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Address:

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Iaşi – Romania, Zip Code 700057
E-mail: rebs@feaa.uaic.ro
Web: www.rebs.feaa.uaic.ro

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RESEARCH ARTICLE

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ANALYZING THE ECONOMIC AND ADMINISTRATIVE DIFFICULTIES OF SMALL AND MEDIUM ENTERPRISES IN ALGERIA

ZIGHED RAHMA [i], MEKIMAH SABRI [ii]

Abstract: *This paper aims to determine the impact of economic and administrative difficulties on small and medium enterprises activities in Algeria, and what are the main solutions to address. An analytical descriptive approach has been adopted, by using a questionnaire as the main tool for data collection, which has distributed to a random sample of SMEs (376 one).*

The study concluded that small and medium enterprises in Algeria are facing difficulties related to financing and Fiscality, especially banking and customs procedures, and solutions related to fighting corruption are the most important to face the difficulties that limit private investment to achieve local development.

Keywords: *Small and Medium Enterprises (SMEs), Local Investment, Economic and Administrative Difficulties*

JEL Classification: *L26, M13*

1. INTRODUCTION

The SMEs sector is the basis for economic development of countries, because of its positive reflection in creating a regional balance. This has produced a new pattern in the business field which is characterized by a large capacity to adapt quickly to economic activity changes, as it is the appropriate tool to achieve development for what it possesses a significant and inexpensive investment motivations and their ability to change rapidly, as well as the ability to innovate and develop. It is also able to expand the dynamism of the economic activity of countries, especially those that it adopted to achieve its developmental leap. SMEs play a

[i] (Corresponding Author) Laboratory ECOFIMA , University 20 out 1955, Skikda, Algeria, E-mail: r.zighed@univ-skikda.dz

[ii] Laboratory ECOFIMA, University 20 out 1955, Skikda, Algeria, E-mail: s.mekimah@univ-skikda.dz

marginal role in developing countries in both economic and social growth, and almost enterprises are inefficient and uncompetitive and suffering developing investment constraints, and the most difficulties facing those enterprises are economic and administrative, such as organizational procedures, the lack in administration competencies, and incapability to obtain necessary funds and finance. For this reason, these SMEs are incapable to compete, whether in local or international field.

In order to be able to play their full role, SMEs must be active within economic climate that may keep them continuing, and guarantees the factors stability and success, and enables them to face environment threats and foreign competition.

Despite the lack of field studies on the difficulties and obstacles of SMEs in Algeria, this study came to focus on the most important difficulties faced these Enterprises.

The problem of the study is looking at the administrative and economic difficulties facing small and medium enterprises that limit private investments in Algeria, knowing that the developing and promoting small and medium enterprises is one of the most important way to achieve development.

On this basis, we should respond the following question:

To what extent are small and medium enterprises affected by the administrative and economic difficulties that limit Algeria's investment, and to what extent are solutions available to confront?

To further more clarify our subject, we ask the following sub-questions:

Question one: To what extent are SMEs affected by administrative and economic difficulties that limit private investment in Algeria?

Question two: To what extent are solutions available to face the administrative and economic difficulties that limit the private investments of SMEs in Algeria?

Small and medium enterprises are considered as pillars which contribute to the development of society and promote the local economy, and the importance of this study is providing information about the obstacles that limit the establishment and expansion the SMEs in the city under study in order to reach proposals that will overcome on the problems and constraints.

The study aims by responding the problematic and questions to the following:

- Clarify the various concepts related to SMEs and local investment.
- Highlighting the role of development played by small and medium enterprises in developing local investment.
- Attempting to highlight obstacles and difficulties facing the development of small and medium enterprises.

- Trying to make recommendations that contribute to alleviating the obstacles that limit the development of this type of organizations in Algeria.

The topic of small and medium enterprises is very important, so many previous studies have studied the topic in its various aspects. We have chosen the following studies to intersect with our topic and the most important are:

- A study entitled: Obstacles for small and medium enterprises in Maan from the A study entitled: Obstacles for small and medium enterprises in Maan from the owners point of view, this study aimed to focus on the obstacles facing SMEs, and to identify the problems facing SMEs in Maan from the viewpoint of workers, the study has reached that small and medium enterprises suffer from a lack of liquidity, which limits the development of these projects, and the reason for this is the lack of sufficient resources to finance these projects (Thompson, wiley series in probability and statistics, 2012).
- A study entitled "Obstacles to Small and Medium Enterprises in Algeria"-a case study of Skikda City-, this study aimed to identify the obstacles facing small and medium enterprises in Skikda City, and the study found that small and medium enterprises face constituent, environmental, financing and marketing constraints in addition to administrative constraints with a degree Medium(Ayoub & Ahcene, 2019).
- A study entitled" the impact of the upgrading on the Algerian SMEs performance, thesis for obtaining a doctorate in economics, University of Oran. This study aimed to identify the situation of Algerian small and medium enterprises that suffer from several internal and external difficulties. The study found that the Manager of a SME assesses the upgrading strategy and that the procedures for engaging in the upgrading program are dominated by bureaucracy and delays in material investments (Kansab, 2016).
- A study entitled "Constraints to small and medium-sized enterprises development in Bangladesh: Results from a cross-sectional study, The European journal of Applied economic. This study aims to identify major constraints faced by the SMEs in Bangladesh, A cross-sectional study was conducted in Narsingdi, The study found that poor infrastructure and electricity supply are the main constraints to the development of SMEs, lack of proper business knowledge and plan, high domestic market competition and lack of skilled manpower and technology, and high cost of raw materials and equipment (Islam & Hossain, 2018).
- Through studies mentioned before, that dealt with the subject of small and medium enterprises, we find that they are diverse and comprehensive to all

aspects of the topic, but they mostly focused on the available sources of funding and exposed to some to some problems and their role in development.

Our study differs from previous ones in terms of its focus on administrative and economic difficulties, as well as the time and spatial domain, which was during the year 2019 in Algeria.

Through study questions and previous studies, we can formulate the following hypotheses:

Hypothesis oneH1: SMEs are affected by administrative and economic difficulties that limit investment in Algeria to a high degree at significance level (0.05).

Sub Hypotheses are set as following

H1.1: SMEs are affected by human resources difficulties that severely limit investment at significance level (0.05).

H1.2: SMEs are affected by finance and fiscality difficulties to a high degree at significance (0.05).

H1.3: SMEs are affected by the difficulties in supply and equipment that limit investments to a high degree at significance level (0.05).

H1.4: SMEs are affected by transportation and distribution difficulties that severely limit private investment to a high degree at significance level (0.05).

H1.5: SMEs are affected by Organizational procedures difficulties that limit investments to a high degree at significance level (0.05).

H1.6: SMEs are affected by the external environment difficulties, which greatly limit investment to a high degree at significance level (0.05).

Hypothesis twoH2: There are available solutions to face the administrative and economic difficulties that limit the investments of small and medium enterprises in Algeria to a weak degree at significance level (0.05).

Sub-Hypotheses are set as following:

H2.1: Financing solutions are available to face the administrative and economic difficulties that limit the investment of small and medium enterprises to a weak degree at significance level (0.05).

H2.2: Supply and Equipment solutions are available to face the administrative and economic difficulties that limit investments of small and medium enterprises with a weak degree at significance level (0.05);

H2.3: Anti-corruption solutions are available to face the administrative and economic difficulties that limit the investment of small and medium enterprises to a weak degree at significance level 0.05).

The analytical descriptive approach was depended on, by introducing the variables of study from the theoretical point of view, both the variable of small and medium enterprises, the development of local investment, and the empirical study, in order to collect data, we have designed and distributed a questionnaire on a sample of enterprises in Algeria. In order to test the hypotheses of study, the SPSS.20 program was used.

2. LITERATURE REVIEW

2.1 Small and Medium Enterprises

SMEs are defined as organizations that are independently owned and managed as they do not dominate the field of work that is active in (Marchesny & Messeghem, 2011 , p. 8), it includes a group of projects that carry out small-scale production and use small capitals, employ a limited number of workers and follow the modern production method (OCDE, 2019, p. 28), so, Its activity dominates the mechanism and applies the principle of division of work. Small and medium enterprises are distinguished by many characteristics that distinguish them from other organizations, as they are characterized by the use of technology and new production techniques that are less complex so that they are able to absorb labor, effectiveness and efficiency so that they are reflected in the ability of these organizations to achieve economic and social goals (José & Francisco, 2008, p. 50), and more satisfying the needs and desires of customers, and this is why small and medium enterprises have a great position in achieving economic independence and stability, because they possess the characteristics and advantages that many economic organizations lack and are flexible to global transformations and economic crises so that they are considered as main pillar for most developed economies (Meghana & et, 2007, p. 8).

Small and medium enterprises face a set of administrative and economic difficulties that limit their activities, among them the difficulties related to financing and fiscality, in spite of the measures taken to achieve tax charges on small and medium enterprises, the investor in this sector still suffers from a high rate of tax on profits and contributions imposed on Employers, and the failure to adapt the current financial system to new economic and financial changes (Scheid & Teston, 1970, p. 160), which are considered to be among the most important constraints suffered by small and medium enterprises, which are reflected in the difficulty of obtaining an appropriate external financing, or a lack of long-term financing due to the complexities imposed on loans and guarantees that Overburden the investor (Abd erhmene & Imed edine, 2018, p. 228), and we also find difficulties related to the

workers, which is one of the constraints facing enterprises as well, and is represented by the lack of trained and qualified workers, which negatively affects the performance of small and medium enterprises, in addition to the deterioration of the professional and technical level of workers and the weak trend towards updating and renewing expertise and skills. We also find a problem of "turnover" of trained workers from small and medium enterprises to large ones in search of better work conditions in terms of higher wages and better benefits, which enforces them to employ a less efficient and unskilled workers (Sasan & al, Financial Constraints and Small and Medium Enterprises, 2020).

In addition, transportation difficulties like transporting raw materials from their sources or final products to markets by an acceptable cost, there is also land problems, the appropriate location and preparing place for an activity, in addition, there are difficulties in air and maritime transport (Beck & Asli, 2006, p. 180). As for the difficulties related to regulatory procedures, the regulatory environment for small and medium enterprises in Algeria is characterized by administrative obstacles represented in organizational procedures such as lack of awareness of the applicable laws, lack of transparency and lack of respect for legal texts. This which makes small and medium enterprises unable to address negative features such as the administrative bureaucracy and the lack of stability in the laws and legislations governing the managing SMEs (salah, 2004, p. 41). As for the difficulties related to supply and equipment, small and medium enterprises suffer from a lack in supply of the productive system due to the economic openness, especially with regard to raw materials, equipment and supplies, their permanent availability and unstable prices, and the inability of these organizations to obtain these materials and equipment at the lowest cost, and this affects the extent of their competitiveness (Pasula & al, 2013, p. 32). And about outside environment difficulties are the most constraints SMEs are facing, because it contains all variables and factors which may affect in way or another its performance and activities, it has being characterized by the complexity in terms of diversity and different components and illegal competition factors and the high costs of distribution services in which the organization controls its goals (Peter & Ostos Mariño, 2013).

In order to address the difficulties related to small and medium enterprises, we find a set of solutions, including financing solutions. In this case, the operations of supporting small and medium enterprises must be funded and a make a portion of the public deals allocated to competition among the enterprises according to conditions and modalities determined by the applicable regulation and encouraging the development of appropriate means for them. And the establishment of loan

guarantee funds, and solutions related to the provision and supply, which lies in facilitating the benefit of providing the enterprise with goods, raw materials and necessary products, but it must be complied to quality, quantity, appropriate time and at the lowest costs (Indrė & Justina, 2014, p. 119), which are important to the various enterprise units and at the appropriate time and all the products necessary for the proper management of its units, and this requires the formation of stocks to ensure the existence of products and purchases, they must be in the best conditions in terms of quality, price, method of payment and guarantee, without forgetting solutions related to fighting corruption. In this case, administrative structures should be simplified and defined so that the focus must be on developing electronic management and giving independence to decentralized communities, reforming public sector and fighting bureaucracy and combating bribery, and this also requires the use of some mechanisms, including transparency and accountability (Lisa & Rachel, 2011).

2.2 Local development

Local development is a movement aims to improve the society living conditions in its entirety based on the participation of this community (Pranab, 1996, p. 2). It is continuous and escalating to satisfy the renewable needs and demands of the local community and includes all economic, social and cultural aspects (Benjamin, 2011, p. 10).

An investment is the sacrifice of the resources used in the present, in the expectation of obtaining some revenues or benefits in the future during a specific time period, whereby the total return is greater than the initial expenses of the investment (Boughaba, 1999, p. 7). The investment has two types: national investment and is funded from internal sources which is all the money invested within the homeland by an individual or organization residing in the homeland, as it includes all opportunities available for investment in the local market (Zin, 2005, p. 142), and foreign investment as it is money transfers received from abroad in the form of cash in order to establish a productive project, management marketing in the long term (Menry bouhet, 2005, p. 99), as it aims to find new markets for products and goods especially to market a large surplus of stagnant commodities that companies cannot market in their home countries.

3. RESEARCH METHODOLOGY

In order to test the hypotheses of the study and reach results on the difficulties facing SMEs and limit the development of local investment, the case of small and medium enterprises was studied through a random sample of these enterprises active in Algeria.

3.1. Population and sample of study

The research population is represented in the small and medium enterprises registered at the industry and trade directorates during the first semester of 2019 in Algeria, where they numbered 1171701 enterprises (Samira, 2019), a random sample was chosen according to the Stephen Thompson equation (Thompson, 2012, pp. 53-56), 376 enterprises estimated, we have distributed the questionnaire and retrieved 255 of them for analysis, so, the response rate was 67.81%.

Through the application of statistical package of the social sciences (SPSS) Program, the statistical treatment was done by analyzing data

3.2. Stability coefficients: (Alpha Cronbach)

The consistency of the questionnaire is intended to give the latter the same result if it was redistributed more than once under the same circumstances and conditions, it means that stability of the questionnaire refers to stability in its results and not change it significantly if it was redistributed to the sample individuals several times and the stability of the research questionnaire was verified by calculating the Alpha Cronbach coefficient as shown in Table1.

Table 1 Constant Coefficients (Alpha Cronbach)

Axis	**Alpha Cronbach Coeff.**
Human resources	0,947
Financing & fiscality	0,984
Supply & equipment	0,984
Transportation	0,935
Organizational procedures	0,984
External environment	0,971
Funds	0,883
Provision & equipment	0,853
Fighting corruption	0,910
Total	0,993

Source: Own calculations based on the output of the program spss

This table indicates, based on the results obtained, that the Alpha Cronbach coefficient value for different axes exceeded 60%, and it ranges between 0,853 and 0,984 which is a high value, while the total value of the Alpha Cronbach coefficient is 0,993 which is also a high value and this indicates the stability of the measuring instrument from The area of the statements included in the questionnaire.

3.3. Descriptive Statistics of axes

We can analyze the attitudes of the enterprises in the study sample on evaluating the different axes of the questionnaire using the arithmetic mean and the standard deviation to determine the rank of each axis and its evaluation in the following tables:

Table 2 Descriptive Statistics of economic and administrative difficulties

axes	rate%	Standard deviation	Mean	Class	Evaluation
Human resources	54,44%	0,87135	2,7222	4	Average
Financing & fiscality	74,40%	1,07074	3,7200	1	High
Supply & equipment	74,22%	1,02402	3,7111	2	High
Transportation	40,16%	0,65812	2,0083	6	Weak
Organizational procedures	50,33%	0,96475	2,5167	5	Weak
External environment	54,58%	0,88880	2,7292	3	Average
Dfficulties	54,58%	0,86261	3,0658	Average	

Source: Own calculations based on the output of the program spss

The sum mean is estimated to 3,0658 and a standard deviation of 0,86261, and this indicates an average degree of approval by the opinions of the study sample , which indicates that there are difficulties facing the SMEs investments in Algeria, by a rate of 54,58%, which is an average percentage.

The phrases related to the procedures for overcoming difficulties can be showed in the next table:

Table 3 Descriptive Statistics of procedures for over coming difficulties.

axes	rate%	Standard deviation	Mean	Class	Evaluation
Financing	78.88%	0,66715	3,9444	3	High
Supply & equipment	84%	0,50172	4,2000	2	High
anti-corruption	86.44%	0,64614	4,3222	1	High
82,11%	82,11%	0,58802	4,1556	High	

Source: Own calculations based on the output of the program spss

The sum mean is estimated to 4,1556 and a standard deviation of 0.558802, and this indicates a high degree of approval by the opinions of the study sample, which indicates that there are solutions to face the difficulties that limit SMEs investment in Algeria by 82.11%. This is a high percentage.

3.4. Testing Study Hypotheses

To test the hypothesis of study, the anova T-test was used, the results of which in the following table:

First sub-hypothesis H1.1 test:

Table 4 T-test and significant level of human resources difficulties

Axis	Mean	Standard deviation	T-test	Sig	Rate %
Human resources	2,7222	0,87135	4,54	0,000	54,44%

Source: Own calculations based on the output of the program spss

The previous table shows the difficulties related to the human resources facing small and medium enterprises in Algeria, where the results showed that the presence of difficulties related to the human resources is high according to the opinions of the study sample equal to 54. 44%, where the calculated value of T was 4.54 and is greater than the tabular T 2.75 with a significant level of 0,000 which is less than 0.05, therefore we reject the zero hypothesis and we accept the alternative hypothesis which states that: There are human resources related difficulties facing small enterprises and Medium in Algeria.

Second sub-hypothesis H1.2 test:

Table 5 T-test and significant level of Financing & Fiscality difficulties

Axis	Mean	Standard deviation	T-test	Sig	Rate %
Financing & Fiscality	3,7200	1,07074	3,36	0,001	74,4%

Source: Own calculations based on the output of the program spss

The previous table shows the difficulties related to financing and taxation facing small and medium enterprises in Algeria, where the results showed that the percentage of difficulties related to financing and taxation is high according to the opinions of the study sample equal to 74.4% , Where the calculated value of T was 3.36 and it is greater than the tabular T 2.75 with a significant level of 0.001 which is less than 0.05, therefore we reject the zero hypothesis and we accept the alternative hypothesis which states: There are difficulties related to financing and taxation facing SMEs in Algeria.

Third sub-hypothesis H1.3 test:

Table 6 T-test and significant level of Supply & Equipment difficulties

Axis	Mean	Standard deviation	T-test	Sig	Rate %
Supply & Equipment	3,7111	1,02402	3,80	0,001	74,22%

Source: Own calculations based on the output of the program spss

The previous table shows the difficulties related to supply and equipment facing small and medium enterprises in Algeria, where the results showed that the presence of difficulties related to the supply and equipment is high according to the opinions of the study sample equal to 74.22% , Where the calculated value of T was 3,80 and is greater than the tabular T 2.75 with a significant level of 0.001 which is less than 0.05, therefore we reject the zero hypothesis and we accept the alternative hypothesis which states: There are supply and equipment related difficulties facing SMEs in Algeria.

Fourth sub-hypothesis H1.4 test:

Table 7 T-test and significant level of Transportation difficulties

Axis	Mean	Standard deviation	T-test	Sig	Rate %
Transportation	2,0083	0,65812	8,25	0,000	40,16%

Source: Own calculations based on the output of the program spss

The previous table shows the difficulties related to transportation facing small and medium enterprises in Algeria, where the results showed that presence of transportation difficulties is weak according to the opinions of the study sample equal to 40.16%, where The calculated value of T was 8.25 and it is greater than the tabular T 2.75 with a significant level of 0,000 and it is less than 0.05, therefore we reject the zero hypothesis and we accept the alternative hypothesis which states: There are transportation difficulties facing SMEs in Algeria.

Fifth sub-hypothesis H1.5 test:

Table 8 T-test and significant level of Organizational Procedures difficulties

Axis	Mean	Standard deviation	T-test	Sig	Rate %
Organizational procedures	2,5167	0,96475	3,74	0,010	50,33%

Source: Own calculations based on the output of the program spss

The previous table shows the difficulties related to the Organizational procedures facing small and medium enterprises in Algeria, where the results showed that the percentage of difficulties related to organizational procedures is weak according to the opinions of the study sample institutions equal to 50.33%, Where the calculated value of T was 3.74 and it is greater than the tabular T 2.75

with a significant level of 0,010 and is less than 0.05, and therefore we reject the zero hypothesis and accept the alternative hypothesis which states: There are difficulties related to Organizational procedures facing SMEs in Algeria.

Sixth sub-hypothesis H1.6 test:

Table 9 T-test and significant level of External Environment difficulties

Axis	Mean	Standard deviation	T-test	Sig	Rate %
External environment	2,7292	0,88880	3,66	0,001	54,58%

Source: Own calculations based on the output of the program spss

The previous table shows the difficulties related to the external environment facing small and medium enterprises in Algeria, where the results showed that percentage of difficulties related to the external environment is medium according to the opinions of the study sample equal to 54.58% , Where the calculated value of T was 3,66 and it is greater than the tabular T 2.75 with a significant level of 0.001 which is less than 0.05, therefore we reject the zero hypothesis and accept the alternative hypothesis which states that: There are difficulties related to the external environment facing SMEs in Algeria .

Testing First hypothesis H1:

Table 10 T-test and significant level of Economic and Administration difficulties

Axis	Mean	Standard deviation	T-test	Sig	Rate %
Difficulties	3,0658	0,86261	9,52	0,000	61,31%

Source: Own calculations based on the output of the program spss

The previous table shows the difficulties facing small and medium enterprises in Algeria, where the results showed that the percentage of difficulties facing investment is medium according to the opinions of the study sample equal to 61.31%, where The calculated value of T is 9.52 and it is greater than the tabular T 2.75 with a significant level of 0,000 which is less than 0.05, therefore we reject the zero hypothesis and we accept the alternative hypothesis that: There are difficulties facing SMEs in Algeria.

First sub-hypothesis H2.1 test:

Table 11 T-test and significant level of Financing Solutions

Axis	Mean	Standard deviation	T-test	Sig	Rate %
Financing Solutions	3,9444	0,66715	7,75	0,000	78,88%

Source: Own calculations based on the output of the program spss

The previous table shows financing solutions to meet difficulties that limit investment of SMEs in Algeria, where the results showed that the percentage of financing solutions to meet the difficulties that limit investment is high according to

the opinions of the sample study is equal to 78.88%, where the calculated value of T was 7.75 and is greater than the tabular T 2.75 with a significant level of 0,000 which is less than 0.05 and therefore we reject the zero hypothesis and we accept the alternative hypothesis which states that: There are financing solutions to meet the difficulties that limit investment of SMEs in Algeria.

Second sub-hypothesis H2.2 test:

Table 12 T-test and significant level of Supply & Equipment Solutions

Axis	Mean	Standard deviation	T-test	Sig	Rate %
Supply & Equipment Solutions	4,2000	0,50172	13,10	0,000	84%

Source: Own calculations based on the output of the program spss

The previous table shows the solutions related to the supply and equipment to face the difficulties that limit investment of SMEs in Algeria, where the results showed that the percentage of solutions related to the supply and equipment to face the difficulties that limit investment is high according to the opinions of the study sample, it is equal to 84%, where the calculated value of T was 13.10 which is greater than the tabular T 2.75 with a significant level of 0,000 which is less than 0.05 and therefore we reject the zero hypothesis and we accept the alternative hypothesis which states that: There are solutions related to the supply and equipment to face the difficulties that limit the investment of SMEs in Algeria.

