strategies is extremely relevant for stakeholders in charge of designing the national coping public policy frameworks (Cace *et al.* 2010, Ionescu and Stănescu 2014). Through its general principles, the social economy represents a sustainable solution for their employment (Stănescu *et al.* 2013). Within this context, we welcome the bilingual book of Ana Maria Preoteasa *Multiple facets of precarious work in Romania*, which brings significant value to the field's knowledge.

2. Review of chapters

The Romanian-English book is organized into six chapters. The first two are dedicated to the employment dynamic in Romania as well as the specificity of vulnerable groups from the perspective of their labour insertion. The next four chapters are analysing employment in a rural area, for youth from the child protection system, for Roma minority and Roma women from a European comparative perspective (Bulgaria, Romania, Italy, and Spain).

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Taking the concept of "employment quality" (Land 1975) as a starting point, chapter 1 „Employment in Romania: general outlook" brings a valuable contribution to the employment dynamic in the transition from a planned economy to the market one. Alongside selected objective indicators, comparative data on contract type emphasize a small percent of both determined period contracts (only 1.5 in Romania comparative to 15% in EU) and part-time labour contracts (10% comparative to 20.4%).

The second chapter, „Vulnerable Groups and Reintegration Behaviours on the Labour Market" point out the complexity of labour relations: employment, unemployment, inactivity, active search for a job, and employment-related vulnerability based on a quantitative comparative approach (Bucharest-Ilfov and South-East development regions as well as a national sample). Main vulnerable occupational types are identified within the chapter: with no occupation (long term unemployed and unregistered unemployed), under-occupation (day laborers, part-time employees, no contract employees „on the black market", subsistence farmers) and the ones inactive (medically and anticipated retired, homemakers).

The third chapter named „Precarious work – last resort for the vulnerable population in the rural area: evidence from qualitative research" overviews conceptual delimitations and analyse through a qualitative based methodology precarious employment models. These cases are mainly due to contextual factors (low job offer in the non-agriculture area) and individual ones (low education level, lack of experience, or professional qualification).

The last three chapters are focus on issues related to labour market integration for youth from the child protection system, for Roma population in general, and for Roma women from a comparative European perspective. The last chapter is of interest for both employment researchers as well as migration ones as Italy and Spain are ranked among the main countries of destination for Romanians.

The fourth chapter focuses on a highly vulnerable group in Romania: youth from the public social protection system. In line with current regulations, they should exist the system at the age of 18 except if they continue their studies. This chapter is dedicated to their insertion into the labour market and into an independent life. Based on an in-depth qualitative approach, the results emphasize the strategic role of individual resources of youth comparative with institutional support assessment rather us residual.

Another vulnerable group represented by the Roma population is addressed in the fifth chapter from the employment perspective. As part of a comparative international project, the study uses a quantitative approach similar to Labour Force Survey in Households run by the National Institute of Statistics that allows both international comparisons as well as with the national population. In terms of the main findings, the Roma employment rate is lower than the majority of the population. Vulnerable groups in accessing labour market are represented by Roma women, youth, and the elderly.

The last chapter is dedicated to Roma women and precarious work from an international comparative perspective: Bulgaria, Romania, Italy, and Spain. While the first two countries were seen as countries of origin for migration, the last two were chosen due to their destination countries' quality. Comparative quantitative studies emphasize common elements of their employment in analyzed countries: chronic unemployment, high unemployment, and inactivity. Potential explanatory factors could be related to the poor

human capital of Roma women. Besides, a comparative analysis of employment status by gender confirms the traditional model of Roma male breadwinner.

3. Conclusion

The added value of the volume is the excellent approach of a highly relevant domain for (inter)national public policy agenda, especially as the pandemic COVID-19 crisis has long-term effects on the classical configuration of the labour market. From this perspective, the employment capacity of vulnerable groups is an asset to the design of social protection systems.

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