Third sub-hypothesis H2.3 test:

Table 13 T-test and significant level of anti-corruption Solutions

Axis	Mean	Standard deviation	T-test	Sig	Rate %
anti-corruption	4,3222	0,64614	11,208	0,000	86,44%

Source: Own calculations based on the output of the program spss

The previous table shows solutions related to anti-corruption to face the difficulties that limit investment of SMEs in Algeria, where the results showed that the percentage of solutions related to fighting corruption to face the difficulties that limit investment is very high according to the opinions the study sample equal 86,44%, where the calculated value of T was 11.20 which is greater than the tabular T 2.75 with a significant level of 0,000 which is less than 0.05 and therefore we reject the zero hypothesis and we accept the alternative hypothesis which states that: There are solutions related to **anti-corruption** to face difficulties that limit the investment of SMEs in Algeria.

Testing second hypothesis H2:

Table 14 T-test and significant level of solutions needed to face administrative and economic difficulties

Axis	Mean	Standard deviation	T-test	Sig	Rate %
Solutions	4,1556	0,58802	10,76	0,000	83,11%

Source: Own calculations based on the output of the program spss

The previous table shows the solutions needed to face difficulties that limit investment of SMEs in Algeria, where the results showed that the percentage of solutions needed to face the difficulties that limit investment is high according to the opinions of the sample study is equal to 83.11%, where the calculated value of T was 10.76 and is greater than the tabular T 2.75 with a significant level of 0,000 which is less than 0.05, and therefore we reject the zero hypothesis and we accept the alternative hypothesis which states that: There are solutions to address the difficulties that limit private investment of SMEs in Algeria.

4. CONCLUSION

Small and medium enterprises face several economic and administrative problems, which constitutes a major obstacle to their survival and contribution to achieving local development, and despite the position development of small and medium enterprises in the Algerian national economy, they are still far from achieving the goals of developing local investment that Algeria seeks to achieve it in a global economic environment characterized by economic and political blocs. Through this study, which was conducted on a random sample of enterprises active in Algeria, and to determine the most important economic and administrative difficulties that limit the ability of small and medium enterprises in achieving local development and private investment development, we reached the following results.

The study found that small and medium enterprises in Algeria are facing administrative and economic difficulties, the most important of which are funding-related difficulties as the results were in line with the previousstudies(Aleawd & karkari, 2017) and (Ayoub & Ahcene, 2019), and the results also showed related difficulties In Supply and Equipment, external environment, Organizational procedures and human resources, but it has less impact on other difficulties and this is complied with the study(Ayoub & Ahcene, 2019), in addition, our study reached to deny the validity of the fourth hypothesis as the results showed that there are no difficulties related to transportation, and that the percentage of difficulties existence is very weak according to the opinions of the study sample, and this is what differed

with the study(Ayoub & Ahcene, 2019) and (Aleawd & karkari, 2017), and the study also concluded that there are solutions to face the difficulties that limit the investment of small and medium enterprises in Algeria, and according to the opinions of the study sample, solutions related to anti-corruption and bureaucracy are the most important to confront the administrative and economic difficulties that limit the private investment of small and medium enterprises to achieve economic development in Algeria, and this is in line with the study (Ayoub & Ahcene, 2019) and (Kansab, 2016).

According to the previous results reached by our study, a set of recommendations will be formulated for small and medium enterprises, the most important of which are:

- The State should encourage small and medium enterprises through providing capital and facilitating entrepreneurial skills among youth, and provide consulting and directive assistance.
- Providing administrative facilities for investors to encourage them to invest in Algeria by defining the regulatory procedures through a precise description of tasks and authorities at the appropriate time.
- Developing support centres to provide information and access to financing aid programs.
- Strengthening and monitoring loan funds and not obligating small and medium enterprises to provide guarantees at the beginning of their establishment.
- Investing in economic reform, reforming labor markets, raising education and training levels to get rid of corruption and providing an effective work environment away from bureaucracy and bribery.
- Establishing specialized banks for financing small and medium enterprises, granting soft loans, especially with regard to the interest rate.
- Defining a clear legal and regulatory framework in order to identify how to obtain real estate and fighting administrative corruption and bureaucracy that were the reason for not starting profitable projects.
- Reviewing the withholding rates that represent an obstacle for small and medium enterprises.

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COVID CRISIS EFFECTS ON NON-PERFORMING LOANS IN THE ROMANIAN BANKING MARKET

ANDREEA MAURA BOBICEANU[i], IOANA GEORGIANA FĂRCAȘ[ii]

Abstract: *The Non-performing loans ratio (NPLs) is an important indicator of the financial stability of a certain financial institution. Therefore, it is crucial to analyze the possible determinants of NPLs ratio. We aim to investigate this issue, by analyzing the NPLs ratio in Romania during 2000-2022. We find that Covid crisis impacts negatively significantly NPLs ratio due to the implementation of stringent measures to the banking sector, but also to the relief measures offered to borrowers. We bring evidence that the economic environment can impact significantly NPLs ratio. The higher level of employment implies an increase in NPLs ratio. Other macroeconomic determinants of NPLs ratio are GDP growth and inflation. Further, our results show that there are also bank determinants of NPLs ratio such us Return on Assets (ROA) and Loan to Deposit ratio. These results remain robust when we employ total NPLS 90 days and NPLs growth rate as dependent variables.*

Keywords: *non-performing loans; banking market; credit risk; emerging markets; covid.*

JEL Classification: *G21, G28*

1. INTRODUCTION

One of the main problems in the banking sector is insolvency. Generated by poor asset quality, insolvency makes the topic of non-performing loans determinants a very important subject in the banking sector, as low liquid banks threaten the financial stability. Increased values of non-performing loans (NPLs) decrease the efficiency of the financial system and curb the transmission of monetary policy (Pop, Cepoi and Anghel, 2018).

A bank's portfolio structure depends on both bank-specific factors and macroeconomic framework. The Covid crisis generated an increased stress for

[i] Babeș-Bolyai University, Postal Adress: Teodor Mihali Street, Nr. 58-60, Cluj-Napoca 400591, Romania, E-mail: andreea.bobiceanu@econ.ubbcluj.ro
[ii] Babeș-Bolyai University, Postal Adress: Teodor Mihali Street, Nr. 58-60, Cluj-Napoca 400591, Romania, E-mail: ioana.farcas@econ.ubbcluj.ro

banks. Interruptions of activity in multiple sectors led to increased uncertainty, unemployment, failure of small businesses and other consequences that shook the financial system all together. Loose monetary policies adopted in order to help banks curb the financial burden for affected borrowers, can be a factor for increasing the fragility of the banking system in the long run.

In this paper we aim to assess the explanatory factors of NPLs ratio' monthly evolution in the Romanian banking market and to examine weather the Covid crisis has a significant impact on non-performing loans. Also, we assess the impact of the pandemic on the non-performing loans growth. Our results show that level of NPLs ratio decrease after the post-pandemic crisis due to the implementation of several macroprudential policies. Further, the economic environment affects the evolution of NPLs ratio. A higher rate of employment influences positively the NPLs ratio. Other significant macroeconomic determinants of NPLs ratio are GDP growth and inflation. Also, our results show that ROA and Loans to Deposits ratio are possible determinants of NPLs ratio. Therefore, an increase in ROA implies an increase in NPLs ratio, while Loans to Deposits ratio affects negatively NPLs ratio.

The main contribution of this paper is the expansion of the literature regarding the determinants of NPLs ratio by obtaining specific results for Romanian market. First, we assess the effects of COVID pandemic on the of NPLs ratio. Then, we bring new insights by investigating which are other possible determinants of NPLs ratio. The policy recommendation based on our results is to implement macroprudential policies as soon as possible when regulatory authorities declare a crisis. Further, the policy makers should be aware of the effects of economic environment on NPLs ratio. Although, they intervene in due time, the macroeconomic indicators interfere in the efficiency of macroprudential policies.

The paper is organized as follows. In Section 2 we present the literature review regarding NPLs ratio. Section 3 presents data collection and describes the empirical approach. The results are discussed in the section 4. Section 5 concludes.

2. LITERATURE REVIEW

2.1 Determinant factors of non-performing loans

According to previous literature, the main variables that drive NPLs are classified in bank-specific factors and macroeconomic factors. Growth, unemployment, income tax, output gap, quality of management and risk preferences strongly influence the NPLs (Dimitrios, Helen and Mike, 2016). Among all factors that influence NPLs, GDP growth, interest rate, unemployment rate, and exchange

rate, have a strong impact on both market-based economy and bank-based economy (Chaibia and Ftiti, 2015). Pop, Cepoi and Anghel (2018) observe a risk-seeking behavior for the banks that exceed the 0.9498 threshold of loan portfolio, as the banks become more sensitive to management performance ownership concentration and macroeconomic factors.

Concentration and competition also prove to have an impact on the level of NPLs as part of the competition-stability topic, concentration enhancing the fast reduction in NPLs and competition reducing the new NPLs, post-crisis. (Karadima and Louri, 2020). Meanwhile foreign banks decrease credit risk, after bank concentration exceeds a certain threshold, foreign banks' total assets enhance NPLs (Natsir et. Al., 2019). Concerns about market integration regarding the banking sector in the European Union, emerged after the global financial crisis. Schnabel and Seckinger (2019) discover substantial growth effects of integration of European banking markets, thus fragmentation has an adverse effect for growth. The fragmentation after the GFC can be justified by the flight home effect, that is not associated with the flight to quality effect, therefor the bias can lead to inefficient lending and poor risk management especially in time of financial shocks (Giannetti and Laeven, 2012).

2.2 Determinant factors of non-performing loans in emerging markets

As stated in the previous section, foreign banks entry can also be an indirect determinant of credit allocation and risk preferences, contributing to NPLs growth. NPL ratio is crucial for the entire banking system's stability, but it is also a trade-off between risk and return. While riskier loans can increase the profitability, they can also endanger financial stability.

Zhang et. Al. (2016) find a threshold of 4.81% in the NPLs ratio for the banking market in China. They indicate, according to moral hazard theory, that risk taking banks resolve the problem in the short-run, but cause greater loss on the long term (Zhang et. Al., 2016). Non-performing loans negatively impact ROA, and this effect is enhanced by poor non-performing directorship, proving that optimal loan ratio and non-performing loan levels can be achieved by competent directory board (Lafuente, Vaillant and Herrero, 2019). In addition, it is found that investment banks are more efficient compared to commercial banks due to superior managerial performance (Saez-Fernandez, Picazo-Tadeo and Jimenez-Hernandez, 2021).

Degryse et. Al. (2012) differentiate between the type of entry and the effects they have on portfolio structure and credit allocation, in the case of emerging

markets. They prove that greenfield banks offer less loans to opaque borrowers. This results in lower rates, forcing the domestic banks to shift to opaque borrowers. In contrast, the takeover banks improve credit allocation quality of domestic banks. High credit growth, high government debt, fixed exchange rates, low bank profitability, and high corporate indebtedness prove to be risk factors, however corporate governance and effective bank supervision and regulation, prove to reduce NPLs problems in emerging markets (Ari, Chen and Ratnovski, 2021). At the same time, a different problem in emerging market countries is NPLs recognition. Banks that present low leverage ratios are less likely to recognize a loan as nonperforming than other banks (Choudhary and Jain, 2021).

2.3 The impact of Covid on NPLs

Ozlem Dursun-de Neef and Schandlbauer (2021) show that worse-capitalized banks have a tendency to issue more loans during crisis to help weaker borrowers in order to avoid loan losses. Covid intensity directly influences led to more delinquent loans and restructuring for better capitalized banks compared to worse capitalized ones (Ozlem Dursun-de Neef and Schandlbauer, 2021). Similarly, low leverage ratios banks are less likely to recognize a loan as nonperforming (Choudhary and Jain, 2021). These finding are in line with pervious literature, that recognition of NPLs is more expensive for less capitalized banks.

Cicchiello et. Al. (2022) demonstrate that higher capital buffers banks have less NPL and generate less NPL inflows. According to Kryzanowski, Liu and Zhang (2022) the pandemic resulted in an increase in NPLs ratio despite the reduction in total lending, big-five, state-owned and domestic banks having lower NPLs. One other factor responsible for the probability of default in times of Covid is risk appetite (Lee, Lye and Lee, 2022). Nigmonov and Shams (2021) analyze the lending market pre and pot Covid and find a higher probability of default post pandemic. Their results are more pronounced for borrowers with low credit scores and in countries where FinTech adoption is low. Thus, recognition of the NPLs itself is an important aspect to take in consideration, when analyzing the efficiency of credit allocation, nonetheless identifying the NPLs risk factors can also reduce the increased default risk associated with the financial crisis.

3. METHODOLOGY AND DATA

Our sample consists of 274 monthly and quarterly observations from the National Bank of Romania; the National Institute of Statistics and Eurostat, for the

period 2000-2022, concerning the banking market in Romania and the macroeconomic framework, as well as the recent pandemic.

In order to conduct our analyses, we follow two steps. In the first step, we aim to determine the explanatory factors of NPLs ratio, while in the second step, we explain the NPLs growth rate. For this purpose, we employ an OLS estimation with robust standard errors using the following regression:

$$NPLs_t = \alpha + \beta * Dummy\ Post\ Covid + \gamma * Macroeconomic\ variables_{t-1} + \delta * Banking\ sector\ variables_{t-1} + \varepsilon_t$$

where NPLs represents the share of overdue amounts debts in total due amounts at a time t; Dummy Post Covid is a dummy variable that takes the value of 1 after March 2020 and 0 otherwise; Macroeconomic variables represents macroeconomic indices and Banking sector variables represents various indices related specifically to the banking sector. For the Macroeconomic and Banking sector variables we used the logged values.

The endogenous variable is alternative. We use NPLs as the general definition of doubtful loans, that is share of overdue amounts debts in total due amounts. We also explain NPLs 90 days, which represents doubtful loans by the European Banking Authority definition. EBA defines NPLs ratio as nonperforming exposures from loans per exposures from loans. According to EBA, exposures are classified as nonperforming if: they are more than 90 days exposure or the debtor is assessed as unlikely to pay without collateral realization (NBR Order no. 6/2014).

The Macroeconomic variables include: Consumer Price Index; GDP growth and Unemployment. Monthly Consumer Price index, collected from National Institute of Statistics, reflects the prices of fixed expenditure patterns. Monthly GDP growth is collected from Eurostat and it is measured as GDP per capita percentage change from the same period of previous year. Unemployment has a monthly frequency and it is gathered from Eurostat.

The Banking sector variables consist of: Policy rate; ROA; Loans to Deposits; RON/EUR volatility; external debt service and M3. Policy rate is a monthly variable from National Bank of Romania. Return on Assets is a quarterly dataset, calculated as Return on assets Annualized net profit / Total average assets and its source is the National Bank of Romania. Loans to deposits is a quarterly observation from National Bank of Romania and it is calculated as Loans granted to clients / Deposits from clients. Monthly RON/EUR volatility represents the standard deviation of RON/EUR exchange rate in a three period rolling window. External debt has a monthly frequency and it is the long-term external debt service growth rate. M3

represents the broad money growth rate with a monthly frequency. The last three variables are our own computation based on data from National Bank of Romania.

In the second step of our study, we determine the factors that drive the NPLs growth ratio and for this reason we employ an OLS regression with robust standard errors as follows:

$$NPLs\ growth\ rate_{\ t} = \alpha + \beta * Dummy\ Post\ Covid + \pi * NPLs\ growth\ rate_{t-1} + \gamma * Macroeconomic\ variables_{t-1} + \delta * Banking\ sector\ variables_{t-1} + \varepsilon_t$$

where the dependent is either NPLs total growth rate, meaning the share of overdue amounts debts in total due amounts – growth rate, or NPLs 90 days, equal to the share of overdue amounts debts over 90 days in total due amounts – growth rate. The independent variables are equivalent to the ones described in the previous step.

Table 1 explains the variables used in this paper alongside their definition, frequency and source.

Table 1 Description of variables

Variable	Frequency	Source	Definition
NPLs total	monthly	OwnC based on NBR data	Share of overdue amounts debts in total due amounts (%)
NPLs 90 days	monthly	OwnC based on NBR data	Share of overdue amounts debts > 90 days in total due amounts (%)
NPLs total growth rate	monthly	OwnC based on NBR data	Share of overdue amounts debts in total due amounts – growth rate (%)
NPLs 90 days growth rate	monthly	OwnC based on NBR data	Share of overdue amounts debts > 90 days in total due amounts – growth rate (%)
Dummy Post Covid	monthly	OwnC	Dummy Post Covid-19 period (after 2020m3)
Policy rate	monthly	NBR	Policy Rate (%)
Consumer Price index	monthly	INSSE	Monthly Consumer Price index CPI TOTALS (%)
ROA	quarterly	NBR	Return on assets (Annualized net profit / Total average assets) (%)
Loans to deposits	quarterly	NBR	Loans granted to clients (gross value) / Deposits from clients (%)
GDP growth	monthly	Eurostat	Gross domestic product per capita, percentage change compared to same period in previous year (%)
Unemployment	monthly	Eurostat	Unemployment rate, percentage of population in the labour force, seasonally adjusted (%)

RON/EUR volatility	monthly	OwnC based on NBR data	Standard deviation of RON/EUR exchange rate in a three periods rolling window (units)
External debt service	monthly	OwnC based on NBR data	LT external debt service growth rate (%)
M3	monthly	OwnC based on NBR data	Domestic liabilities; M3 growth rate (%)

Note: Computations are based on data from National Bank of Romania. INSSE represent the National Institute of Statistics.

The descriptive statistics presented in Table 2, indicate a larger mean value of NPLs by their general definition compared to the mean of NPLs described by EBA. In addition, we notice a negative mean value of mean NPLs total growth rate and NPLs 90 days growth rate, which unravels a slowdown of NPLs.

Table 2 Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
NPLs total	273	6.526	3.48	1.14	13.04
NPLs 90 days	273	5.86	3.215	.93	12.42
NPLs total growth rate	272	-.413	4.182	-14.088	15
NPLs 90 days growth rate	272	-.116	4.667	-14.783	36.41
Dummy Post Covid	274	.117	.322	0	1
GDP growth	252	4.464	4.778	-9.5	16.3
Unemployment	273	7.278	1.351	4.7	9.6
Consumer Price index	271	187.015	89.652	100.56	562.96
Policy rate	238	6.441	5.383	1.25	21.25
RON/EUR volatility	213	.029	.03	0	.23
External debt service	174	25.426	57.464	-96.581	288.319
M3	187	.916	2.183	-5.882	9.091
ROA	170	.925	.543	.01	1.77
Loans to deposits	179	94.189	20.123	65.89	124.71

Note: Variables are explained in Table 1.

The correlation matrix reported in Table 3, reveals a strong negative correlation between NPLs total and Dummy Post Covid, that might indicate a good response to policy measures taken in the context of covid. There is also a strong positive correlation between unemployment and NPLs total and NPLs growth rate. GDP growth does not show a strong correlation with NPLs total, but it indicates a negative one with NPLs growth, a slowdown for the NPLs ratio in economic expansion. Consumer Price Index, Policy Rate and RON/EUR volatility have a negative correlation with NPLs total, however a positive worth mentioning correlation with NPLs growth.

Table 3. Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
NPLs total	1.0											
NPLs total growth rate	-0.2	1.0										
Dummy Post Covid	-0.3	-0.2	1.0									
GDP growth	0.0	-0.3	-0.1	1.0								
Unemployment	0.4	0.4	-0.3	-0.4	1.0							
Consumer Price index	-0.3	0.5	-0.5	-0.0	0.3	1.0						
Policy rate	-0.4	0.5	-0.3	-0.1	0.3	0.9	1.0					
RON/EUR volatility	-0.2	0.4	-0.2	-0.0	0.2	0.5	0.5	1.0				
External debt service	-0.0	-0.0	0.0	0.0	-0.0	0.0	0.0	-0.0	1.0			
M3	-0.0	-0.1	0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	1.0		
ROA	-0.1	-0.4	0.2	0.5	-0.7	-0.3	-0.4	-0.2	-0.0	0.0	1.0	
Loans to deposits	-0.0	0.5	-0.5	-0.1	0.6	0.8	0.8	0.5	0.0	-0.0	-0.6	1.0

4. RESULTS

Table 4 illustrates the results of the empirical regressions detailed in the previous section. Overall, we find a significant negative impact of Covid crisis on the level of NPLs ratio. The National Bank of Romania intervene in order to impede the development of negative spillovers within the financial system. By putting into force the Government Emergency Ordinance No. 37/2020, the borrowers can postpone their loans payments up to 9 months, but not later than 31 December 2020. A similar situation is noticed within Euro Zone as all of the regulatory authorities are more precautious having in memory Global Financial Crisis period.

Table 4 Determinants of NPLs

	(1) NPLs total	(2) NPLs total	(3) NPLs total	(4) NPLs total
Dummy Post Covid	-4.208***	-3.104***	-5.607***	-5.202***
	(.338)	(.242)	(.419)	(.382)
L.GDP growth	.13***	.082***	.129***	.118***
	(.034)	(.022)	(.029)	(.03)
L.Unemployment	1.401***	1.606***	1.549***	2.119***
	(.099)	(.079)	(.097)	(.105)
L.Consumer Price index	-.108***		-.185***	-.158***
	(.007)		(.01)	(.016)

	(1) NPLs total	(2) NPLs total	(3) NPLs total	(4) NPLs total
L.RON/EUR volatility	-13.565***	-.566	-2.728	-4.127
	(3.627)	(4.582)	(3.698)	(5.28)
L.Policy rate		-.955***		
		(.063)		
L.External debt service			0.000	.001
			(.002)	(.002)
L.M3			.022	-.010
			(.057)	(.05)
L3.ROA				1.367***
				(.423)
L3.Loans to deposits				-.034**
				(.015)
Constant	12.711***	-.348	22.069***	16.127***
	(.919)	(.579)	(1.45)	(2.024)
Observations	209	209	173	170
R-squared	.777	.821	.809	.845

Robust standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

First, results from column (1) – (4) show that Covid 19 pandemic influenced negatively the NPLs ratio, contrary with our assumptions. Then, the economic environment can influence significantly the creditworthiness of the population. Therefore, the employment is negatively correlated to the level of NPLs ratio as the borrowers with financial difficulties are less likely to repay their debts. Regarding the volatility of RON/EUR, it is an important determinant of loans in foreign currency. A higher volatility of this ratio implies an increase in the level of NPLs ratio. Another macroeconomic determinants of NPLs ratio are GDP growth and inflation. GDP growth is positively associated with the NPLs ratio, while inflation affects negatively the NPLs ratio contrary to other studies conducted in Euro- Zone.

Second, column (2) shows that policy rate influence positively the creditworthiness of the borrowers by implementing stringency measures to the banking sector. Kasinger et al. (2021) bring also evidence that a pro-active NPLs management can decrease NPLs ratio.

Further, the return on assets influences positively NPLs ratio. A possible explanation is that the banks are interested in offering risky credits to borrowers to a higher interest rate although their creditworthiness is worser. The ratio of loans to deposits affects negatively NPLs ratio. A higher ratio of loans to deposit implies a higher liquidity risk which leads to a more precautious behavior of financial institutions. Being more precautious, banks are more willing to give risky credits. Therefore, the level of NPLs ratio tend to decrease.

Table 5 Determinants of NPLs (EBA definition)

	(1) NPLs 90 days	(2) NPLs 90 days	(3) NPLs 90 days	(4) NPLs 90 days
Dummy Post Covid	-3.977***	-2.931***	-5.445***	-5.012***
	(.35)	(.251)	(.434)	(.392)
L.GDP growth	.14***	.094***	.137***	.13***
	(.036)	(.023)	(.03)	(.031)
L.Unemployment	1.283***	1.489***	1.435***	2.064***
	(.1)	(.079)	(.098)	(.106)
L.Consumer Price index	-.105***		-.186***	-.152***
	(.007)		(.01)	(.016)
L.RON/EUR volatility	-14.571***	-1.052	-3.321	-4.109
	(3.628)	(4.529)	(3.591)	(5.206)
L.Policy rate		-.949***		
		(.064)		
L.External debt service			0.000	.001
			(.002)	(.002)
L.M3			.026	-.009
			(.058)	(.05)
L3.ROA				1.386***
				(.431)
L3.Loans do deposits				-.042***
				(.015)
Constant	12.716***	-.011	22.535***	15.994***
	(.929)	(.588)	(1.481)	(2.058)
Observations	209	209	173	170
R-squared	.749	.81	.787	.833

Robust standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

To test the robustness of our results, we introduce the overdue amounts debts declared after 90 days as dependent variable in our empirical models. Our results remain robust in all of four employed models.

Table 6 Determinants of NPLs growth rate

	(1) NPLs total growth rate	(2) NPLs 90 days growth rate
Lagged Y	.207**	.189*
	(.095)	(.106)
Dummy Post Covid	-1.359**	-1.385**
	(.535)	(.557)
L.GDP growth	-.208***	-.257***
	(.062)	(.066)

	(1) NPLs total growth rate	(2) NPLs 90 days growth rate
L.Unemployment	.309**	.432***
	(.155)	(.134)
L.Consumer Price index	-.020*	-.024**
	(.012)	(.012)
L.RON/EUR volatility	33.824***	35.505**
	(11.46)	(14.407)
Constant	.893	.773
	(1.651)	(1.758)
Observations	209	209
R-squared	.315	.386

Robust standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

In the next phase, we introduce NPLs total growth rate and growth ratio of NPLs declared after 90 days as dependent variables. We find also a significant negative impact of Covid crisis on NPLs ratio. In addition, we obtain that the main macroeconomic indicators of NPLs ratio are GDP growth, unemployment, GDP growth and RON/EUR volatility.

5. CONCLUSIONS

With this study, we expand the literature on NPLs ratio by bringing new insights regarding the link between COVID crisis and NPLs ratio within the Romanian banking sector. Analyzing the period 2000-2022, we empirically assess the impact of COVID pandemic on NPLs ratio. The main findings show that COVID crisis influences negatively the increase in NPLs ratio due to the implementation of macroprudential policies. Then, macroeconomic indicators such as employment, GDP growth and inflation can determine NPLs ratio. These results remain robust when we take into consideration the ratio of NPLs declared after 90 days.

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COVID CRISIS EFFECTS ON LENDING IN THE ROMANIAN BANKING MARKET

ANDREEA MAURA BOBICEANU[i], IOANA GEORGIANA FARCAS[ii], ANDREEA MARIA PECE[iii]

Abstract: *Credit growth is an important indicator of the financial stability within a country. We aim to investigate this issue, by analyzing the credit growth in Romania during 2000-2022. We find that Covid crisis impacts positively and significantly credit growth. We bring new insights regarding the effects of macroeconomic variables like GPD growth, inflation, and long-term external debt service on credit growth. These results remain robust when we employ several categories of credit growth (e.g. by currency, by maturity, by type of credit) as dependent variables.*

Keywords*: lending; banking market; emerging markets; covid.*

JEL Classification: *G21, G28*

1. INTRODUCTION

The Covid-19 crisis had significant repercussions in all sectors of activity, whilst the abrupt start of the pandemic cumulated with the governmental restrictions, led to consequences that still have significant effects felt so far. The financial sector has been one of the sectors that suffered an increased level of stress during the crisis, as it is expected to play a countercyclical role (Demirguc-Kunt, Pedraza, and Ruiz-Ortega, 2021).

Banking institutions were expected to be part of the solution for the financial concerns generated by the interruption of activities in certain sectors, as well as

[i] Babeș-Bolyai University, Postal Adress: Teodor Mihali Street, Nr. 58-60, Cluj-Napoca 400591, Romania, E-mail: andreea.bobiceanu@econ.ubbcluj.ro
[ii] Babeș-Bolyai University, Postal Adress: Teodor Mihali Street, Nr. 58-60, Cluj-Napoca 400591, Romania, E-mail: ioana.farcas@econ.ubbcluj.ro
[iii] Babeș-Bolyai University, Postal Adress: Teodor Mihali Street, Nr. 58-60, Cluj-Napoca 400591, Romania, E-mail: andreea.pece@econ.ubbcluj.ro

dealing with a generalized increase of uncertainty. Therefore, the Covid-19 crisis has undeniable consequences in the banking sector.

To better understand the implications of the health crisis in the banking sector, we assess the effects of the Covid-19 crisis on the lending growth registered by credit institutions in the Romanian banking market. Our empirical set includes a large set of macroeconomic factors and banking sector variables. We also examine the effects of the Covid-19 crisis on the lending growth by several categories of credit, like currency, maturity, type of loans, and type of credit institutions.

Our results show that the Covid crisis affects positively the credit growth in the Romanian banking market. We also find strong evidence of the association between the economic environment and credit growth. Macroeconomic characteristics like GDP growth, inflation, and external debt generates an increase in credit growth. Regarding the banking sector environment, we find evidence that non-performing loans growth influences negatively credit growth. Further, we show that our results are robust when performing subcomponents analysis (e.g., credit growth by currency, credit growth by maturity, credit growth by type of loans, and credit growth by type of credit institution).

Our contribution consists of the expansion of the literature regarding the determinants of credit growth by obtaining specific results for Romanian market. First, we investigate the effects of COVID pandemic on the credit growth. Then, we bring new insights by assessing which are other possible determinants of credit growth. The policy recommendation based on our results is to take into consideration that every category of credit growth reacts in a similar way in case of a crisis, but this indicator is influenced differently by the economic environment based on the category of credit (e.g., currency, maturity, type of loans). Therefore, the policy makers should be aware of the effects of economic environment on credit growth. Although, they intervene to impede the increase or decrease in credit growth, the macroeconomic indicators interfere in the efficiency of macroprudential policies.

The paper is organized as follows. In Section 2 we present the literature review regarding credit growth. Section 3 presents data collection and describes the empirical approach. The results are discussed in the section 4. Section 5 concludes.

2. LITERATURE REVIEW

We present in this section the main factors that drive the level of lending in general, as well as determinants specific for emerging markets. In addition, we include several studies that asses the effects of Covid-19 crisis on lending.

2.1 General

Evidence from previous research on the emerging market economy, indicates that there is a connection between credit expansion and economic expansion, more precisely, a strong positive correlation of household credit with output and real exchange rate and a negative correlation with exports (Bahadir and Gumus, 2016). Another factor determining the level of lending in a region is monetary policy, having a direct influence on the credit supply. Although the impact of monetary policies is incontestable, it has a different magnitude depending on the borrower, business loans being more sensitive to monetary policies compared to household loans (Yun and Cho, 2022). Taking into account the previous literature, establishing a difference between household loans and business loans is needed when evaluating explanatory factors of the credit market.

As we mention monetary policy as a determinant factor of lending, there is further research that refers to monetary policy rate cut that indicates the expansionary effect of negative interest rates on credit supply, as high deposit banks relax their lending requirements (Schelling and Towbin, 2022). Moreover, a study that includes bank efficiency proves that good bank management, improves the transmission of policies for banks with low loan to deposits ratios and reduces the policies transmission for banks with high loan to deposits ratios (Fungacova, Kerola and Weill, 2022).

Accounting for income and wealth inequality, Rubaszek and Serwa (2014) prove that the spread of lending-deposits interest rate, individual income and individual persistence, determine the household credit to GDP.

2.2 Emerging markets

Considering that developed economies differ from emerging ones, we present in the current section, possible determinants of credit growth as found in previous research that has as main focus emerging market economies and credit growth. Credit growth measures prove to be a relevant topic as credit growth influences financial stability. The evidence indicates that observing the speed of credit growth has a vast importance, considering a too rapid pace may threaten financial stability (de Moraes and Costa, 2022).

Gozgor (2014) finds that loose monetary policy, differences between domestic and global lending rates and real trade openness positively impact the level of domestic lending in emerging market economies. As Gozgor explains, in the case of emerging economies, loose monetary policies intend to increase the investment volume for economic growth purposes, making borrowing more accessible,

therefore contributing to credit growth; moreover, a higher spread between domestic and foreign interest rates allows banks to lend at a higher domestic interest rate and borrow at a lower global rate, increasing the level of domestic credit. In addition, real trade openness, measured as productivity differences between countries, positively impacts domestic loans (Gozgor, 2014). Regarding the loose monetary policies, the previous findings are consistent with Guo and Stepanyan's (2011) work conduced for a sample of 38 emerging market economies.

Another study, this time focusing on a credit union from Columbia, shows that credit demand is affected by income, indebtedness, education, credit maturity and real interest rate, meanwhile, credit supply increases with interest rate, income, maturity and scores (Arango and Cardona-Sosa, 2022). Credit growth, in emerging economies, is also enhanced due to external and domestic funding and economic growth; at the same time, high levels of inflation lead to an increase in nominal credit growth, but reduces real credit growth (Guo and Stepanyan, 2011).

2.3 Covid-19 crisis effects

The pandemic and the governmental restrictions led to a decrease in spending, therefore households accumulated savings, increasing the level of deposits, funds used by banks to issue more real estate loans, especially for the ones with higher capital ratios and in countries with higher house pricing (Dursun-de Neef and Schandlbauer, 2022). Another study proves that, during the pandemic, there is an increase in debt of non-financial agents, which results mainly of real estate credit growth in the case of Poland (Danilowska, 2022).

Czech and Puszer (2021) prove that an increased transmission of the virus results in a low tendency for using consumer credit and a higher tendency, when there is a decline in Covid symptoms. The pandemic also has a negative impact on the credit card use, however this effect becomes smaller over time, but other factors impacting credit use include public health interventions and riskiness of borrowers (Horvath, Kay and Wix, 2021). The decline in credit growth relies on the multiple factors. Small, foreign and government-backed banks are more effected, as well as banks from countries with less developed financial intermediaries, credit markets and bond markets (Çolak and Oztekin, 2021).

Regarding bank corporate lending in an uncertain context, results show that uncertainty reduces the probability of the loan applications to be favorable and it increases the time for loans to be disburse (Alessandri and Bottero, 2020). Considering the monetary policies easing in Poland, in order to support banks, continue their activity and help firms and households withstand the health crisis, a

decrease in credit demand was still felt, leading to lower interest rates (Danilowska, 2021). Çolak aand Oztekin (2021) also report a globally loan decline in response to Covid crisis.

3. SAMPLE AND METHODOLOGY

3.1 Sample

The analysis of the impact of the Covid-19 crisis on the lending growth in the Romanian banking sector is realized by using a sample composed by 34 financial institutions. The data is represented by monthly and quarterly data on lending growth, on NPL growth, on performance, on unemployment rate, on consumer price index captured before, during and in the aftermath of the Covid-19 crisis from 2000 to 2022.

The description of the variables used to assess the effects of Covid-19 crisis on the lending growth are highlighted in the below table:

Table 1 Variables used to investigate the effects of Covid-19 crisis on the lending growth

Variable	Frequency	Description
CG Total	monthly	Loans granted by credit institutions growth rate
CG RON	monthly	Loans granted by credit institutions; RON growth rate
CG EUR	monthly	Loans granted by credit institutions; EUR growth rate
CG USD	monthly	Loans granted by credit institutions; USD growth rate
CG OTHC	monthly	Loans granted by credit institutions; other currencies growth rate
CG ST	monthly	Loans granted by credit institutions; short term (less than one year) growth rate
CG MT	monthly	Loans granted by credit institutions; medium term (1-5 years) growth rate
CG LT	monthly	Loans granted by credit institutions; long term (more than 5 years) growth rate
CG CORP	monthly	Loans granted by credit institutions; corporate growth rate
CG HH	monthly	Loans granted by credit institutions; households growth rate
CG CONS	monthly	Loans granted by credit institutions; consumer and other loans growth rate
CG COM	monthly	Loans granted by credit institutions; commercial loans growth rate
CG HOUSE	monthly	Loans granted by credit institutions; housing loans growth rate
CG STATE	monthly	Loans granted by credit institutions; state-owned and majority state-owned credit institutions growth rate
CG PRIV	monthly	Loans granted by credit institutions; private and majority privately owned credit institutions growth rate

Variable	Frequency	Description
CG LEGE	monthly	Loans granted by credit institutions; credit institutions – Romanian legal entities growth rate
CG BRAN	monthly	Loans granted by credit institutions; branches in Romania of foreign credit institutions growth rate
Regressors		
Covid-19 dummy	monthly	Dummy Covid-19 period which takes the value 1 after March 2020, 0 otherwise
NPLs growth	monthly	Share of overdue amounts debts in total due amounts – growth rate (%)
CPI	monthly	Monthly Consumer Price Index CPI TOTALS (%)
LVR	quarterly	Leverage Ratio
ROA	quarterly	Return on assets (Annualized net profit / Total average assets)
GDPC	monthly	Gross domestic product per capita, percentage change compared to same period in previous year
UNEMP	monthly	Unemployment rate, percentage of population in the labour force, seasonally adjusted
LTEDS	monthly	Long term external debt service; direct public debt (growth rate)
STEDS	monthly	Short term external debt service (growth rate)
RON/EUR change rate	monthly	RON/EUR change rate (%)

The data source is represented by National Bank of Romania, National Institute of Statistics and Eurostat.

The main features of the data used for the empirical study are described in the below table. The lending growth for USD, the NPL ratio and the consumer price index have recorded a high volatility during the observed period. The Banks' profitability and the leverage ratio have recorded values which are closer to the mean.

Table 2 Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
CG total	153	.519	.519	-1.08	1.857
CG RON	153	.967	.745	-1.851	2.738
CG EUR	153	.101	.701	-2.277	2.426
CG USD	153	.162	4.047	-25.106	18.193
CG OTHC	153	-.796	2.458	-7.76	22.794
CG ST	153	37893.523	7403.764	27552	52030
CG MT	153	95910.719	29227.485	57805	180307
CG LT	153	202685.87	48409.737	133010	302521
CG CORP	153	.567	.977	-1.682	7.869
CG HH	153	.782	.538	-.718	4.486
CG CONS	153	.197	1.378	-14.127	3.304
CG COM	153	-.195	4.637	-29.43	7.716

Variable	Obs	Mean	Std. Dev.	Min	Max
CH HOUSE	128	.895	.651	-3.75	4.046
CG STATE	153	1.159	.991	-.87	4.868
CG PRIV	153	.473	.532	-1.116	1.824
CG LEGE	153	.501	.518	-1.478	1.843
CG BRAN	153	.703	1.521	-6.494	4.979
Covid-19 dummy	154	.208	.407	0	1
GDPC	150	3.418	4.212	-9.5	16.3
LTEDS	151	31.285	100.191	-98.596	844.722
UNEMP	153	7.205	1.621	4.7	9.6
CPI	151	132.927	11.815	100.56	158.55
STEDS	151	17.601	42.748	-92.512	133.172
NPLs growth	153	.026	3.157	-14.088	13.742
LVR	146	8.653	.831	7.38	10.3
ROA	146	.93	.519	.01	1.76
RON/EUR change	153	.102	.709	-2.45	3.226

The values recorded by the correlation coefficients provide evidence that the variables used in the empirical model are likely to have low levels of correlation (<0.5).

A strong level of correlation has been identified between the values recorded by the Consumer Price Index (CPI) and unemployment rate (UNEMP) and between the NPLs growth rate and the Consumer Price Index (CPI).

Table 3 Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
CG total	1.00										
Covid-19 dummy	0.29	1.00									
GDPC	0.15	-0.14	1.00								
LTEDS	0.03	0.12	-0.03	1.00							
UNEMP	-0.28	-0.40	-0.36	-0.09	1.00						
CPI	-0.21	-0.69	-0.23	-0.12	0.76	1.00					
STEDS	0.09	-0.00	0.00	0.59	-0.02	-0.01	1.00				
NPLs growth	-0.001	-0.23	-0.33	-0.06	0.48	0.53	-0.12	1.00			
LVR	0.21	0.39	-0.07	0.08	-0.80	-0.57	-0.03	-0.35	1.00		
ROA	0.20	0.23	0.46	0.04	-0.78	-0.66	-0.03	-0.52	0.48	1.00	
RON/EUR change	0.11	0.02	0.04	0.03	-0.03	0.00	0.05	-0.12	0.06	-0.02	1.00

3.2 Methodology

Empirical financial studies highlighted that the Covid-19 crisis effects are reflected on the lending rate evolution. In this paper we assess the determinants of the lending growth for the Romanian banking sector, under the magnifying glass of the Covid-19 pandemic.

Having the objective to quantify the impact of the Covid-19 effects on the evolution of the lending growth, we have estimated the following regression models based on the OLS (Ordinary Least Squares) method with robust standard errors:

$$\mathrm{CG_t} = \alpha + \beta * \text{Covid} - 19\ \text{dummy}_t + \gamma * \text{Macroeconomic variables}_{t-1} + \delta * \text{Banking sector variables}_{t-1} + \varepsilon_t$$

For the robustness of the results we have estimated multiple regression models, where the dependent variable CG_t quantifies the following data:

- CG_{total} – lending growth total (lending growth evolution for the overall Romanian banking sector);
- CG_{RON}; CG_{EUR}; CG_{USD}; CG_{OTHC} – lending growth by several categories of currencies, like RON, EUR, USD, Others
- $CG_{ST}; CG_{MT}; CG_{LT}$ – lending growth by various maturities, respectively short term loans, medium term loans and long term loans
- $CG_{CORP}; CG_{HH}; CG_{CONS}; CG_{COM}; CG_{HOUSE}$ – lending growth by credit typology: loans granted to corporates, households, consumer and others, commercial loans and housing loans
- $CG_{STATE}; CG_{PRIV}; CG_{LEGE}; CG_{BRAN}$ – lending growth by financial institutions typology: loans granted by state-owned credit institutions, loans granted by private-owned credit institutions, loans granted by credit institutions – Romanian legal entities; loans granted by branches in Romania of foreign credit institutions

The explanatory variables which quantify the evolution of the macroeconomic environment are: $Covid-19\ dummy$, $L.GDPC$ – gross domestic product per capita, percentage change, $L.LTEDS$ – long term external debt service, growth rate, $L.UNEMP$ – unemployment rate, $L.CPI$ – monthly consumer price index (%), $L.STEDS$ – short term external debt service, percentage change, $L.\frac{RON}{EUR}change$ – RON / EUR change rate (%).

Further, we have considered also the explanatory variables associated with the banking sector dynamics, respectively: $L.NPLs\ growth$ – growth rate of the non-performing loans, $L3.LVR$ – leverage ratio, $L3.ROA$ – return on assets.

4. EMPIRICAL RESULTS

We begin our research by analyzing the main determinants of the credit growth in the Romanian banking sector during the period 2000-2022, which also incorporates the Covid-19 crisis. The empirical results from Table 4 support strong evidence for the impact of the Covid-19 effects on the evolution of the credit growth. We observed a positive and notable effect of the Covid-19 pandemic on the lending activities and we explain this by EBA supporting regulatory requirements for the

SME and infrastructure projects lending, having the objective to sustain the lending activities and the post crisis recovery.

Further, the empirical findings provide evidence of a positive impact of the GDP per capita rate on the lending activities growth. Even if the GDP has decreased in real terms during the Covid-19 period, the contraction was lower than the previously anticipated and the positive forecast is due to the recovering domestic demand.

Additionally, the results obtained highlight a positive relationship between the long-term external debt service and the credit growth. We explain this by the financial stimulus packages which were introduced to counter the negative effects of the Covid-19 pandemic having the objective to sustain the preservation of the workplaces and the financing and investment needs of the companies.

Table 4 Main results: Determinants of credit growth

	(1) CG total	(2) CG total	(3) CG total
Covid-19 dummy	.222**	.481***	.408***
	(.108)	(.154)	(.154)
L.Y	.38***	.316***	.383***
	(.065)	(.063)	(.079)
L.GDPC	.028**	.034***	.024*
	(.011)	(.011)	(.012)
L.LTEDS	.001**	.001	.001*
	(0)	(0)	(0)
L.UNEMP	-.024	-.045	-.104
	(.027)	(.033)	(.065)
L.CPI		.01*	.012**
		(.005)	(.005)
L.STEDS		.001	0
		(.001)	(.001)
L.NPLs growth			-.028*
			(.014)
L3.LVR			-.066
			(.079)
L3.ROA			-.171
			(.137)
Constant	.358	-.886	.039
	(.228)	(.626)	(1.314)
Observations	173	173	170
R-squared	.498	.519	.488

Robust standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

Table 5 Determinants of credit growth by currency

	(1) CG RON	(2) CG EUR	(3) CG USD	(4) CG OTHC
Covid-19 dummy	.048	.873***	1.896**	.983**
	(.153)	(.201)	(.959)	(.493)
L.Y	.483***	.21***	-.201	.109
	(.072)	(.077)	(.161)	(.112)
L.GDPC	.024*	.03**	.192***	.072**
	(.014)	(.015)	(.065)	(.035)
L.LTEDS	.001*	0	.001	.003**
	(.001)	(.001)	(.004)	(.001)
L.UNEMP	.015	-.061	.425	.019
	(.044)	(.039)	(.258)	(.122)
L.CPI	-.003	.031***	.013	.08***
	(.004)	(.007)	(.024)	(.024)
L.STEDS	0	.001	-.008	-.003
	(.001)	(.002)	(.015)	(.004)
L.NPLs growth	-.025	-.007	-.103	-.084**
	(.018)	(.018)	(.063)	(.039)
L.RON/EUR change	-.038	-.158***	-.122	-.13
	(.043)	(.043)	(.168)	(.115)
				(.112)
Constant	.651	-3.9***	-5.585*	-11.946***
	(.648)	(.962)	(3.249)	(3.019)
Observations	173	173	173	173
R-squared	.46	.486	.092	.225

Robust standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

Positive and statistically significant coefficients confirm that the main macroeconomic determinants of the lending growth by currency for the Romanian banking sector are the Covid-19 effects, GDP per capita growth rate, Consumer Price Index rate. A positive relation between the credit growth the and the Consumer Price Index rate is induced by the further liberalization of the household electricity market and the increasing global inflation pressure.

Table 6 Determinants of credit growth by maturity

	(1) CG ST	(2) CG MT	(3) CG LT
Covid-19 dummy	1.863***	.964***	.406***
	(.624)	(.271)	(.149)
L.Y	.189**	.138**	.158***
	(.091)	(.059)	(.04)
L.GDPC	.066*	.04**	.029**
	(.039)	(.02)	(.012)

L.LTEDS	.001	.002*	0
	(.004)	(.001)	(.001)
L.UNEMP	-.04	-.015	-.076*
	(.155)	(.062)	(.041)
L.CPI	.029*	.016*	.025***
	(.015)	(.008)	(.006)
L.STEDS	-.008	-.003	.004
	(.012)	(.002)	(.004)
L.NPLs growth	-.001	-.058**	-.032**
	(.044)	(.027)	(.014)
L.RON/EUR change	-.2*	-.135**	-.144***
	(.107)	(.058)	(.033)
Constant	-4.045**	-1.686	-2.482***
	(2.047)	(1.163)	(.771)
Observations	173	173	173
R-squared	.135	.275	.372

Robust standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

For checking the robustness of our results, we have estimated regressions, where the dependent variable is represented by the credit growth rate, split by maturities: short term, medium term, long term. We find evidence in Table 6 that the main variables which influence the evolution of the credit growth by maturity are the Covid-19 effects, GDP per capita growth rate, Consumer Price Index rate, RON/EUR change rate.

Table 7 Determinants of credit growth by type of loans

	(1) CG CORP	(2) CG HH	(3) CG CONS	(4) CG COM	(5) CH HOUSE
Covid-19 dummy	1.128***	.488***	.718***	-2.146	.526**
	(.249)	(.131)	(.26)	(2.007)	(.208)
L.Y	.017	.06*	.015	.033	-.094
	(.066)	(.031)	(.024)	(.102)	(.087)
L.GDPC	.051**	.039***	.042**	-.262	.015*
	(.02)	(.012)	(.019)	(.168)	(.008)
L.LTEDS	0	0	.003	.006*	.001
	(.001)	(.001)	(.002)	(.003)	(.001)
L.UNEMP	.001	-.057	-.229***	-.079	-.152**
	(.057)	(.037)	(.08)	(.333)	(.064)
L.CPI	.018**	.027***	.042***	.05	.034**
	(.007)	(.007)	(.011)	(.038)	(.013)
L.STEDS	.004	.002	-.007	-.004	-.002
	(.004)	(.002)	(.008)	(.008)	(.003)
L.NPLs growth	-.024	-.027	-.062**	-.042	-.014
	(.022)	(.017)	(.027)	(.187)	(.016)
L.RON/EUR	-.159***	-.115***	-.185**	-.025	-.069

change					
	(.053)	(.043)	(.081)	(.405)	(.058)
Constant	-2.341***	-2.739***	-3.97***	-4.973	-2.483*
	(.874)	(.779)	(1.259)	(4.828)	(1.361)
Observations	173	173	173	173	125
R-squared	.201	.4	.234	.095	.118

Robust standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

The main factors shaping the lending growth in the Romanian banking sectors, by loans typology are GDP per capita growth rate, unemployment rate, the Consumer Price Index (%) and RON/EUR change rate. The empirical results from Table 7 highlight a negative relationship between the NPLs growth and the lending growth for the consumer loans. The decreasing of the NPL growth ratio can be assigned to the supporting macroeconomic environment associated with comprehensive monetary and risk policies, portfolio cleaning activities which have been realized by the financial institutions.

Table 8 Determinants of credit growth by type of credit institutions

	(1) CG STATE	(2) CG PRIV	(3) CG LEGE	(4) CG BRAN
Covid-19 dummy	1.034***	.573***	.593***	.836**
	(.294)	(.153)	(.158)	(.344)
L.Y	.247***	.264***	.25***	.038
	(.086)	(.061)	(.065)	(.071)
L.GDPC	.077***	.028**	.029**	.069***
	(.019)	(.011)	(.012)	(.026)
L.LTEDS	.001	.001	.001	-.001
	(.001)	(0)	(0)	(.001)
L.UNEMP	-.067	-.056*	-.043	-.252***
	(.077)	(.033)	(.034)	(.087)
L.CPI	.052***	.017***	.017***	.035***
	(.013)	(.005)	(.006)	(.012)
L.STEDS	.004*	0	0	.003
	(.002)	(.001)	(.001)	(.003)
L.NPLs growth	-.041	-.028**	-.031*	-.009
	(.044)	(.014)	(.016)	(.032)
L.RON/EUR change	.105	-.136***	-.104***	-.376***
	(.107)	(.033)	(.033)	(.115)
Constant	-6.102***	-1.651***	-1.758**	-2.625
	(1.731)	(.627)	(.721)	(1.646)
Observations	173	173	173	173
R-squared	.479	.54	.511	.222

Robust standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

We conclude our empirical research by investigating the determinants of the credit growth by financial institutions typology. Table 8 reports the sign and the statistical significance of the Covid-19 dummy, GDP growth per capita, unemployment rate, consumer price index and RON/EUR exchange rate coefficients. NPLs growth ratio can explain the evolution of the credit growth in the case of loans granted by private-owned credit institutions and loans granted by credit institutions – Romanian legal entities.

5. CONCLUSIONS

Credit growth and lending levels from an economy are reliable indicators of financial stability, therefore empirical estimates are a subject of interest for supervisors, policy makers and investors likewise. With this study, we extend the literature on credit growth by investigating the link between COVID crisis and credit growth within the Romanian banking sector. Analyzing the period 2000-2022, we empirically assess the impact of COVID pandemic on credit growth. The main results show that COVID crisis influences positively credit growth. Macroeconomic indicators like GDP growth, inflation, and external debt, also significantly affect the lending. These results remain robust when we assess the effects of the pandemic on different subcategories of credit determined by currency, type of loans, maturity, and type of institutions.

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USING MACHINE LEARNING IN DETECTING FAKE NEWS

ȘTEFAN BOLOTĂ [i], MIRCEA ASANDULUI[ii]

Abstract: *In a world that has been greatly affected by the Coronavirus pandemic and more recently by the armed conflict between Russia and Ukraine, the flow of information is constantly increasing and at the same time the veracity of this information raises a big concern, and this makes the topic of fake news a problem of major interest. Our paper proposes a tool for fake news detection using different models of machine learning developed over a Fake News Corpus. Neural networks have proven to be the most effective method, reaching an accuracy of over 90%, but also Naive Bayes can be an excellent solution for classifying text data. Besides these two, we also developed and analyzed other models based on Naive Bayes and k-Nearest Neighbors. The results are promising and show that the problem of fake news can be managed by machine learning algorithms.*

Keywords: *fake news detection, neural networks, machine learning, artificial intelligence, natural language processing, Naive Bayes.*

JEL Classification: *C45, C63*

1. INTRODUCTION

With so much of our lives spent online on social media, more and more people tend to seek and consume news and other information from social media, rather than traditional media sources as a more accessible route.

In a world that has been hit hard by the Coronavirus pandemic, and where many countries have restricted the right to free movement, forcing people to stay indoors, the consumption of information has increased considerably from all media sources. At the same time, with the entire world watching the armed conflict between Russia and Ukraine, the flow of news is increasing.

[i] Alexandru Ioan Cuza University of Iași, Faculty of Economics and Business Administration, Iași, Romania, stefan_bolota17@yahoo.com
[ii] Alexandru Ioan Cuza University of Iași, Faculty of Economics and Business Administration, Iași, Romania, mircea.asandului@uaic.ro

But the authenticity of the information has become a major issue affecting the whole society. On social media, information is circulating so fast and so intensely. Due to this it has a huge capacity to make an impact in the real world, affecting millions of people in a matter of minutes.

Although this is a major problem, still there is no concrete solution for the problem. In the news industry, fake news has become the main topic of discussion, as most content is questioned for its veracity due to the constant, alarming spread of fake news. This is even a more urgent matter especially during the pandemic period, when people are scared and tend to believe any conspiracy or any information that has no substantiated basis. Also, during this pandemic period, a plethora of myths have appeared in the media, from different ways to get rid of the Coronavirus to the darkest conspiracies, from Bill Gates stealing humanity's data, 5G antennas causing the disease to vaccine-implanted chips.

Society's problems grow with man's inability to distinguish accurate, authentic news from fake news. According to Anderson (2017) young people are generally known to be "all-knowing" compared to their parents, but when it comes to determining whether a news story is fake or not, they prove to be just as confused as the rest of society. One of the biggest problems facing the field of media, Journalism, especially the digital area, is the out of control spread of fake news. The fake news, which is the subject of the second problem, is amplified and 'maintained' by big companies like Google, Apple, Facebook, and Amazon who decide who publishes, what content is published and how this fake news is monetized.

Fake news has become so widespread and widely circulated that journalists publish their own content on their personal social media accounts, thus manipulating society and spreading the content with exceptional ease.

With all this in mind, we have concluded that a study is needed, and above all a way to bring down this "conspiracy" of fake news, the first step being to identify it. With the exacerbated evolution of technology, it is necessary to sound the alarm on our response to the effects that technology produces. Society deserves to live by honest rules, it deserves to be informed correctly and on time.

Establishing the veracity of information online is therefore a current challenge, requiring attention, regulation and active monitoring of digital content disseminated by media entities involved in supporting the way information is presented and shared between people, on the internet, including search engines and social networking platforms.

Our goal is, using Data Mining and Machine Learning techniques, to develop a tool that can verify the veracity of the information in a manner as simple as possible and in the same time very accurate.

To get to the core of the issue and to better understand the impact of fake news on humanity, we will present concrete reports and facts that reveal the negative effects of this phenomenon, the characteristics of fake news and how to identify it. It should be noted that fake news is not just about spreading totally false stories. This phenomenon has several "manifestations": it is possible for a news item to be false simply by omitting certain issues, by focusing on a single aspect and forgetting the context, by reformulating certain lines given by certain people, by changing certain facts, etc.

Fake news is often used for financial or political purposes and is associated with propaganda aimed at spreading misleading information to promote a political interest or point of view. We consider that the main characteristics of this phenomenon include the fact that the news is inaccurate, the content is optimized for distribution or sharing, and that the information is designed to mask or distort emotions by emphasizing bias or discrimination.

If we look at it from a journalistic point of view, the specific elements are structural elements such as the headline, the body of the news, the images, etc. On the side of intent to deceive we find the desire to provoke the reader from a political/ideological or financial point of view.

Further on, in the following section, we will present a literature review, analyzing some of the existing studies and their relation to the problem of identifying fake news. After this, we will discuss the methods and mechanisms used to develop machine learning models, as well as the data used to train the models. In the last part of this paper, we will present the results obtained and some conclusions that emerge from our analysis.

2. LITERATURE REVIEW

To identify fake news, it is not only necessary to think about whether it might happen, to check several sources, to check the date the news is posted or to check the author.

Based on the features, different models for recognizing fake news exist. The first model is the knowledge-based model. This model is done either by journalists or experts in the field or by majority vote. Majority voting refers to the idea that if a majority claims that a certain content is false, then it must be so. As an example, we

can consider the case of Coronavirus, focusing on the analysis of the social network Facebook. Majority voting would have a greater impact in Facebook groups, as people socialize and exchange different opinions. In the context of participating in a discussion outside my area of knowledge, not having sufficient information on that topic, I tend to follow the herd effect and conform to the majority.

The second pattern is called the automatic verification pattern. This model makes use of a huge database that contains information about any field, thing, etc.

The third model is the style-based model: fake news generally uses a specific style that plays on the reader's emotions to change their behavior. Another commonly used style is sensationalism which arouses curiosity in the reader that makes him click on the news. In general, these sensational news stories come from the world of social media. Journalists use words such as 'sensational', 'exclusive', 'you won't believe it...' etc. These formulas arouse curiosity mainly through their wording and not necessarily through the subject of the news. In other words, someone may access a news story, only persuaded by the wording of the headline, and not by the subject matter.

The most effective and appropriate model for recognizing fake news is based on content. The knowledge-based model is from a practical point of view very difficult to implement, being expensive and needing a huge database that has to be manipulated.

Reis *et al*. (2019) use machine learning techniques for newsfeed articles related to the 2017 US election. The algorithms evaluated were k-nearest neighbors (kNN), Random Forest, Support Vector Machines (SVM) and Extreme Gradient Boosting (XGBoost). To develop these algorithms a lot of hand-crafted features were used, such as language features bag-of-words, POS tagging and others for a total of thirty-one different features), lexical feature(number of unique words and their frequencies), psychological features (built using Linguistic Inquiry and Word Count which is a specific dictionary built by a specialized text extraction program) and semantic features (toxic score obtained through Google API). Many other features, extracted from source and social metadata, were also used.

Their results are shown in Figure 1. They also show that XGBoost is good at selecting texts that need to be manually verified, meaning that texts classified as trustworthy are indeed trustworthy and thus reducing the number of texts that need to be manually verified. This model is limited by the fact that they use metadata that is not always available.

Perez-Rosas *et al.* (2018) used almost the same set of features but also used a linear SVM-based model and worked on a different dataset. The models that had the best performances in their case were XGBoost and Random Forrest.

Another interesting study uses a hybrid model (CSI) to detect fake news. Ruchansky *et al.* (2017) used a hybrid network, combining features obtained from news content and metadata, such as social engagement, into a single network.

To do this, they used a recurrent neural network (RNN) for extracting news timing features and a fully connected network for social features. For features extracted from text they used the dov2vec library. The results of the two networks are then concatenated and used for the final classification.

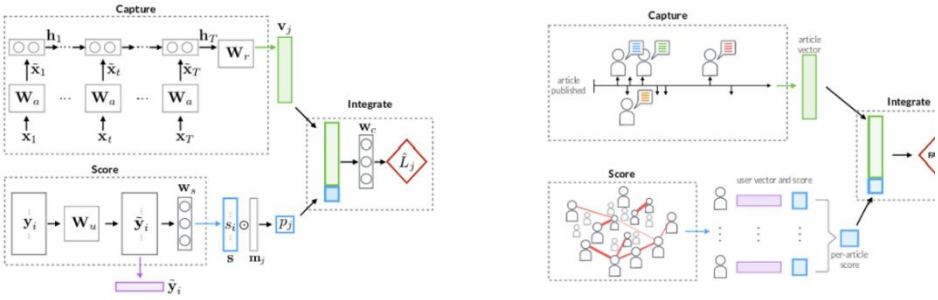

Figure 1 CSI model

Yang *et al.* (2018) used a convolutional neural network (CNN) that uses images found in articles to do classification. They used a Kaggle dataset containing fake news, in addition they scraped real news from trusted sources such as the New York Times and Washington Post.

Their network consists of two branches: a text branch and an image branch (Figure 2). The text branch is then divided into two sub-branches: text explicit: information derived from the text, such as the length of the news, and the text latent sub-branch, which is basically the content of that news, limited to 1000 words.

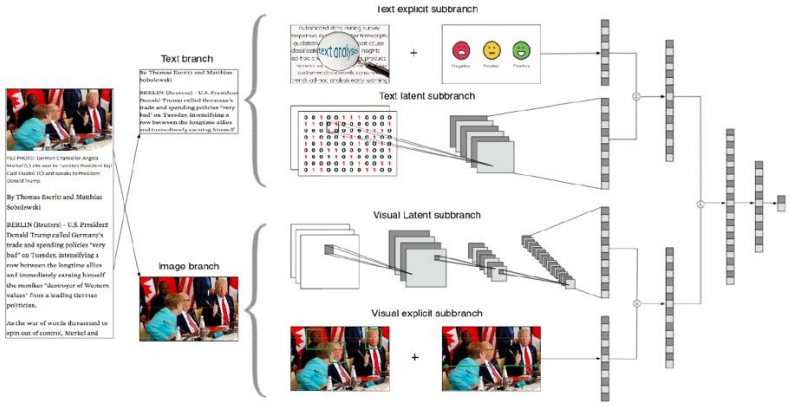

Figure 2 Convolutional neural network

The branch dealing with image processing also consists of two sub-branches, one containing information such as image resolution or the number of people present in the image, and the second sub-branch using a convolutional neural network on the image itself. The results support the hypothesis that using images generates better results.

Gilda (2017) emphasis the importance of Natural Language Processing (NLP) in identifying false or incorrect information. Using Term Frequency – Inverse Document frequency) of bigrams and probabilistic detection of context-free grammar. They used Bi-Gram Count Vectorizer (TF-IDF) and Probabilistic Context-Free Grammar (PCFG), the study detects false information. At the same time, the dataset from more than one class of algorithms was examined to find a better model. The bigram count vector was loaded directly into a stochastic top-down model that identifies items that are not credible with 71.2% accuracy.

Shu *et al.* (2017) focus on fake news on social networks presenting a data mining perspective that includes the characterization of fake news in psychology and social theories. Their paper analyzes two main factors responsible for the widespread user acceptance of fake messages, which is naive realism and confirmation bias. A general two-phase data mining framework is proposed which includes feature extraction and modeling, dataset analysis and confusion matrix for false news detection.

Parikh and Atrey (2018) point out that social networking sites process news mainly in three ways. The first option is by multilingual text; this is analyzed using computational linguistics, which focuses semantically and systematically on how the text was made. Since most publications are in text form, their analysis requires enough work to draw some relevant conclusions. Another manner is multimedia,

when several forms of media are integrated into a single publication. This can include audio, video, images, and graphics and is incredibly attractive and attracts the viewer's attention without having to consider much text. The last mentioned way is by hyperlinks that allow the author to make posts referring to various sources and thus gain the trust of viewers. In practice, references are made to other social media sites and screenshots are inserted.

3. DATA AND METHODOLOGY

In this chapter we will present information about the used dataset and the methodology used to develop an application that is able to predict fake news. The dataset we use is called the Fake News Corpus and is an open-source dataset composed of millions of news articles that have been extracted from a list of 1001 domains. This corpus is intended for the development of data mining algorithms for the purpose of fake news recognition.

Being still under development, the public version includes over 9 million articles (745 out of 1001 domains). Out of the nine million data we used for the training part only 200 thousand news that are associated with de labels *reliable, fake, unreliable, clickbait, conspiracy.*

Data mining models for text classification

We take into consideration three classification methods to classify news, namely neural networks, the Naïve Bayes classifier and the k-NN classifier; further we present briefly how these methods work and the principles behind them.

Neural networks are a branch of artificial intelligence that simulates brain activity within a program to create a machine learning model for the computer. In practice, neural networks are used for classification and regression problems.

Within a neural network the term perceptron appears (Fig. 3). A perceptron is an artificial neuron model in which the input signals are summed, and the output signal appears only if the sum exceeds the threshold θ.

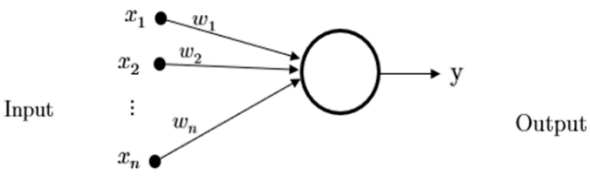

Figure 3 Structure of a perceptron

The purpose of the perceptron is to classify an instance into one of two classes (0 or 1). The perceptron has n inputs ($x_1, x_2, \ldots, x_n$) and one output y, and w_i is the weight for each input x_i.

Using the standard (single layer) perceptron is not always a happy one, as it is unable to implement some functions, such as the logical XOR function or larger networks, thus creating an output that very sharply separates the input space into two halves (Fig. 4).

This is why it was necessary to introduce multilayer perceptron in which the output function is no longer binary, but a real value between 0 and 1 that can be interpreted as a probability. (Fig. 5) The output here is smooth, continuous, thus solving the problem of very abrupt switching from one value to another.

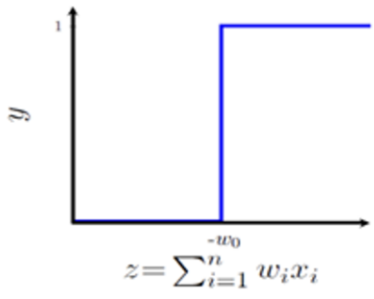

Figure 4 XOR function

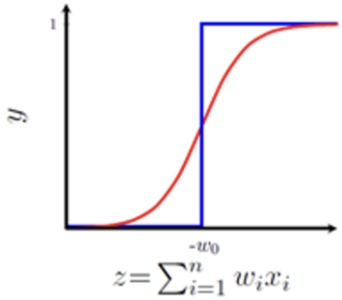

Figure 5 Binary output function

The multilayer perceptron is a feed-forward neural network with one or more hidden layers, as it can been observed below.

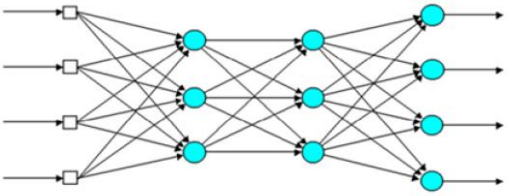

Figure 6 Structure of the multilayer perceptron

This example of a neural network is a fully connected network, i.e. there is an arc from every perceptron on layer *i* to all perceptrons on layer *i+1*.

Another important parameter in neural networks is the activation function which, for the multilayer perceptron, must be non-linear.

The way the neural network creates the learning model is based on an algorithm to adjust the network weights to reduce the difference between the actual

output (y) and the desired output (y_d). One such algorithm is the back-propagation algorithm that has two stages.

First, the network receives the input data as a vector ($x_1, x_2, \ldots, x_n$) and sends the signal forward, step by step in each layer, until the last layer generating the output is reached.

The second step is to propagate the error from the output layer to the input layer by adjusting the network weights:

$$\Delta w_{jk} = \alpha \cdot y_j \cdot [y_k (1 - y_k)] \cdot e_k$$
$$\Delta w_{ij} = \alpha \cdot x_i \cdot [y_j (1 - y_j)] \cdot \sum_k \delta_k w_{jk}$$

where Δw – weight correction, α – learning rate, x – input, e – error ($y_d - y$)

The Naive Bayes algorithm is a classification method based on Bayes' theorem. This algorithm assigns a particular label to new instances based on the probabilities calculated for each label. Specifically, if we have a model that needs to classify a new instance as True or False, the algorithm will calculate the probability that the instance is True and the probability that the instance is False, and then compare the probabilities and choose the higher one.

Bayes' theorem calculates the probability of an event occurring, considering the probability of another event that has already occurred and has the following form:

$$P(A|B) = \frac{P(B|A) \cdot P(A)}{P(B)}$$

To calculate these probabilities, we need a data set that is divided into two parts, a set of features (D), and an output y (classification label). Thus, in our case, the formula becomes:

$$P(y|D) = \frac{P(D|y) \cdot P(y)}{P(D)}$$

The naivety of the Naive Bayes algorithm comes from the naive assumption of data independence, i.e., each pair of classified features is independent of each other. In this case, we can have the following formula:

$$P(A, B) = P(A) \cdot P(B)$$

Using last formula, we can write Bayes' formula in the following form:

$$P(y|D) = P(y|x_1, \ldots, x_n) = \frac{P(x_1|y)\, P(x_2|y) \ldots P(x_n|y)\, P(y)}{P(x_1)\, P(x_2) \ldots P(x_n)}$$

To create a classification model of the data, we calculate the posterior probabilities for all possible values of the variable class y and choose the output with the maximum probability. We can write this in the following form:

$$P(y|x_1,\ldots,x_n) = \frac{P(y)\cdot\prod_{i=1}^{n} P(x_i|y)}{P(x_1)\cdot P(x_2)\cdot\ldots\cdot P(x_n)}$$

Finally, we have to calculate the class probability *P(Y=y)* and the conditional probabilities $P(x_i|y)$. In total, we have calculate *2*n+1* probabilities, where n is the number of features.**)**

K-Nearest Neighbors (K-NN) is a classification and regression algorithm that ranks instances based on their k nearest neighbors. This classifier starts from the idea that similar things are close to each other, and in this sense, similarity would be calculated as the distance between the two points. The smaller the distance, the more similar things are.

There are several ways we can calculate the distance between two points, but it depends on the problem we want to solve. However, in practice, Euclidean distance is most often used.

If $p=(p_1, p_2, \ldots, p_n)$, $q=(q_1, q_2, \ldots, q_n)$ points in an n-dimensional Euclidean space, then the Euclidean distance is calculated according to the formula:

$$d(p,q) = \sqrt{(p_1-q_1)^2+(p_2-q_2)^2+\cdots+(p_n-q_n)^2} = \sqrt{\sum_{i=1}^{n}(p_i-q_i)^2}$$

The success of the algorithm lies in the right choice of the parameter k. This choice can be made by running the algorithm several times with different values for k and selecting the parameter that reduces the error, while maintaining the algorithm's ability to make accurate predictions. This method is also called the elbow method. This algorithm is a simple and easy algorithm to implement and does not require model building or additional assumptions. However, the k-NN algorithm can become significantly slower as the dataset grows.

4. RESULTS AND DISCUSSIONS

We randomly extracted a sample of 200 thousand articles, and we used this part of the data set to train the algorithms. In order to do this, we created a pipeline to put together the whole data processing process, starting from the news given as

input in the original format, then processing it, then transforming it into a different representation, so that finally this representation can train the model.

Another important aspect to be mentioned is the length of time over which the training took place. For this dataset, which also used the pipeline described above, only the pre-processing and vectorization of the text took about 12 hours (the length of the news stories was long enough), and the actual training lasted per classifier.

To train the models, we used 80% of our dataset, and the remaining 20% we used for the testing process to obtain the score for the three classifiers.

In terms of training time, the model created using Naive-Bayes is the fastest, followed by k-NN, and finally neural networks. However, this ranking changes when we talk about model accuracy, the results are shown in Table 1**.**

Table 1 Classification results on the training dataset

	Neural Networks			Naïve-Bayes			k-NN			Support
	Precision	Recall	F1-score	Precision	Recall	F1-score	Precision	Recall	F1-score	
Fake	0.86	0.98	0.92	0.85	0.93	0.89	0.84	0.94	0.89	
Reliable	0.98	0.87	0.92	0.87	0.84	0.85	0.92	0.86	0.89	
Accuracy			0.92			0.87			0.89	196899
Macro avg	0.92	0.93	0.92	0.85	0.88	0.87	0.88	0.90	0.89	
Weighted avg	0.93	0.92	0.92	0.87	0.86	0.87	0.89	0.87	0.89	

Next, we evaluated our trained models and for this we extracted a new dataset consisting of about 750 thousand instances. On this dataset, we assessed each of the three models and obtained similar scores (Table 2), which shows that the models we created are quite good.

Table 2 Classification results on the test dataset

	Neural Networks			Naïve-Bayes			k-NN			Support
	Precision	Recall	F1-score	Precision	Recall	F1-score	Precision	Recall	F1-score	
Fake	0.94	0.93	0.93	0.83	0.91	0.87	0.86	0.85	0.85	
Reliable	0.92	0.94	0.93	0.92	0.85	0.88	0.94	0.86	0.85	
Accuracy			0.93			0.88			0.85	744261
Macro avg	0.93	0.93	0.93	0.88	0.88	0.88	0.85	0.95	0.85	
Weighted avg	0.93	0.93	0.93	0.88	0.88	0.88	0.85	0.85	0.85	

To conclude, training was one of the most difficult steps in the modeling part of a classifier, especially in terms of the execution time of the different tests we did, but also in terms of the limited hardware components. As it can be observed, the Neural Networks have the best classification results, classifying correctly more than 9 out of 10 news. For the last two classifiers, we did a graphical analysis measuring the scalability and performance of the models (Figure 7, 8 and 9).

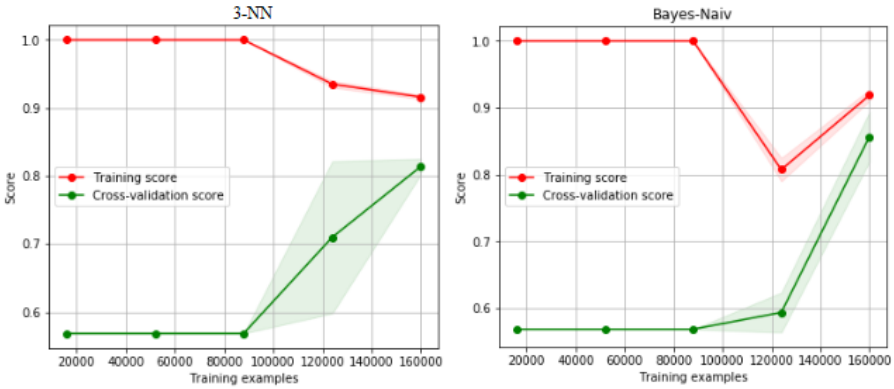

Figure 7 Training and cross-validation score analysis for Naive-Bayes and 3-NN

Moreover, in practice it turns out that Bayes is much faster than 3-NN when it comes to classifying a new instance, since in the case of the latter all distances between the new instance and the data with which the model was trained have to be computed.

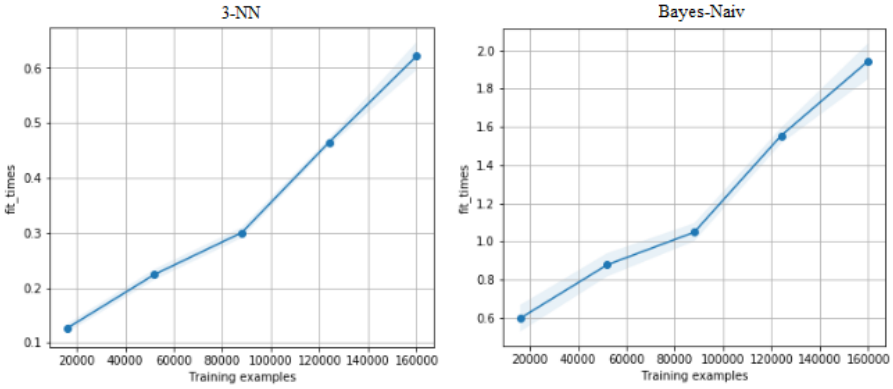

Figure 8 Scalability analysis of the two models

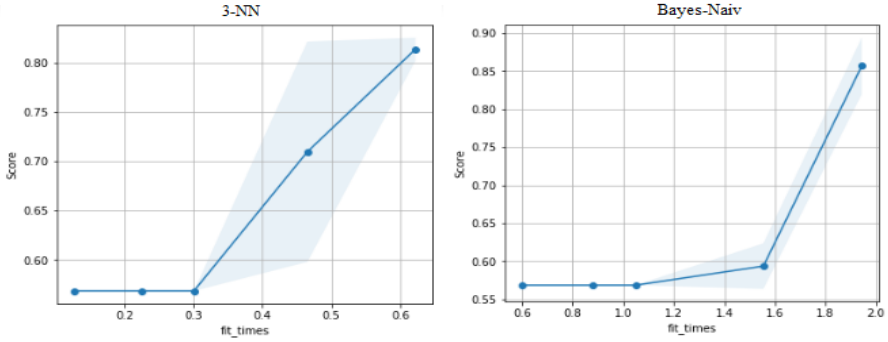

Figure 9 Performance analysis of the two models

As it can be observed from the graphics above, the Naive-Bayes classifier performs better than 3-NN on our dataset, even though the time required for the 3-NN model to train with different training dataset sizes is smaller than that of the Naïve-Bayes classifier.

5. CONCLUSIONS

The aim of this work was to develop a desktop application capable of detecting fake news. For the development of the application, we used three classifiers in order to see which machine learning model fits better the data. In building the classifiers we started from a dataset of about nine million records. We extracted two data sets, the first was used for training the algorithm and the second one was used to evaluate the algorithms' performance. On average we achieved an accuracy of 90%, which tells us that our models can correctly classify nine out of 10 news stories.

In our future work, to improve the created solution, we will create a database to keep track of all the new articles that have been entered for classification, and in the case of a story that has been classified with a probability of less than 75%, the user could have the option to choose what kind of story it is. In this way, when the classifier gathers a certain number of new items in that database, it will train again with the new data, thus achieving dynamic learning.

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SLAVERY, CLIOMETRICS AND THE AUSTRIAN SCHOOL OF ECONOMICS

OANA-MARIA COZMA[i]

Abstract: *Slavery is generally understood as the action of involving one group of people which controls and exploits another group of people in order to obtain a wide range of advantages. Even though historians, sociologists, psychologists, or philosophers appear to be most interested in the subject of slavery, economists have also long looked into the issue, particularly to determine if it was a justified workforce or a profitable institution. In addition to the linkages between slavery and the productivity of the slave labour force, economists continue to discuss whether or not the institution of slavery influenced the social and economic development of today's most developed nations. The purpose of this paper is to highlight and compare two perspectives on the economic profitability of slavery. On the one hand, the position of Alfred H. Conrad and John R. Meyer, the Cliometrics representatives, who examine the slave operations in the Antebellum South of the United States of America, 1812–1861, and who come to the conclusion that slavery was in fact profitable and self-sustaining, will be taken into consideration. On the other hand, the position of Murray Rothbard, a representative of the Austrian School of Economics, will also be presented; more specifically, his opinion will oppose Conrad and Meyer's argument that slavery was neither profitable nor sustainable. The present paper's conclusions emphasises the fact that continuous disagreement over the subject of slavery's profitability leaves room for further research and debate.*

Keywords: *slavery; Cliometrics; The Austrian School of Economics.*

JEL Classification: *A13, B25, B53, J40, N31*

1. INTRODUCTION

Slavery has been a delicate topic within academia as researchers from multiple fields continue to attempt to explain why slavery persisted throughout time as a well-established institution and they also try to uncover the processes that made slavery possible for so long in all human cultures. As mentioned before, this form of

[i] Alexandru Ioan Cuza University of Iași, Faculty of Economics and Business Administration, Iași, România, cozma.oana@feaa.uaic.ro

oppression was common throughout all human history; for instance, Ancient Greece and Rome were slave states where slavery was a deeply ingrained component and a significant institution. For example, Aristotle, a highly well-known philosopher from Ancient Greece, defended slavery. He claimed that slaves, unlike free people, lack normative intelligence in order to defend natural slavery on the basis of intellectual arguments (Garnsey, 1996; Brunt, 1993; Charles River Editors, 2016). At the same time, slavery was legally permissible in ancient Rome. Roman Law specifically made a distinction between people who were free and those who were slaves (Buckland, 1970; Hunt, 2018). Subordination to the master (Buckland, 1970; Bradley, 1987), the slaves' status as objects, forms of propriety, and a lack of dignity were the main factors in establishing a slave's status (McKeown, 2011; Patterson, 1982). Even though this form of oppression and exploitation may be traced back centuries, we must proceed cautiously because the available information is fragmentary and does not give a clear picture of slavery in Ancient Greece and Rome (McKeown, 2011). Even though slavery is often considered a thing of the past, it is important to remember that the various forms of modern slavery serve as the finest examples of the consequences of today's slavery. The term "modern slavery" refers to a wide range of illegal practises, including forced labour, domestic servitude, sex trafficking, forced marriage, and enslavement based on descent (O'Connell Davidson, 2015). Modern slavery is a result of past slavery, although the latter also raises concerns about whether it aided in the economic advancement of today's most developed countries, especially those involved in Transatlantic Slave Trade. The Transatlantic Slave Trade was a global slave trade that carried enslaved Africans from Africa to the Americas over the Atlantic Ocean (Rawley and Behrendt, 2005). As the present paper explores Alfred H. Conrad and John R. Meyer's approach on the profitability of slavery in the Antebellum South of the United States of America, 1812–1861, and Murray Rothbard's criticism of their analysis, it is important to comprehend the framework of the Transatlantic Slave trade.

The purpose of this paper to present and compare two points of view on the profitability and self-sustainability of slavery. To be further precise, Alfred H. Conrad and John R. Meyer, two proponents of the Cliometrics methodology, employed statistical and economic instruments to reach the conclusions that slave activities were lucrative and that slavery was a long-lasting institution. They also emphasise that the American Independence War (Higginbotham, 1983) was necessary to put an end to slavery because of the profitability and durability of slavery. A representative of the Austrian School of Economics, Murray Rothbard, on the contrary, criticises Conrad and Meyer's work, particularly their use of

Cliometrics and their expeditious findings regarding the profitability of slavery. The remainder of this paper is organized in the following manner: Chapter 2 presents the used methodology; Chapter 3 introduces the relationship between slavery and its profitability and various views on this matter; Chapter 4 explores Conrad and Meyer and Rothbard's approaches on the profitability of slavery. Some final remarks conclude the paper.

2. METHODOLOGY

In order to achieve the purpose of the present paper, a qualitative research method was used, namely, content analysis. Through the content analysis there was undertaken a literature review on different views related to the profitability of slavery. In all, 22 sources were examined, including 11 books and 11 articles. Jstor, ProQuest, Science Direct and Francis and Taylor were the main databases used. The primary keywords employed were *slavery, slavery profitability, transatlantic slavery*. More specifically, books and articles arguing that slavery was not a very profitable activity and therefore had little impact on the economic development of state entities which used slave worforce, as well as books and articles supporting the idea that slavery was profitable and also was an economic growth determinant were examined. Furthermore, the focus was established on Conrad and Meyer's paper about the profitability of slavery, as well as on Rothbard's response to their analysis.

3. THE PROFITABILITY OF SLAVERY

It is challenging to separate the subjective aspects from the objective and economic components of slavery and its profitability, therefore the subject has long been a source of academic debate. Despite the fact that there have also been researchers who have attempted to demonstrate the unprofitability of this institution, specialists have always attempted to underline how and why slavery was thought to be lucrative.

Taking into consideration the case of the Ancient Greece, the institution of slavery had a considerable economic impact on this area, despite the fact that Greece lacked a unified Greek economy as there was no universal Greek society (Wiedemann, 1981; Cartledge, 2002). Therefore, within Greek society, slaves have represented a significant component of the labour force, participating in various industrial, agricultural, and household tasks (Schlaifer, 1968). More specifically, Greek individuals might earned profits only via the labour of slaves, according to various methods mentioned by the great thinker Socrates: (1) owning a significant

farm (where all labour was completed by slaves); (2) owning rental properties that may be rented (generally, these types of housing were offering accommodation to temporary residents, but they also represented brothels for prostituted slaves); (3) owning slave craftspeople (many workshops were based on the labour of slaves, and some of them were even managed by dependable and highly skilled slaves) (Cartledge, 2002). As it was already stated, even if Ancient Greece's political economy and economic system were not entirely consistent, the ruling class nonetheless conducted a contemporary analysis of economic logic to increase their profits; even though slaves were a significant source of financial rewards for Greek citizens who owned them, it must be acknowledged that there appears to be a scarcity of measurable historical data when examining the profitability and the political economy of slaves' labour (Finley, 1999; Cartledge, 2002).

In more recent times, the Transatlantic Slave Trade has been used to suggest that slavery was profitable because it allowed the state entities that participated in the trade to develop economically and socially. There are specialists who argue and are working to support the idea that The Transatlantic Slave Trade and slavery had a favourable impact on the economies and growth of the empires involved. For instance, if we refer to the case of the British Empire, there are researchers (Williams, 1944; Inikori, 1992; Darity, 1990) who claim that the triangle trade between the British Empire, France, and the colonized Americas allowed the expansion of trade on a global scale as well as the economic development of the participating nations – especially the British Empire – at the disadvantage of non-trading nations. The following is a description of the triangle trade's profitability process: various things specific to the European continent were loaded into ships that traveled from their home countries; these goods were then exchanged for African slaves, who were then used to trade colonial goods that were later taken back to their home countries, and, therefore, the triangular trade provided the British Empire with a threefold incentive for industrial development (Williams, 1944). Taking a more detailed look at the example of the Dutch Empire, there are specialists (Brandon and Bosma, 2021; Williams, 1944; Fatah-Black and van Rossum, 2014) who argue that slavery and The Transatlantic Slave Trade played a very important role in the expansion and economic development of the Dutch Empire as the phenomenon of slavery benefited the Dutch economy in a wider context. Specialists claim that the Dutch Empire benefited indirectly economically from The Transatlantic Slave Trade in a number of ways. As a result, the Dutch economy created and sold the ships used to transport slaves, had to provide food and other necessities for trade to each slave-buying mission, and simultaneously had to produce and market all the items that would be

traded in the interactions with African state entities. These activities have undoubtedly created a large number of jobs for textile and gun businesses as well as for numerous workshops across the Dutch Empire (Brandon and Bosma, 2021).

Regardless the fact that a wide variety of experts argue in favour of slavery's profitability, there are also researchers who advocate against it, suggesting that it was actually a more expensive than profitable activity. For instance, given the historical time in which he lived, Adam Smith, the Scottish economist, philosopher, and politician who is regarded as the founder of modern economics, had the unique opportunity to witness the involvement of the world's most powerful states in the Transatlantic Slave Trade, arguing against the institution of slavery. Adam Smith's economic arguments against slavery centre significantly on the efficacy of the slave labour force. Smith promoted the idea that slave labour has always costed far more than free labour because slaves lacked the motivation to become more productive (Smith, 1994). Slaves were completely obedient to their owners, thus they were unable to enjoy the independence and security necessary to benefit from the advantages of their work (Smith, 1994). Adam Smith's argument on the low productivity of labour rooted in slavery was frequently contradicted by the Caribbean sugar cane industry's success (Salter, 1996). Smith countered this claim by stating that economic laws controlling foreign commerce in the colonies maintained the earnings from this activity artificially above market values (Salter, 1996). In particular, the colonial powers' trade and production monopolies were a direct result of the extraordinary profitability of sugar cane plantations in the colonies (Salter, 1996; Smith, 1994).

In the recent past, The Transatlantic Slave Trade has also been analyzed in order to demonstrate that the institution of slavery was actually unprofitable and did not support the socio-economic development of nations involved in this activity. Even though The Transatlantic Slave Trade was investigated in order to demonstrate the profitability of slavery, slavery was recently shown to be unproductive and did not contribute to the socio-economic growth of the countries participating in this activity by analysing again The Transatlantic Slave Trade. Taking anew into consideration the case of the British Empire, there are specialists who claim that the early estimates of the profitability of slaves by experts like Williams (1944) and Inikori (1988) were confusing because they overestimated the quantity of slaves and the prices at which they were sold, ignored time factors in estimating profits, and relied on unrepresentative samples using relatively small slave shipments (Morgan, 2000). The expenditures and dangers of transporting slaves from West Africa to the colonies of the British Empire or the continent of Europe are some underappreciated

factors that were not taken into consideration while analysing the profitability of slavery in the British Empire (Morgan 2000). The full cost picture included the costs of setting up the ship to transport the slaves, including the deployment of the crew of enslaved slaves, the minimal subsistence needs for the maintenance of the slaves, and the extent to which the slaves were transported farther off the West African coast – the higher the transport costs (Richardson, 1978). Additionally, the arguments raised against the profitability of slavery inside the Dutch Empire often follow the same course as those raised against the British Empire's slavery's profitability. For example, specialists have tried to demonstrate that costs varied depending on the weather, the distance traveled, market fluctuations, and international political circumstances. Examples of costs were the passengers ship's damages, food for the crew and slaves, salaries of the crew and officers, and maritime insurance (a tense international political climate could lead to much higher costs for those involved in The Transatlantic Slave Trade) (Anstey, 1976; Postma, 1990). Moreover, due to the fact that the human cargo was extremely vulnerable and prone to illness and death, the triangle slave trade had costs that other kinds of trade did not, and, therefore, it involved a risky activity (Postma, 1990; Eltis, Emmer and Lewis, 2016).

4. RESULTS

Alfred H. Conrad and John R. Meyer were two American economists, pioneers of the quantitative economic current called New Economic History or Cliometrics. *The Economics of Slavery and Other Studies in Econometric History* (1964) is a significant work by the two American economists in which they concretized the current of cliometrics. On the other hand, Anarcho-capitalism and contemporary libertarianism were concepts developed by the American economist Murray Rothbard, a representative of the Austrian School of Economics. *The Anatomy of the State* (1974), *Man, Economy, and State* (1962), and *An Austrian Perspective on the History of Economic Thought* (1995) are some of his most significant contributions.

Conrad and Meyer set out to illustrate the ways in which economic theory could be used to order and organize historical facts. Specifically, they measured the profitability of slave operations in the antebellum South of the United States of America, 1812-1861, by referring not to accounting profit but to economic profit, and treating slavery as a capitalist institution. They defined slavery in terms of two production functions – a production function for slave-based agriculture, especially cotton crops, and a production function that refers to the production of an intermediate

good, namely, the breeding of slaves as a common product of slavery (Conrad & Meyer, 1958). Furthermore, Conrad and Meyer considered a sensitive ideological issue, namely, whether the American Civil War was justified or not. The two economists tried to answer a series of questions in this regard: (1) whether the slave system was destroyed by its own weight; (2) whether the allocation of resources was affected by the rigidity of the capitalized labor supply; (3) whether capital from the South has been misused or drawn to the North; (4) whether slavery would have inevitably diminished through the inability of slaves to reproduce sufficiently (Conrad & Meyer, 1958). Basically, they set out to conclude whether slavery was ineffective and would have disappeared on its own, not justifying the American Civil War, or whether slavery was profitable and required the outbreak of the Civil War to abolish it. The two American economists pointed out that there was nothing self-destructive about the profits of the slave economy because the prices of slaves did not exceed the productivity of this system of forced labor (Conrad & Meyer, 1958). In short, Conrad and Meyer reach the conclusion that slavery was profitable because the combined output of slave labor – such as agricultural production and slave breeding – exceeded the returns on alternative investments (Conrad & Meyer, 1958). Conrad and Meyer therefore confirmed the argument that the War of Independence was essential in determining the abolition of the phenomena of slavery by coming to the conclusion that slavery was profitable.

Murray Rothbard wrote about the antebellum slave economy of the United States South in the early 1960s in an unpublished note. This note was actually a critique of cliometrics, the methodology used by Conrad and Meyer (1958) to establish the profitability of slavery (Rothbart, 1960). Conrad and Meyer's thesis has mostly been criticized for connecting slavery to capitalism, whereas according to Rothbard, historically, slavery has resulted from warfare not from trade (Thornton, 2019). Building on this idea, Rothbard explains that the real economic benefits of slavery arose in the past when slave hunters and traders exploited the initial supply of slaves. Specifically, the original price would have reflected the anticipated present value of the income streams over time. However, in the long run, even slave hunters would have earned a normal return on investment in the market, and subsequent slave owners would have earned only a normal profit from their exploitation (Rothbart, 1960; Thornton, 1994). Therefore, any detection and measurement of economic returns in a short-term disequilibrium situation in the real world would be the result of other factors than slavery itself (Rothbart, 1960; Thornton, 2019). Rothbard further argues that although the institution of slavery was not profitable, the anti-manumission laws enacted in the laws of the slaveholding states were a central element in preventing the collapse of slavery.

At the same time, Rothbard points out that the constitutional measure to close the international slave trade increased the profitability of slave breeding (Rothbart, 1960). In addition to these external measures which determined the support of slavery in the absence of its profitability, a series of legislative acts and events were added which increased the profitability of agriculture based on slave labor which, in turn, determined the maintenance of slavery: The Slave Clause of the United States Constitution, the Fugitive Slave Act of 1793, the invention of the cotton gin in 1793, the Industrial Revolution, laws preventing the escape of slaves, and the passage of the Fugitive Slave Act of 1850 (Rothbart, 1960). Rothbard therefore concludes that (1) slavery itself was not economically profitable after the initial, past slave-hunting stage and was generally inefficient, and (2) political forces were the main factor preventing the system of slavery from collapsing sooner (Thornton, 2019). Murray Rothbard was not against the introduction of statistics and mathematical calculations into economics books and articles, but his criticism of cliometric methodology came through the prism of the dangerous ideological conclusions that could arise from its use – in this case, the justification and attribution of war to a role of constructive activity within society (Thornton, 2019).

5. CONCLUSIONS

Researchers from a multitude of disciplines, including history, psychology, sociology, and economics, have been interested in the issue of slavery. Slavery is relevant for economics because it may be used to explain the historical economic expansion of today's most developed nations. In addition, economists can determine whether it was profitable and not supported by external factors, such as political ones, by measuring and analysing its functions production, the slave prices, the production of goods determined by slave labour, or its capitalist nature. As a result, like in the case of the United States of America, the profitability and the self-sustainability of slavery can determine whether or not a war was required to put an end to it.

The purpose of this paper sought to examine how two Cliometrics representatives, Conrad and Meyer, conducted a study supported by empirical data wherefrom it resulted that slavery was profitable, necessitating the American Independence War, as well as how Rothbard, who is an influential representative of The Austrian School of Economics approached and criticized Conrad and Meyer's findings. In conclusion, there is nevertheless room for more research given the ongoing disagreement among experts regarding whether slavery was a factor that

drove economic growth or whether it was profitable and self-sustaining so that violent episodes, such as war, were required to outlaw it.

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THE EXPECTATIONS OF GRADUATES FROM EMPLOYERS IN THE NORTH-EAST ROMANIA REGION

DANIEL-FLORIN DĂNILOAIA[i], MARIA VIORICA BEDRULE GRIGORUȚĂ[ii]

Abstract: *Graduates' expectations regarding employers are often the subject of many discussions among human resources specialists and managers. The use of human resources strategies adapted to these expectations can lead to an increase in organizational efficiency and effectiveness. Following the collection of data from a number of 650 graduates from the North-East Region of Romania, through a questionnaire, relevant information was obtained regarding the actions taken by graduates to find a job, the characteristics taken into account when choosing an organization and the benefits expected from employers.*

Keywords: *job expectation, university graduates, motivating factors, generation.*

JEL Classification: *M12*

1. INTRODUCTION

Graduates' expectations regarding the workplace are often different from what the labor market offers regarding the specifics of the workplace. Motivation at the workplace and staying at a stable workplace are often influenced by the difference between the expectations of the graduates and what the workplace actually offers.

It is essential for company management to understand that demographic and technological changes have an important impact on changes in attitude, social trends and mentality of new generations of employees (McCrindle, 2006).

(Kupperschmidt, 2000) defines a generation as an identifiable group or cohort that shares birth years, age, location, and significant events at critical developmental stages. Each generation is influenced by external forces (parents, peers, media,

[i] Alexandru Ioan Cuza University of Iaşi, Faculty of Economics and Business Administration, Iaşi, Romania, daniloaiadaniel@gmail.com

[ii] Alexandru Ioan Cuza University of Iaşi, Faculty of Economics and Business Administration, Iaşi, Romania, maria.bedrulegrigoruta@uaic.ro

critical social and economic events, popular culture), which create the system of common values that differentiate them from people who grew up in other times Meglino and Ravlin (1998) While generations are characterized by specific values and organizations are characterized by values and constantly communicate these values Miller and Yu (2003). Studies show the existence of consistent differences between generations regarding personality traits, attitude, behaviour and even mental health. Thus, differences influence the workplace environment (Twenge, 2010).

Although there are studies that believe that the differences between generations can be attributed to age or career level (Smola and Sutton, 2002) in a study carried out on different generations at the same age, it emerged that these differences exist because of the generation and not of age or development level.

Considering the fact that the generations of graduates can also be grouped into generational cohorts with different specifics due to different environmental factors, the expectations regarding the workplace must be treated particularly in order to have some motivated employees. In the following pages, the graduates' expectations regarding the workplace will be presented. Graduates of 2021 from the Alexandru Ioan Cuza University from Iasi.

The following approach to graduate expectations covers several important aspects of the employee's life. Answering the following research questions:

- What actions do they take in order to find a suitable job?
- What aspects do they look for in an organization when applying for a job?
- What are the most important criteria when choosing the organization to work in?
- Which are most wanted extra-salary benefits by graduates?

The foundation of the criteria and specifications of the workplace is based on the specialized literature in the field of motivating the new generations at the workplace.

2. EXPECTATION GAP BETWEEN PERSPECTIVE OF GRADUATES AND THE VISION OF EMPLOYERS – A CONSTANT ISSUE

In the report made by (iCIMS Insight, 2022) on a sample of 500 professionals in the field of human resources and 1000 college graduates from the USA, a consistent gap was identified between the requirements of the new generations of graduates and what employers offer. While over 54% of employers say they intend to hire more college graduates, 43% of graduates say they followed a different career path than what they studied in college conform according to a study made by the National Association of Colleges and Employers (NACE), iCIMS report

summarized through this research the main differences between the expectations of graduates and the conditions in the labour market: 69% among graduate's grads would like their job to accommodate some remote work, according to 32% employers, graduates have unrealistic expectations about working remote also they believe that graduates have to high expectations about their starting earnings. 49% of graduates say their views on work-life balance have changed and working from 9 to 5 is not anymore key successful career. Also 41% believe that their employer must engage in social causes that they value, 66% of them say that there must be an alignment between the company's mission and their personal values before applying for a job. (Blaga, 2021) confirms the fact that there is a positive connection between intrinsic motivation and the development of social entrepreneurial activities, values that motivate intrinsic can have the personal values that intrinsically motivate people, can have a very important role in the workplace stability of the new generations, so organizations must take this aspect into account.

In international survey led by (Deloitte, 2021) based on interviews with more than 9,000 students and college graduates from 19 countries from Europe including Romania they found that there is major change in expectations of graduates from previous reports from 2013, 2015 and 2018.

Most important values in their life are for 78% happy family, 83% good health and professional work is very important for 39% of respondents. When choosing an employer, 42% respondents, regardless of gender, see individual plans and opportunities to develop their careers as most important. Salary continues to be an important consideration when choosing an employer, being second most important priority at job. Main reasons to leave an employer according to report are insufficient appreciation of work, negative relationships at work, insufficient opportunities for professional development and low salary/ better financial offer by another employer. Also, they found out that 73,3% from respondents are motivated by opportunity to learn something new and acquire new know-how and experience, 43% are motivated by developing and expanding their expert knowledge, 44,6% believe without benefits (promotion, raise, bonuses) can't be motivated.

An important similarity between the study conducted in the USA and the one in Europe is given by the high percentage of those who consider that a full-time job is not the key to success, in Europe the percentage is lower than in the USA, of approximately 33% of respondents compared to 41%.

Analysing these reports, we can see that there is a change in the approach to the workplace by the new generations, this fact is also generated by the Covid pandemic and the technological changes that have influenced these generations.

Considering the economic context in Romania, influenced by the brain drain phenomenon, researchers are interested in identifying methods and strategies to stop this phenomenon.

The studies carried out regarding the expectations of the young generations of students are also of interest in Romania. In a study carried out by (Matei et al., 2016) using the questionnaire as a research tool, applied to a number of 230 students in the 3rd year of studies, the following desires from job and demotivating factors were identified among students.

Top 3 dissatisfaction of young employees found in this research are:

- Demand of previous experience for entry level jobs, 82% of respondents,
- Lack of importance of academic importance, 65% of respondents,
- Insufficient pay for work, 59% of respondents,

Top 3 desires of young employees from employer:

- Better wage amount, 78% of respondents,
- Less focus on previous experience 67% respondents,
- More importance on academic performance from employers, 59% of respondents.

The main result of this study is given by the inconsistency between what employers offer and what the new generations of graduates want from a job.

3. RESEARCH METHODOLOGY

This research is quantitative research. This method was chosen in order to have a more accurate picture of the main characteristics that are desired by a graduate from a job. At the same time, the research is based on another research report carried out by the Alexandru Ioan Cuza University from Iasi within the Service for Students and Graduates in 2017.

3.1. Survey Design

The research tool used is an adaptation of the tool used in 2017 by the Service for Students and Graduates to identify the expectations of graduates and employers(Onofrei Mihaela et al., 2017). The adaptation was carried out according to the new research objectives, the research was carried out within the project "Equal opportunities for education – equity in society! (SE3S)", project code CNFIS-FDI-2021-0489, carried out by the Alexandru Ioan Cuza University in Iasi.

The questionnaire includes 34 items, the vast majority of items were of the closed answer type. In this article, only the answers regarding the graduates'

expectations from future employers are analysed. Answering the research questions from the previous pages.

3.2. Application of the research instrument

The research was carried out within the project "Equal opportunities for education – equity in society! (SE3S)", project code CNFIS-FDI-2021-0489, carried out by the Alexandru Ioan Cuza University in Iasi.

A number of 650 answers were obtained from UAIC graduates, the data collection was carried out by submitting the online questionnaire through the Google forms platform. The data collection was carried out in 2 stages, July 2021 and September 2021, the questionnaire was sent to graduates of bachelor's and master's studies.

3.3. Data analysis

The data were analysed using the SPSS and Excel programs, using descriptive statistics in order to observe the overall perspective on the research variables.

From 650 respondents, 56% they graduated with a bachelor's degree and 44% master's degree.

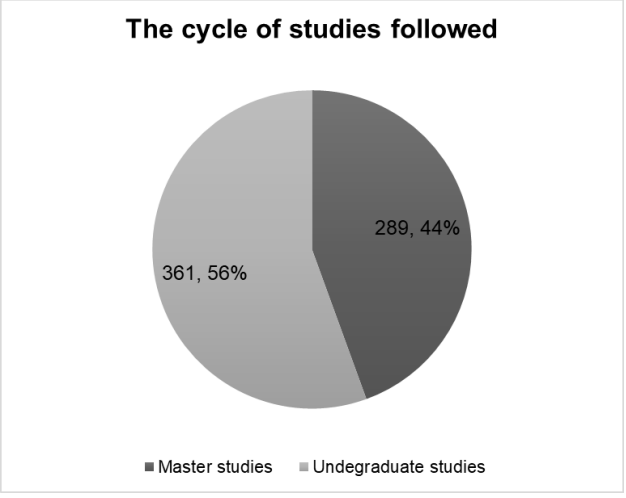

Figure 1 Respodents cycle of studies followed

Taking into account the delimitation of generations according to the specialized literature, we have the following distribution of respondents by generation. 526, 80,09% respondents from the generation Z, born between 1996-2002, 63 of respondents accounting for 9,6% of respondents are born between 1981-

1995 and are part of the generation Y (Millennial's), 61 of respondents are born between 1957 and 1980, part of The Baby Boom Generation (born between 1946 and 1965) and Generation X (born between 1966-1980), respondents are 24% men and 76% women. Distribution of range respondents and generation can be seen in the following figures:

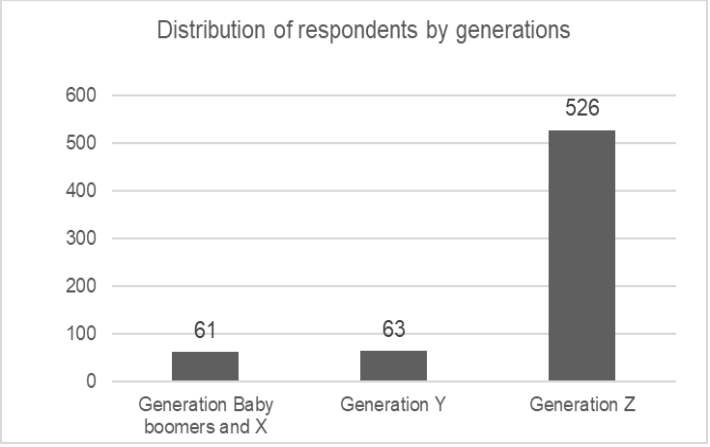

Figure 2 Generations of respondents

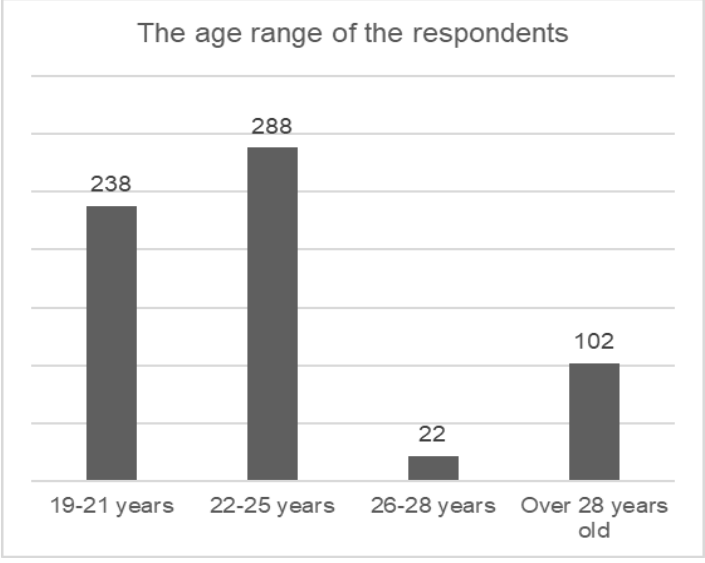

Figure 3 Age intervals of respondents

In order to respond research question, what actions they take in order to find a suitable job, graduates they were asked what actions do to find a job, the question allowed multiple answers. Most done action was to search on job platforms 546 of

respondents, second was to access website of company, section careers 319 of them. The frequency of actions among graduates can be seen in the figure below:

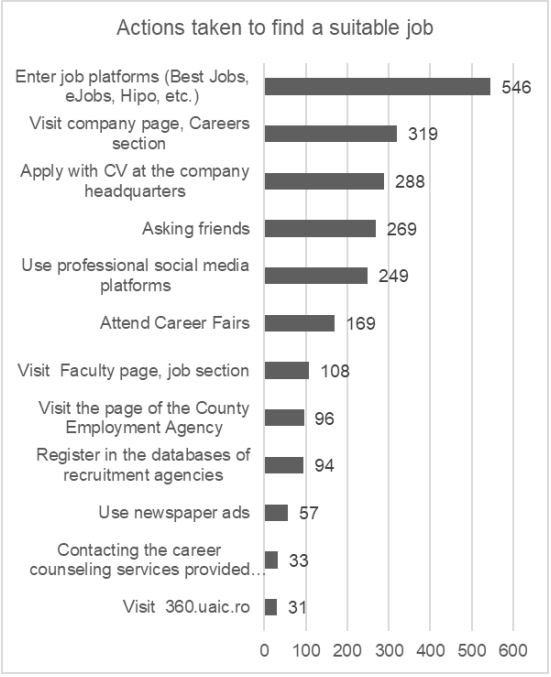

Figure 4 Actions done for finding suitable job

Asking friends action is made by many graduates. This aspect shows us that informal factors can be very important in terms of attracting talent within companies. It is necessary to constantly carry out employee branding actions in order to obtain results through informal recruitment channels.

For responding research question what aspects do they look for in an organization when applying for a job? the respondents had to select which are the criteria they consider when choosing an employer, the question allowed multiple answers.

As can be seen in the following figure, the most often considered criteria regarding a job are attractive salary, flexible work schedule and the possibility to advance in the career. But the other criteria based on specialized literature have a high frequency of occurrence.

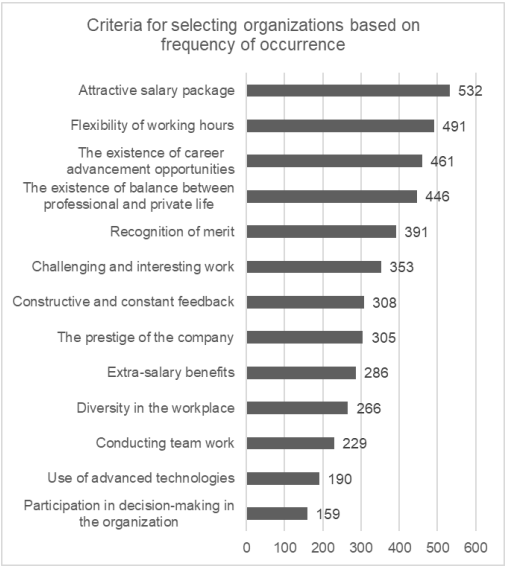

Figure 5 Criteria of selection by respondents

The top 3 most important criteria in choosing an employer are attractive salary package, flexible working hours, and balance between professional and private life. Recognition of merits gets a high score regarding importance. Making a correlation between the importance for the recognition of merits and the most important motivating factor, namely the attractive salary level, we identify the similarity with the study carried out by (Uriesi, 2017). In this study it appears that there is a positive impact on the organizational performance of a performance-based payment. According to this study, in Romania, a performance-based payment system is considered fair by employees.

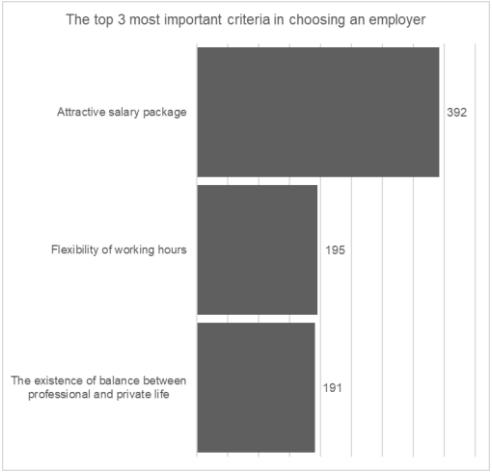

Figure 6 Most important 3 criteria

An important point for employees is extra-salary benefits. Extra-salary benefits are very often used by employers to increase the motivation of employees. Given the fact that there is a lower level regarding the taxation of these benefits in Romania. The graduates had to choose the 5 most important extra-salary benefits. In the following figure, you can see the classification of benefits according to importance.

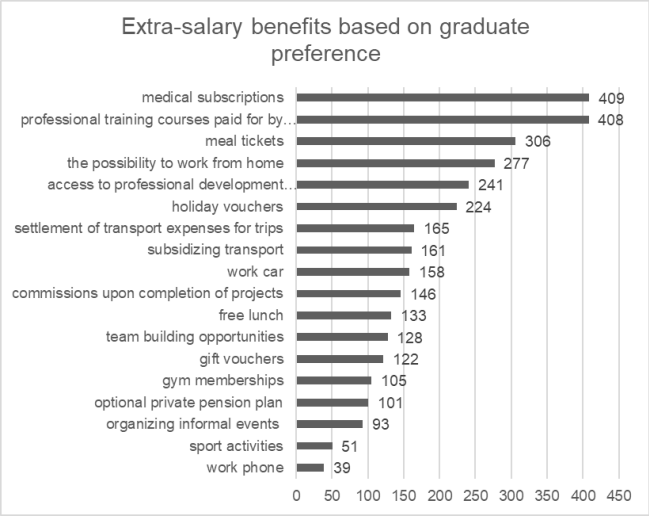

Figure 7 Top extra-salary benefits

4. CONCLUSION

Although there are substantial differences between the socio-economic environment in the countries of Eastern Europe and the West of the continent, the new generations of graduates share common expectations regarding working life. As it appears from the report made by iCIMS and Deloitte, the new generations of graduates consider that health, balance between personal and private life, attractive salary are the main factors to be motivated at work.

From our research, some key aspects emerge for understanding the way in which the new generations of graduates interact with the labor market:

The most frequently performed actions for obtaining a job by graduates are: using recruitment platforms, accessing company pages (career section), applying with a CV at the company headquarters, asking friends about jobs, using professional social media platforms. Except for the classic actions in the first 3 places, the question of friends about the job is used by a significant number of respondents, this aspect can be viewed through the lens of a cultural aspect, but also through the lens

of the increased need to use proactive employer branding strategies. (Wilden *et a*l., 2010) demonstrates the importance of employer branding strategies in the ability of organizations to attract young talents.

The criteria used by the new generations in choosing an organization are diverse, for all the criteria included in the study there are a significant number of respondents who use them. Considering the diversity of their training, being graduates from 15 different faculties, it influences the chosen criteria.

The top 3 most important criteria are attractive salary, flexibility regarding the work schedule, there is a balance between professional and personal life. These findings are in full correlation with the studies and reports regarding these generations of graduates mentioned in this article.

Attractive salary is the main decision factor also taken into account by other generations of employees in Romania, but the mix with the flexibility of the program and balance between personal and professional life can actually be the main gap between the expectations of graduates and what employers offer at this moment. The existence of a shortage of qualified labor in several sectors of activity puts pressure on employers to increase many times the number of hours worked, rigidity regarding the program to be able to meet the needs of stakeholders leads to an imbalance. Employees from Romania have the highest productivity in relation to the salary level in the European Union and it is the country with the highest increase in labor productivity in the last 15 years at the level of the European Union according to several studies (Cornea Ramona, 2022; Guga Ștefan & Spatari Marcel, 2019; Pele Alexandra, 2022).

Extra-salary benefits are a means very often used by organizations to increase the degree of motivation of employees, these benefits are tax-favored, being easier to offer than net income. However, the mix used by employers can be the key to success in attracting and retaining employees. The 3 most desired extra-salary benefits by the graduates who responded to this research are: private medical insurance, professional courses paid by the company, meal vouchers and the possibility to work from home. the concern for the state of health is also observed in the previously mentioned studies. The orientation of this generation of graduates in terms of professional development stems from their preference for the opportunity to participate in professional courses paid for by the company. Meal vouchers are a ubiquitous extra salary benefit offered by employers to employees.

In this article, the results were presented regarding the expectations of graduates from employers, with the aim of increasing awareness of these expectations, in order to increase motivation and retention at work.

5. RECOMMENDATION

Our recommendations are addressed to human resources specialists, entrepreneurs and managers, considering the specifics of the new generations of graduates, greater attention is needed in order to create a working environment that meets their expectations. Salary payment remains in the first place as a motivation factor among the younger generations, but the flexibility of the schedule and the way of working is a very important factor. Human resources strategies should take into account the different specifics of employees who are part of the same team. Making an optimal combination of intrinsic and extrinsic motivational factors can help organizations reduce costs with human resources and increase organizational performance.

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EXPOSURE TO SPORTS AS A FACTOR ENCOURAGING 6-12 AGED GIRLS TO PURSUE PHYSICAL ACTIVITY

TAL ALONI ROZEN[i]

Abstract: *This paper aims to examine the hypothesis that exposure of girls aged 6-12 to a variety of sports activities in the hometown and community where they live will lead to an increase in the number of hours, namely the frequency of physical activity in which they engage in an average week after school hours. The research instrument is a questionnaire designed to test several different hypotheses that may affect the frequency of physical activity. The questionnaire has been designed and statistically validated when the exposure variable has been defined following in-depth interviews and qualitative research conducted within the overall framework of doctoral study research. The direct exposure component has been measured using five items in a comprehensive questionnaire that testS other variables. The exposure variable has been first statistically validated by a small statistical sample and running Cronbach's alpha, and then an EFA test has also been performed together with other variables. The target audience is 208 parents of girls aged 6-12 living in Israel. The daughters are involved in all types of sports activities at different levels, from girls who do not pursue physical activity at all to girls who engage in sports on a competitive basis.*

Keywords: *physical activity, frequency of physical activity, behavioral change, Athena project in Israel, marketing strategies factors, exposure.*

1. INTRODUCTION

The importance of gender inequality

Gender inequality is accompanied by gender stereotypes that limit both women and men (e.g., Barnett and Rivers, 2011; Bem and Lewis, 1975; Kimmel, 2016). Higher levels of gender equality in the country allow a more significant prediction of male athletes and female athletes as winners of Olympic medals.

[i] Alexandru Ioan Cuza University of Iasi, Iași, Romania, Talsaloni@gmail.com

Greater gender equality and greater opportunities for women have been found to increase corporate profitability (Desvaux et al., 2010) – improve team intelligence (Woolley et al., 2010), the scientific impact of intellectual collaborations (Joshi et al., 2015), as well as the economic growth of entire countries (Inglehart, Norris and Ronald, 2003). This is usually attributed to profits generated by previously unused women's human capital (Inglehart, Norris and Ronald, 2003; McKinsey Company, 2010), and the changes in the group dynamics involved in gender diversity (Joshi et al., 2016; Woolley et al., 2010).

Thus, increased gender equality in society brings to light the human potential not only of women but also of men. These findings contradict the popular belief that access to opportunities is a 'zero-sum game' where women's success inevitably results in men's loss. Instead, gender equality is a “win-win” situation that allows both genders to exhaust their true potential.

The full potential of women also increases men's achievements

Studies conducted after the London 2012 Olympic Games show that a company that is worth more in a large number of areas such as society and education, can demonstrate better achievements in its number of medals (both men and women). In other words, a WIN-WIN situation is created here, because the full potential of women also increases men's achievements and, thus, more achievements at the state / society level.

Analysis of the London 2012 Olympic Games data shows that only 11% of coaches and instructors in these games were women. (Slater et al., 2015).

According to Winand et al. (2010), the main reason for the quota set by the International Olympic Committee in the key sport positions in line with one of the approaches, is that there is a minority of women in the top positions in the field of sport. For women to be in key roles, a broader pool of women who want to fulfill such roles is needed. There needs to be an essential change – from the initial stages onwards – in the recruitment, training, internship, and wages phases. For various and familial reasons, many women do not try finding senior sport positions. Studies show that women only apply for jobs that meet 100% of their criteria. Men, on the other hand, apply even if they think they meet only 60% of the requirements, thus perpetuating the problem. Without a regular "supply" of women looking to get elected, 20% of such an important role seems like a very difficult goal to accomplish (Winand et al., 2010).

2. LITERATURE REVIEW

2.1 Background of the sport situation in Israel

Promoting the health, well-being and safety of teenagers is an important and complex challenge that society is facing, due to the adolescents' vulnerability and exposure to risks and morbidity. The Israeli Ministry of Education, Sport and Culture (2007) examined the amount of physical activity of Israeli children and adolescents, attributing importance to this issue.

Regular exercising has prominent benefits for the promotion of the adolescents' health. These activities strengthen the body and improve physical health, e.g., reducing body fat, improving metabolic processes, and bone density. Furthermore, physical activity enhances mental health, such as: decreasing depression and anxiety symptoms, as well as increasing self-esteem (Hallal et al., 2006)

Involvement in risk assessments performed in Canada, indicated that this can prevent premature mortality by about 20%. Thus, it is of utmost importance to establish habits in routine physical activity as early as possible (Katzmarzyk et al.,2000). Exercise habits that have been prescribed since childhood, may also lead to ongoing physical activity even in adulthood. In this context, parents have a highly essential effect on their children (Hallal et al., 2006).

2.2 The relationship between academic attainments and gender among youths and adolescents

Studies have linked physical activity to academic attainments, as well as a link between gender and achievements. Galily et al. (2012) found that engaging in high-achieving sport activities works differently on boys' education than on girls. While girls engaged in high-achieving sport activities demonstrated the highest academic attainments, boys engaged in the same activities demonstrated the lowest attainments. This may be due to the socio-cultural context of youth in Israel, and the legitimacy given to boys versus girls to engage in high-achieving sport activities (Galily, 2010).

2.3 Gender differences in sports in Israel

The fact that more men engage in high-achieving sport activities, compared to girls and women (Siegleschiffer, 2012), raised an interest in the field of research, aiming to identify the reasons thereof. Chachashvili-Bollutin (2010) and Lissitsa and Galily (2010) presented several categories of personal motives for physical activity such as Task motives, such as pleasure, skill enhancement, and excellence; self-image

motives, e.g., comparison to others; social motives, such as affiliation and integration. Women attribute great importance to physical activity (Netz and Raviv, 2003), mainly due to for factors like stress reduction, physical fitness, weight loss and outdoor appearance.(Haas and Hwang, 2007). On the other hand, men attribute greater importance to the motive of competitiveness (key explanations for gender differences in physical activity are rooted in the different societal processes in which a considerable proportion of girls and boys undergo during lives. Girls engage in less physical and more aesthetic sports, while boys expect to participate in sports that require strength and physical touch).

Competitive sports increase gender differences in favor of men (Chachashvili-Bollutin, 2010). Gender differences are intensified when one looks at media coverage, absence of women from the news and articles, as well as no women acting as management members of sports associations (Lissice and Galily, 2010). All these factors reinforce social perceptions that define sport as a male issue (Shoval et al., 2021), (Siegleschiffer, 2012).

2.4 The relationship between gender and media in Israel

The relationship between gender and media is one of the most discussed topics in the crucial discourse about the media. In this context, the analysis of media content, both in terms of representation and in terms of meaning, is a key measure of gender balance. Representation is measured by the frequency of appearance in the various media contents; characteristics and roles attributed to men and women; and images and stereotypes in the context of gender. The importance is measured by examining the encounter between media messages and the audience that interprets them. Gender and television election campaigns in Israel have consistently demonstrated gender inequality. For example, an analysis of the 1988 election campaign found that less than 15% of television images were women; the women presented were younger than the men; they were not identified as professionals; and they were more emotional. The women appeared mostly as assistants to the election campaign – attractive young women dressed in fashionable clothes who presented and summed up the broadcasts or linked excerpts from it literally. They did not express individual political views. The female politicians who appeared in the media, addressed only "feminine" issues, such as education, health, welfare, and family. A study of the 1996 campaign did not indicate a significant change: women remained marginalized in the campaign, even though the status of women in society improved. Similar findings – and even worse as far as gender balance was concerned – were illustrated in the 1999 campaign. Thus, although there has been a change in the status of women in Israel during the last decade, including in the political arena, there has

been no change in their marginal representation in televised elections. The reason was probably related to the perception of politics as masculine in at least two aspects: the creators of the campaign seemed to believe that men set the tone in the political context and were, therefore, the more valued target. The second aspect was that the focus on men as the primary election audience, reflected the perception that only men were interested in politics. The conclusion is that there is a two-way connection between the media presentation and political reality, and that a change in women's election-related status requires not only a change in their social status. Rather, they must first and foremost be a change in politics itself and in life by the way it is perceived. In fact, a causal vicious circle has been created, in which election broadcasts reflect an existing conception of politics as a male kingdom and, at the same time, men themselves perpetuate this conception. The masculine orientation of politics through broadcasts, emphasizes politics as discriminatory against women. Broadcasts state that issues considered as masculine, are given the highest priority in elections, as it is believed that men understand these issues better. Still, the gender representation gaps in election campaign broadcasts are larger than such gaps in television commercials. The political arena in Israel is probably a source of greater-than-usual discrimination. As much as this area is so influential, such discrimination is dangerous and disturbing.

2.5 The Israeli field of sport

During the first four decades after the foundation of the State of Israel, there was just a relatively small direct involvement of governing institutions of the State in the field of sports. This was mainly due to the fact that the young state faced considerable challenges in the fields of foreign affairs, security, economy and absorption of new immigrants, and did not allocate time to the consideration of a 'marginal' issue such as sports. Furthermore, it is now customary to classify sports in Israel as part of what is known as the 'third sector'. This term is an inclusive concept for the group of voluntary and non-profit organizations in society. It is called 'Third', after the other two major sectors – the business sector and the government-public sector.

The scope of physical activity in Israel has doubled since the beginning of the 1990s, until the end of the first decade of the 21st century (Galily et al., 2011), simultaneously with the demographic changes that the Israeli society has undergone. In a short time, the percentage of people reporting that they are physically active, has increased from 24 percent to almost 60 percent of the population.

Nevertheless, although women make up more than half of the population in Israel, their involvement in sports is seen as an exception. Even at the beginning of the

modern sports era, their proportion among those engaged in physical activity at the professional and amateur level was negligible (Tamir and Galily, 2010). Even after women have penetrated diverse social circles, sport remained a distinct male territory. It was only following female struggles in the legal, parliamentary, and sports fields that a different trend became evident, manifested by a slight increase in the number of female athletes participating in competitive sports and the legitimacy thereof.

Moreover, the growth curve of the physical activity scope has stabilized in recent years. Galily et al. (2011) estimate that we are now at the point of balance between the barriers and the motivation for physical activity. It seems that some of the reasons for the increase in the rate of physical activity, such as the massive immigration from the Soviet Union in the 1990s, have exhausted themselves (Galily et al., 2011)

Historically, women's sports activities have been at a disadvantage in terms of their number, status, and social standing both in Israel and around the globe. The number of girls and female adolescents that have turned to sports, the number of competitive athletes, the budgetary allocations to women's sports over the years are factors need to be improved, if gender equality is to be achieved. Engaging in sports is a social, ethical, and educational instrument, which impacts all circles, beginning with the individual, through to the community and, finally, to society at large, making them all more egalitarian and more just, as women become equal partners in the sporting arena.

2.6 ATHENA – The national Israeli project

The changed situation in Israel with reference to sports activities, has resulted in the establishment of the Athena project, aiming to bring about a further increase in the number of women engaged in competitive sports. Athena – the national Israeli Project for the Advancement of Women in Sports – is supervised by the Israeli Ministry of Culture and Sport under a multi-year plan.

The Public Council for the Advancement of Girls, Adolescents, and Women in Sports has been functioning since 2005, pursuant to the Israeli Government Decision 3416. The Council serves as an advisory body to the government, the Ministry of Culture and Sport, and the minister in charge, as to the promotion and development of women's sports in Israel.

Athena offers opportunities in sports for girls, adolescents, and women through targeted programs in a variety of sport activities, sports organizations, projects at sports clubs, programs involving local authorities, and programs promoting female leadership in sports. Its activities involve girls and women of all

ages in popular and competitive sports. Athena works to identify, retain, promote, and support girls and women in all branches of sports, from girls in primary school and up to female athletes about to be included in Israel's Olympic delegation. "To Bring about Social and Gender Change in Israeli Sporting Culture, Ensuring Full and Equal Participation for Girls, Adolescents and Women in all Sports and at all Levels" (Ministry of Education, Sport and Culture, 2007).

Despite the Athena project in Israel during the last decade, the marketing activity, and the awareness and sympathy for the Athena brand, there was no considerable change in the number of Israeli girls and female adolescents who engaged in sports. Their percentage has never exceeded the 22% line, although there has been an increase in the total number of female athletes and male athletes in Israel as well. Hence, the total number of female athletes has not essentially grown (25,311), constituting 21.2% of the total female athletes and male athletes in Israel. The unexplained gap between the number of competitive female athletes at young age and that of female athletes reaching an Olympic level, is unclear. Thus, the level of government policy has been promoted, trying to find out how to work for a more equitable society also in the field of sports.

3. METHODOLOGY

3.1 Research aim

This study aims to identify the motivational factors that affect the frequency of physical activity of girls aged 6-12, and the research question is: "Can exposure help in increasing the physical frequency of sports activity among girls aged 6-12?"

3.2 Research method

A questionnaire was, based on the answers of the respondents from the qualitative stage. Each of the categories comprised several items that measured it. A Cronbach's alpha was calculated or each variable, and the answers to all the questions were on a Likert scale of 1-5: 1 represents – do not agree at all, and 5 represents – agree in a very great extent. If the parent didn't know, he/she could skip the question or mark "I don't know"

The items that measured the independent variable exposure were:

1. In my town there are lectures on physical activity for the girls.
2. Around my city/village/kibbutz there are varied sports events (races, tournaments, etc.).

3. My community holds sports competitions for girls
4. The local/district council praises the achievements of the children's sports activities before an audience.
5. The local/district council advertises the girls' sports activities in the various media channels.

This independent variable was called Ex and the Cronbach's alpha that was calculated is 0.749.

During the summer months of 2022, the questionnaire was administered online to parents of girls aged 6-12 throughout Israel. The threshold condition for the questionnaire was at least one girl aged 6-12 and living in Israel.

The dependent variable was the frequency of physical activity of girls aged 6-12 during an average week after school hours (HR_Bat).

3.3 Research hypothesis

There will be a relationship between the motivational factors EX – Promoting physical activity as a local and social culture and highlighting local sports heroes and the frequency of physical activity in girls aged 6-12.

3.4 Research Sample

The threshold condition for the questionnaire was at least one girl between the ages of 6-12 and living in Israel.

Two-hundred and eight parents responded to the questionnaire: 36.7% (76) were fathers and 63.3% (131) were mothers. Almost all the respondents were Jewish – 198 respondents, 96.6%. One-hundred eighty-seven respondents (90.3%) were secular (i.e., not having any connection with religion), and 15 (7.2%) respondents were observants (minimum connection with religion).

Almost 85% have two or three children in the family, and the average number of children in the family was 2.52 children. The average place according to birth order in the family of the girl that the parent chose to answer , was 1.91. The average age of the parents was 44.18, the average total years of schooling was 15.83, with 36.9% having a bachelor's degree (76).

In response to the average wages, 17% (34) respondents earned average wages, 45.5 (91) respondents earned above average monthly wages, and 21 (42%) respondents reported monthly wages well above the average.

Regarding the answer to the question about the dependent variable, namely how much time the girl is engaged in physical activity on average during a normal week after school hours: 40 respondents (19.5%) indicated two hours and additional 40

respondents (19.5%) indicated three hours. Twenty-eight respondents (13.7%) indicated 0 (zero), representing lack of the girls' engagement in physical activity. Thirty-two respondents (15.6%) indicated one hour, and 28 respondents (13.7%) indicated four hours. Eight respondents (3.9%) indicated five hours and 29 respondents (14.1%) indicated six hours or more as the number of hours that the girl was engaged in physical activity on average, during a normal week after school hours.

4. FINDINGS

A positive significant relationship was found between the motivational factor, promoting physical activity as a local and social culture, and highlighting local sports heroes (EX), and the frequency of physical activity among girls aged 6-12 (HR_Bat), as illustrated by the model.

A positive significant relationship was found between Ex and HR_Bat (b=0.239, p=0.036), corroborating the hypothesis (f(1,202)=4.45, p=0.036)). This implies that the higher the Ex, the higher the HR_bat. Ex accounts for 2.2 of HR_Bat variance (R^2=0.022)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.147[a]	.022	.017	1.865

a. Predictors: (Constant), EX_T

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.453	1	15.453	4.445	.036[b]
	Residual	702.253	202	3.476		
	Total	717.706	203			

a. Dependent Variable: HR_PG_BAT
b. Predictors: (Constant), EX_T

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.999	.373		5.361	.000
	EX_T	.239	.113	.147	2.108	.036

a. Dependent Variable: HR_PG_BAT

5. DISCUSSION AND CONCLUSIONS

Galili and Tamir (2011) argue that the curve of the increase in the number of competitive athletes has been slowing down, and that we have reached a 'glass ceiling' at the moment, in terms of the increase in the number of athletes in the country. Sports is considered as masculine, among other things, for historical reasons in the State of Israel. One of the options for increasing the number of athletes in Israel was to increase the number of women in the field. The Athena project was designed in order to help increasing the quantity and quality of female athletes. It involved the investment in the brand, sympathy for the project, and increased rate of women joining many fields other than sports over the years of the project's activity. In spite of all these, the glass ceiling has not been broken and the number of competitive female athletes has not crossed the 22% threshold.

This study constitutes part of a larger study that examines what might eliminate the barriers of girls and boys regarding engagement in physical activity and sports. This study aims to examine the aspect of exposure to sports through a valid and statistically tested questionnaire.

The conclusions drawn from the findings illustrate that the world of male sports which has been rooted over the years in the State of Israel. Moreover, the fact that there is no exposure on the sports channels to women's sports in Israel implies that this lack of exposure has been going on for many years, despite the impressive achievements of Israeli female athletes in the various Olympic Games. At the base of the pyramid there are not enough girls who engage in sports for more than five or six hours, although it is known that practicing and persisting in sports in the afternoons may lead to competitive sports in the future. It can be seen that at the base of the pyramid there are not enough girls who engaged in physical activity for more than five or six hours per week, when it is known that practicing and persisting in sports during the afternoons may lead to competitive sports in the future.

It can be concluded that if a local city wants to increase the base of the pyramid of girls who will be involved in sports, they need to motivate the girls by increasing the sports events in the city and especially to increase the exposure to it, in the various media throughout the city, whether it is local races, or other sports activities that the municipality initiates, Including lectures on sports by female athletes , as it has been found to contribute to the girl's motivation to be more hours engaged in physical activities

It can be assumed that if the state or the city wants to increase the base of the pyramid of girls who are involved in sports, all that needs to be done is to promote the sports events and, especially, the exposure to them in the various media throughout the city.

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CASE STUDY

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PLANNING WITH OR WITHOUT BUDGETS? THE "NEW CONTROLLING" APPROACH

IONELA URSU[i], IULIANA GEORGESCU[ii]

Abstract: *Today's companies are influenced by a multitude of internal and external factors that cause changes in its framework. Within these changes, the controlling department acquires a considerable importance, because the companies must monitor the competition on the market, the products offered, customer's status and as well the value created. As a consequence, a requirement for controlling is to be more process oriented than was in the past. This means that activities like planning, coordination and control activities must be adapted. This process is currently called new controlling or re-engineering and some of the new tools with which it operates are for example Beyond Budgeting, Advanced Budgeting, Modern Budgeting, Balanced Scorecard, Target Costing and Benchmarking. The current paper aims to present this transition from traditional controlling to new controlling as well as the tools used by controllers, focusing more on the budgeting process as one of the main research question is: "Planning with or without budgets"?*

Keywords: *new controlling, beyond budgeting, advanced budgeting, modern budgeting.*

1. INTRODUCTION

Today's companies are influenced by a multitude of internal and external factors that cause changes in their framework. Within these changes, the controlling department acquires an important consideration, because the companies must monitor the competition on the market, the products offered, customer's status and as well the value created. As a consequence, a requirement for controlling is to be more process oriented than was in the past *(Horvath & Partner, 2009, p. 286).*

So the current paper aims to present this transition from traditional controlling to new controlling, focusing more on the budgeting process as it represents one of

[i] Alexandru Ioan Cuza University of Iaşi, Faculty of Economics and Business Administration, Iaşi, Romania, ionela.ursu92@gmail.com
[ii] Alexandru Ioan Cuza University of Iaşi, Faculty of Economics and Business Administration, Iaşi, Romania, iuliag@uaic.ro

the main tools used and well known in controlling. The budget represents the costs and the revenues within an organization and is also a measurement tool for control, coordination, communication, motivation and performance tracking *(Yee, Khin and Ismal, 2016).*

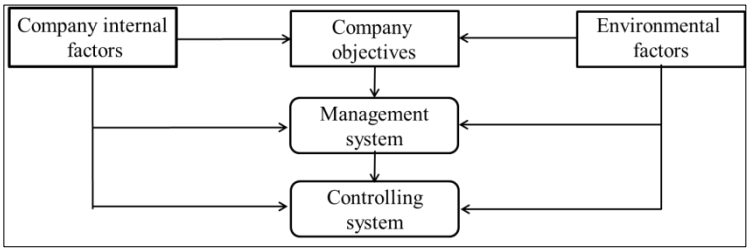

Figure 1 Frame reference of the controlling system
(Adapted from Horvath & Partner, 2009)

Over the years budgets started to being criticized by some authors that are mentioning that they have a conservative perspective when we talk about an uncertain or constantly changing environment and they become inflexible and do not support innovation *(Sponem and Lambert, 2015).*

Therefore the main research question is: Are the companies going to plan with or without budgets?

In this article we will answer this question by conducting a state of the art of current knowledge.Why do we need a review of the literature? Because in order to create new knowledge we need to connect the past with new scientific research *(Massaro et al., 2016).*

In this study we will describe the methodology and the research questions, the results that we found regarding the characteristics and dimensions of the budgets, the critics that the theoreticians and practitioners are mentioning about this tool and of course the solutions to these problems that consists in new instruments that the new controlling operates with, like Zero Based Budgeting, Activity Based Budgeting, Balanced Scorecard, Beyond Budgeting, Better Budgeting, Advanced Budgeting. Last we will describe the conclusions and the future research opportunities.

2. METHODOLOGY

In order to answer the main research questions a literature review was conducted. For a literature review there are many methods we can use: systematic review, meta-analysis, rapid review, literature review, narrative review, research synthesis and structured literature review *(Massaro et al. 2016).* A literature review

helps us to understand the development of knowledge on what authors wrote *(Silverman, 2013, cit. by Massaro et al, 2016).*

In order to realize the study for the current paper, a meta-analysis was conducted and following databases were searched: ProQuest Central, Springer Link, Web of Science. We focused on these databases because they contain the largest number of relevant articles in the field chosen for scientific research and to which of course we had access.

Meta-analysis provides us with an objective process of reviewing literature, by using objective procedures for the selection and analysis of the articles *(Stanley, 2001).* The Meta-analysis combines studies from different, but related, studies in order to provide empirical knowledge about causal associations that would not be possible from just one single study *(Matt et al., 2010).*

The approach taken for the meta-analysis started with the delimitation of the sample, to do so, some steps were followed. We started with the delimitation of the field investigation, this means controlling, financial accounting, management accounting, management. We used specific key-words in order to search the databases and we established specific research criteria (period, english language, full access for the articles) and the results that were not needed were excluded (chapter books, duplicates articles, articles not relevant for the research topic). The abstracts were read and the contents that were not relevant were excluded from the full article reading. A branched bibliography approach was used as well, as we consider that the articles cited by the authors were really relevant so we included them in our research.

While studying the content of the articles we are following to answer the following detailed research questions, beside the main research questions mentioned above in the paper.

- What are the current dimensions of the budgeting system?
- Do budgets add value for the organizations?
- How satisfied are the users in working with budgets?
- Are there any critics of budgeting?
- Do we have some alternatives instead of using budgets?
- Is the approach of managing without budgets be more suitable for specific business fields?
- Are there any relationships between budgets and other controlling tools and processes?

In the next section we will answer these questions by searching the current literature.

3. RESULTS

3.1 Budget Characteristics

In a dynamic and competitive environment, controlling and accounting are gaining more and more importance. Controlling is used for planning, decision making and performance evaluation *(Hofmann et al., 2012).* As a consequence, a requirement for controlling is to be more process oriented than was in the past. This means that activities like budget planning, coordination and control activities must be adapted. This process is currently called new controlling or re-engineering *(Horvath & Partner, 2009, p. 288).* In this paper we will focus more on the budgets as one of the main instruments used and well known in controlling. Further we will briefly illustrate some characteristics and dimentions of the budgets.

The budget is a well known instrument of operational planning that is used in the companies. Budgets are used to allocate resources and estimate costs *(Badea and Dobrin, 2006).* Budgeting, as a structured process, transpose the actions that are planned into money. Budgets include also the economic resources needed to be allocated and also the goals that need to be achieved by management *(Zimmerman, 2006,* they serve also as a mediator between long-term planning and current planning in order to transpose strategic planning into quantitative goals for one year *(Hofmann et al., 2012).*

By comparing the planned data with actual, some variances can occur over the year and this means the need to improve and adapt the planning *(Rickards, 2006).*

When we talk about a budget system we mean information flows and processes as an integral part of a short-term, range planning control system of an entity *(Merchant, 1981).* Author *Bouquin (2006), (cit. by Sponem, Lambert, 2010)* is presenting three main dimensions regarding the budget system and process: finalization of the budget (before the action takes place), steering of the budget (during the action in a specific time frame) and post-evaluation (after the action, usually 1 year).

Historically the budgets played an important role in the organizations *(Libby, Lindsay,* 2010*).* The budget, as a management tool, was firstly used in 1920 by Alfred Sloan și Donaldson Brown at the General Motors company *(Berland, Ronge, 2019).* Budgets have many roles since then: planning and forecasting, control, managerial role, strategic role (when used to implement strategies) and provide performance indicators *(Sponem and Lambert, 2015).*

In 1999, almost 99% of the companies were using the budgets according to a study published by the Association of Financial Directors and Management Control

(Berland, Ronge, 2019). The budgeting system developed in a certain context: markets and value chains were stable, the competitors were known, and their actions predictable, the life cycle of products and the strategy of companies were spread over time *(Berland, Ronge, 2019).* Traditional budgeting developed in the industrial ages and nowadays post-industrial businesses are requiring more flexible controlling instruments *(Rickards, 2006).*

Also the author *Banham (2000)* is highlighting that many companies are setting out a new retooling path including also a reengineering planning and budgeting process. This means that the focus is to integrate software applications with strategic and tactical data in order to spend less time on the budgeting creation.

3.2 Critics to the budgets

In the current literature, budgets are being criticized by some authors that are mentioning that they have a conservative perspective when we talk about an uncertain or constantly changing environment and they become inflexible and do not support innovation *(Sponem and Lambert, 2015).*

The author *Hansen et. al. (2003)* also summarized the following criticisms to the budget system: the budgeting process consumes a lot of time and costs, due to their fixed nature, budgets prevent companies from adapting to changes, budgets are sometimes disconnected from the company's strategy. *Berland and Ronge (2019)* stated also that the budget is centered on the resource allocation rather than on the customer's needs (outputs), it focuses on departments rather than the interdependencies between departments, suppliers and customers, predictions are often a simple projection of the past.

There are also many other reasons mentioned for making changes in the budgeting systems such as: budgets can be manipulated (self-interest), budgets reports do not have a meaning for the front-line employees, budgets are not drivers for constant improvements *(Ekholm and Wallin, 2000; Neely et. al., 2003);* budgets are not aligned, connected to the firm's strategy *(Ekholm and Wallin, 2000; Neely et. al., 2003); Libby, Lindsay, 2010),* the budgeting process consumes a lot of the manager's time *(Hansen et. al., 2003; Libby, Lindsay, 2010),* budgets are inhibiting companies in adapting to changes, as they have a fixed nature and they are promoting budget gaming for performance evaluation *(Hansen et. al., 2003).* A budget system can provoke a conservative behavior and discourage cooperation, is used mainly for past performance, can produce stress and is blocking innovations *(Sponem, Lambert, 2010).* Budgets ignore the turbulence of the markets, can lead to unethical management behavior *(Rickards, 2006*), are focusing more on departments

and functions performance rather than company's value creation *(Nguyen et al., 2018)* and are not flexible and adaptive in case of unpredictable environments *(Libby, Lindsay, 2010).*

We have to point out here that, until now, researchers are trying to explain the criticisms levels against the budget via the external contingency factors, based on the research they made. Actually the way in which the budget is used and the roles that it has, will influence the criticisms that are formulated against it *(Sponem, Lambert, 2010).*

The budgets would be more criticized when the company operated in a higher uncertainty of the environment or when the new focus is to innovate the strategies *(Bescos et al., 2004, cited by Sponem, Lambert, 2010).*

3.3 Solutions to the critics: ZBB and ABB

Regarding the rigidity of the budgets and the need for the revisions, practitioners have mainly two opposite opinions: some managers affirms that "if the budget is not revised, the document no longer represents foreseeable performance". Others, on the other hand, suggest that "a revision destroys the basis for analyzing the gaps between actual performance and the objective to which the company committed when the budget was approved". This kind of problem represents today the main debate for the proponents of a management without a budget *(Sponem, Lambert, 2010).*

Practitioners and academics have proposed several possible solutions to reform the budget process. Starting with 1960 there have been firstly attempts to reform the budgets, for example with the Zero Base Budget and more recently, since the 1990s, with Activity-Based Budgeting *(Berland, Ronge, 2019).*

The Zero-Based Budget is a tool for restructuring companies *(Berland, Ronge, 2019)* and was used for the first time in Texas at the Xerox Corporation and in the '70s first paper was published *(Badea, Dobrin, 2006).* The traditional budgeting practice becomes problematic when the company has to deal with a hostile environment or drastic challenges (currently like Covid-19, the war in Ukraine). The phrase "zero-based budgeting" does not mean that budgets are reset to zero every year. It is rather a question of helping the management to better define the objectives to be achieved, to evaluate the alternatives and the actions to be carried out and the indicators for measuring the performance *(Berland, Ronge, 2019).*

In theory, zero-based budgeting comes from the fact that the budget will not take into account all past costs as a reference *(Callaghan et al., 2014, cit. by Brînduşe, Bunget, 2021).* But, in fact, an enterprise cannot completely ignore all the costs from the past periods that are not absolutely necessary, but allocate resources based and

aligned with current strategy *(Gartner, 2020, cit. by Brînduşe, Bunget, 2021).* The company should keep only the expenses that represent the activities that can support and generate value for the company. Of course if we consider the complexity of a business and the environment it's operating, an ideal budgeting process cannot be achieved, but we can hope for the best version *(Brînduşe, Bunget, 2021).*

The Activity-Based Budgeting, on the other side, rides under the influence of the Activity-Based-Costing. ABB is in a way an ABC upside down. Resource allocation is based not only on volume drivers (the number of products manufactured or sold, which traditionally leads to establishing a budget), but also the characteristics of the products or services which have repercussions on activities organized into processes. Implementing a value creation strategy requires understanding how activities meet customer needs. Traditional budgetary control does not participate in the creation of value because it is centered on resources more than on activities *(Berland, Ronge, 2019).*

The Activity-Based Budgeting (ABB) approach focuses on the budgeted cost of the activities that are necessary to produce and sell products and services *(Horngren et al., 2012, p. 215).*

The classical budgetary control does not participate in the creation of value because it is centered on resources more than on activities. The Activity-Based Budgeting aims to transform strategic plans into activities to be implemented. We need to mention that ABB will enrich the further deviation analysis by going back to the root cause of the costs (activity drivers) and therefore provides a better understanding of deviations by identifying the inductors *(Berland, Ronge, 2019).*

3.4 Other New Controlling Instruments

The important aspect that budgets have to be more flexible and adaptable is coming from the unpredictable environment in which now the companies are operating: the life cycle of the products are shorter, prices are under pressure and customer options are changing very quickly *(Hope and Fraser, 2003a).*

Since the 90s it has been developing more alternatives to traditional budgeting, beside Zero Based Budgeting and Activity Based Budgeting. Most known are Beyond Budgeting, Advanced Budgeting and Better Budgeting. These three tools are proposing some solution to the problem brought from the traditional budgets *(Rickard, 2006).* The dissatisfaction regarding the budgeting process comes on two fronts: companies that want to abandon budgets and the others want to improve it *(Hansen et. al., 2003).*

Author *Rickards (2006)* is highlighting that the Beyond Budgeting concept has less to do with budgeting but with implementing a new management model. Beyond Budgeting is focusing on a transition from the traditional model of "production and sales" to the new model "market preview and production based on customer demands" and a self-controlling approach.

The authors *Hope and Fraser (2003 a,b)* are highlighting that in their opinion the Beyond Budgeting solution does not mean an improvement of the traditional budgeting, but actually this tool should be eliminated. The proponents of Beyond Budgeting suggest that the Balanced Scorecard should substitute the budgeting systems and become the main controlling instrument *(Rickards, 2006).*

The main principles of Beyond Budgeting are *(Rickards, 2006):*

- focusing on non-monetary performance indicators;
- firms should focus on on benchmarks oriented to external competitors;
- controlling should be based on output-oriented processes;
- an enterprise should use a dynamic, rolling approach;
- integration of the strategic planning with operational planning;
- companies should have an anticipative information system.

We also have to mention here that managers have to engage and train the employees when this kind of changes occur, otherwise the implementation will not be successful *(Becker, 2014).*

The advocates for Beyond Budgeting have not yet convinced most of the controllers and managers to adopt this approach completely. A main reason for this is the generally formulated leadership and performance principles; this means the proponents for these tools have to gain more practical experience in order to implement their ideas *(Rickards, 2006).*

The other two approaches Better Budgeting and Advanced budgeting, are not calling to a fundamentally changing economic model within the companies, but are focusing on improving the budgets efficiency.

Better Budgeting is focusing on simplifying the traditional budgeting by improving the functional aspects of it. Advanced Budgeting represents a middle way between Beyond and Better Budgeting and has following characteristics *(Rickards, 2006):*

- clear objectives for planning and budgeting originating from strategies and benchmarking;
- a simplification of the budgeting process;
- more flexible budgets by using rolling budgets and self-adjusting goals.

Advanced Budgeting makes an usage of global budgets, using both financial and non-financial indicators and replaces one year budget planning with rolling planning *(Valerian, 2018).*

Making a clear differentiation between Better Budgeting and Advanced Budgeting is difficult, the distinction between these two tools depends on the characteristics of the company that is implementing them such as complexity, planning system and dynamism of the environment *(Rickards, 2006).*

Beside the new approaches for budgeting mentioned above, there are other and new tools that, the new controlling approach, is developing and can substitute budgets or use them simultaneously.

When companies are dealing with unpredictable aspects, they are adjusting the budget targets and adopting other tools and processes that can compensate for this *(Libby, Lindsay, 2010).* We will briefly present some of these tools in the following lines.

A well known instrument is the Balanced Scorecard, which represents an integrated, strategic and holistic information system that includes a finance view, customer retention, internal processes and employees aspects. Balanced Scorecard is a guide tool for managers for the decision making process *(Rickards, 2006);* it ensures the implementation of the strategies *(Horvath & Partner, 2009, p. 298).* Benchmarking compares the internal performance of products and processes of a company, or best practices, with the competitors *(Rigby, 2001, Rickards, 2006).* The fast track is used in order to obtain new resources *(Libby, Lindsay, 2010).* Forecasting, or budget revision, consists in replanning the initial budget throughout the year, usually on a monthly base *(Sponem, Lambert, 2015).* The rolling forecast is used by companies when instead of relying on historical data for planning; companies should rely on future-oriented data, means future prognoses *(Rickards, 2006).*Target costing helps to introduce new products in line with the market; the performance measurement is a cost process-oriented approach and the process-oriented budgeting is used to develop the output-oriented budgets *(Horvath & Partner, 2009, P. 299).*

Authors *Libby T. and Lindsay M. (2010)* made a survey regarding the budgeting practices in North America and Canada companies. Respondents were asked if they are still using budgets, for control, meaning for managerial motivation and performance evaluation. The results are that 80% of the Canadian and 77% of the North America sample answered that they are using this tool for control in their entity. Further the Canadian group were asked if they were planning to make some

changes regarding the budgeting system in the next period and 46% of the respondents mentioned that they plan to adapt in the next two years.

On the other hand, when we want to emphasize the assertion that budgets cannot adapt to uncertain environment *(Hope and Fraser, 2003b),* we must evaluate first the industry in which a company operates and how quickly is needed for it to adapt in an unpredictable environment, for example the company field studied by *Hope and Fraser (2003b)* was banking where a revolutionary change was not needed *(Libby, Lindsay, 2010, p. 57). Lau and Tan (2012)* are actually mentioning that budgets are an essential aspect of manufacturing companies and are likely to be prevalent in these kinds of organizations.

However the budgeting process should always be connected, linked to the strategies of the company *(Kaplan and Norton, 2001).* When a budget is considered to be part of a firm's strategy? Is considered so when the budget planning is integrated with other management tools, or practices *(Shastri and Stout, 2008).*

We should not focus on traditional budgeting or beyond budgeting, better budgeting, advanced budgeting and so on but, instead try to develop a mechanism where to use more approaches together *(Libby and Lindsay, 2010).*

There is also the concept that companies have a fear of change when abandoning the budgets is being proposed, as managers are hesitating to empower employees to make decisions and subordinates are fearing to accept this responsibility in order not to disappoint the management *(Nguyen, Weigel, Hiebl, 2018).*

Other authors are also arguing that it is more expensive implementing Beyond Budgets than upgrading the existing traditional budgeting approach *(Vaznoniene and Stonciuviene, 2012).*

4. CONCLUSIONS AND FUTURE RESEARCH

Companies nowadays are facing a lot of changes, internally and externally, as a consequence they have to adapt, and simultaneously also the controlling department has to be more process oriented. This changes, this adaptation is called in the literature "new controlling". Therefore this paper aimed to present this transition, focusing on one of the main instruments that controlling operates with: the budgets. By taking into consideration these changes, we proposed the following main research question: Are the companies going to plan with or without budgets?

Beside this also other branched questions came up:

- What are the current dimensions of the budgeting system?

- Do budgets add value for the organizations?
- How satisfied are the users in working with budgets?
- Are there any critics of budgeting?
- Do we have some alternatives instead of using budgets?
- Is the approach of managing without budgets be more suitable for specific business fields?
- Are there any relationships between budgets and other controlling tools and processes?

Via a literature review we tried to answer these questions by searching and lecturing the articles and we managed to find information by using the meta-analysis methodology. Literature reviews represent the ground on which we can build up new discoveries and studies *(Woods, 2011).* Authors *Light and Pillemer (1984, p. 169, cited by Massaro et al., 2016)* are mentioning that "the need for a new research is not as great as the need for the knowledge of already existing studies".

We presented the budgets characteristics, the main dimensions, how the authors see and define this tool. We proceed in presenting also the critics that the users can face when using this instrument and the solution that can compensate, solve the issues. This means implementing new approaches like Zero Based Budgeting, Activity Based Budgeting, Beyond Budgeting, Better Budgeting, Rolling Forecast, Benchmarking, Balanced Scorecard.

We need to understand that financial measures coming from the budges worked very good in the industrial era, but now they are "out of step" with the current competencies that companies are trying to master currently, they are getting oriented also to nonfinancial measures when performance evaluation is needed *Lau and Tan (2012).* Companies use financial indicators (revenues and expenses) and nonfinancial indicators, like customer satisfaction and market share *(Shastri and Stout, 2008)* by using one or more instruments presented above.

On the other hand, controllers use too many tools and are inundating the management with too much information and managers are worse informed about their company nowadays than many years ago *(Rickards, 2006).* Other authors are pointing out that managers are stating that just some key performance indicators are sufficient to manage a firm like cash flows, employee motivation, customer satisfaction *(Welch and Byrne, 2003).*

In the end is it possible to manage without budgets? Without a budget system, controlling the inventories in the manufacturing area is very hard or sometimes impossible. Without a proper planning system we would have an unclear sales planning that would lead to an unclear production planning, to unused capacities or

exceeded capacity, this could increase to an uncontrollable growth in inventories. Abandoning budgets would determine managers to be unable to provide information to the stakeholders and other parties *(Rickards, 2006).*

In conclusion, authors considered that the companies are obtaining a value-added when using the budgeting *(Libby, Lindsay, 2010).*

Most of the articles that were reviewed for this paper are conceptual articles, which means that there is a lack of empirical approaches in the literature. This means that this represents an opportunity for more research in this area of budgeting and management without budgets.

In the current literature there are still unanswered questions that can represent some future research like: how to adapt to a management without budgets with the help of the IT-experts; what is the approach of the companies that are using simultaneously budgets and other toolings like Balanced Scorecard, Benchmarking, Rolling Forecast; the risks that a company can face when is implementing the Zero Based Budgeting, Activity Based Budgeting, Beyond, Better or Advanced Budgeting approach, empirical evidence from the companies that managed to implement successfully this tools and also the most important lesson learned from the companies that failed to adapt to this new approach.

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A COMPARATIVE STUDY OF THE NATIONAL START-UP ECOSYSTEM STRATEGIES OF THE MEMBER STATES WITHIN THE EUROPEAN ECONOMIC AREA APPROACH

ANDREI DODEA[i], DOINA DĂNĂIAȚĂ[ii]

Abstract: *This paper focuses on national start-up ecosystem strategies in the European Economic Area and the area within the ecosystem towards which the strategy delivers the most. We have also analyzed the circumstances in which such a strategy occurs. Documents in English were identified for each state. The keywords "Start-up Ecosystem National Strategy" "Start-up Ecosystem National Manifesto", "Start-up Ecosystem National Whitepaper" were used for the data collection on Google in February 2022. We used the PRISMA methodology to narrow the total number of papers resulting from this study. A total of 5 countries have been identified to have such documents. We checked the distribution of each document in 6 areas relevant to the start-up ecosystem. We concluded that there is no trend at the European level. We could also conclude that the national start-up ecosystem strategy is a European phenomenon that appears where the first unicorn has high economic impact.*

Keywords: *start-up ecosystems; national start-up ecosystem strategy; public policy in start-up ecosystems, European Economic Area, start-up unicorn.*

JEL Classification: *L26, M13*

1. INTRODUCTION

The ascension of some successful start-ups to the rank of "unicorn" i.e., to a valuation of over 1 billion euros (Lee, 2013), has sparked the desire of start-ups to work together in order to facilitate the best possible conditions for the success of all members within their ecosystem. Success examples such as the Romanian unicorn UiPath (Ilie & Kahn, 2022) are causing major shifts in the level of interest of all stakeholders, governments and start-ups alike wanting to better facilitate the chances of success of local and national start-ups both in the local and international markets.

[i] West University of Timișoara, Faculty of Economics and Business Administration, Timișoara, Romania, andrei.dodea98@e-uvt.ro
[ii] West University of Timişoara Faculty of Economics and Business Administration, Timișoara, Romania, doina.danaiata@e-uvt.ro

A successful start-up ecosystem, however, needs support through public policies implemented by the government of the country to which that ecosystem belongs. Public policies can advance or slow down certain start-ups in their development, through support mechanisms for start-ups, and they can guarantee the proliferation of an ecosystem with an increased potential to produce unicorns and start-ups of international renown, which will then return value to the local economy and ecosystem.

For an adequate implementation of public policies in the private space, especially in an area that finds itself in a constant process of change and innovation, such as start-ups, a well-defined strategy in partnership with the private sector, can facilitate a trajectory of development which is in line with the current circumstances of the ecosystem and actively build upon those circumstances.

Although there are a multitude of countries that have examples of successful start-ups, not all states explicitly implement strategies targeting start-ups. These policies are often bunched together with strategies dedicated to innovation, entrepreneurship, and digitization. In certain circumstances, however, we need to pay particular attention to the public policies dedicated towards what the start-up ecosystem needs.

This paper deals with the topic of national start-up ecosystem strategies. The national start-up strategies within the European Economic Area (EEA) member states will be identified, and we will discover how many of the EEA member states have a strategy dedicated for the start-up ecosystems. We also want to assess the composition of these strategies and identify to which part of the ecosystem and to which level of ecosystem maturity each of the identified strategies mainly delivers support towards.

2. LITERATURE REVIEW

2.1 Start-up Ecosystems

A start-up ecosystem consists of people, start-ups in their various stages of development and multiple types of stakeholders in one location (physical and/or virtual), interacting as a system to create new start-up companies. These stakeholders can be further divided into categories such as: universities, funding organizations, support organizations (incubators, accelerators, co-working spaces, etc.), research organizations, service organizations (legal, accounting, marketing services etc.) and large corporations. Different organizations typically focus on specific parts of the ecosystem function and on start-ups at different stages of development. (Startup Commons, 2019)

Figure 1 shows the relevant components for the development of a start-up ecosystem. We can identify the elements upon which a start-up ecosystem is built: research organization; start-ups at different stages; start-up angel investors; mentors; funding

organizations; start-up advisors; third parties from other organizations with start-up activities. (Startup Commons, 2012)

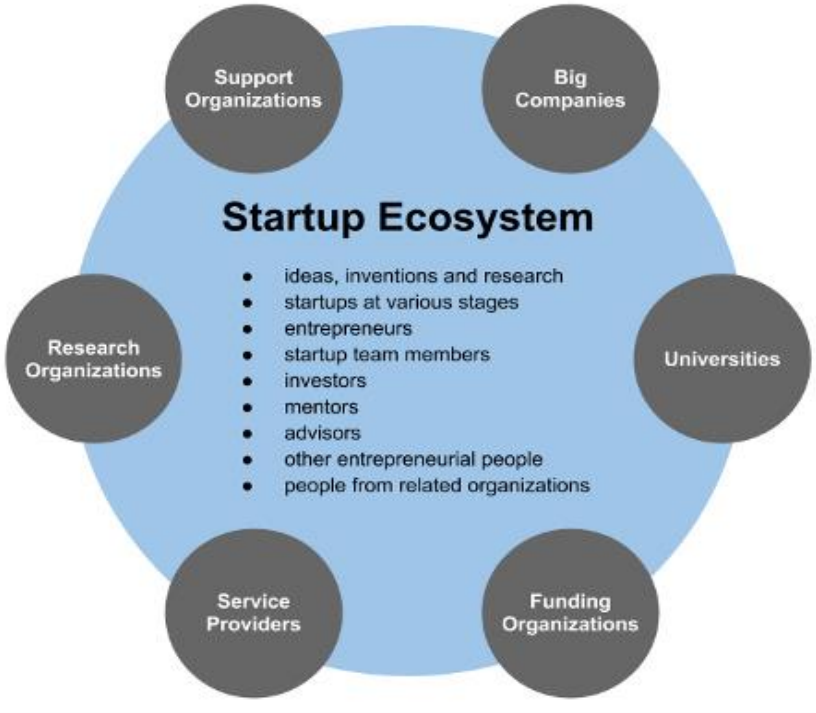

Figure 1 The elements of a start-up ecosystem

Source: Startup Commons (2019).

We may also note the organizations and activities that help to develop the ecosystem: universities, counselling and mentoring organizations, incubators, accelerators, co-working spaces, service providers (consulting, accounting, legal, etc.), event organizers, start-up competitions, start-up networks, investor networks, venture capital companies, crowdfunding portals, other funding providers (loans, grants, etc.), start-up blogs and other business media, other such facilitators. (Startup Commons, 2012)

Just as there are well-defined stages that a start-up goes through in its evolution, there are also well-defined stages for the evolution of a start-up ecosystem.

Figure 2 shows the stages for which a start-up ecosystem provides support, both from a human perspective (of capabilities, local potential, entrepreneurial knowledge, team development capacity) and from a business perspective (capacity to turn an innovation into a business, the local ability to attract funding, the ability of teams to develop their start-up, etc.).

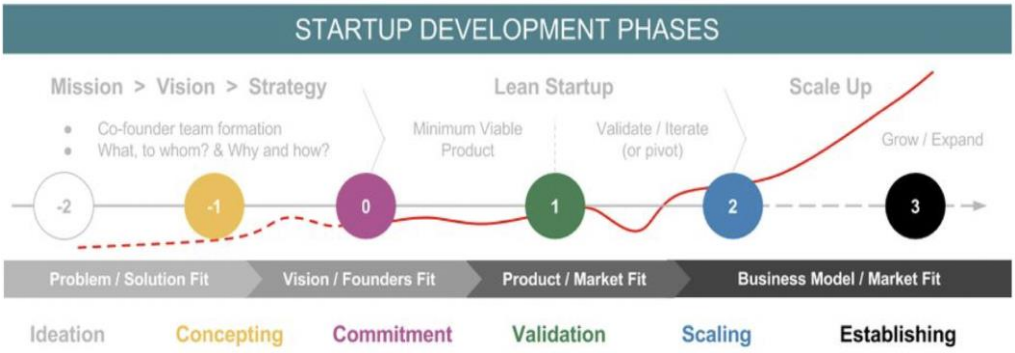

Figure 2 Start-up development phases

Source: Startup Commons (2022b).

To enable an efficient development of the ecosystem, it is necessary to map all the events and organizations that contribute to its development.

Figure 3 shows an example of mapping that offers the ability to observe the growth potential areas not covered by the ecosystem, respectively the support currently offered for start-ups, both from an organizational perspective and a business perspective.

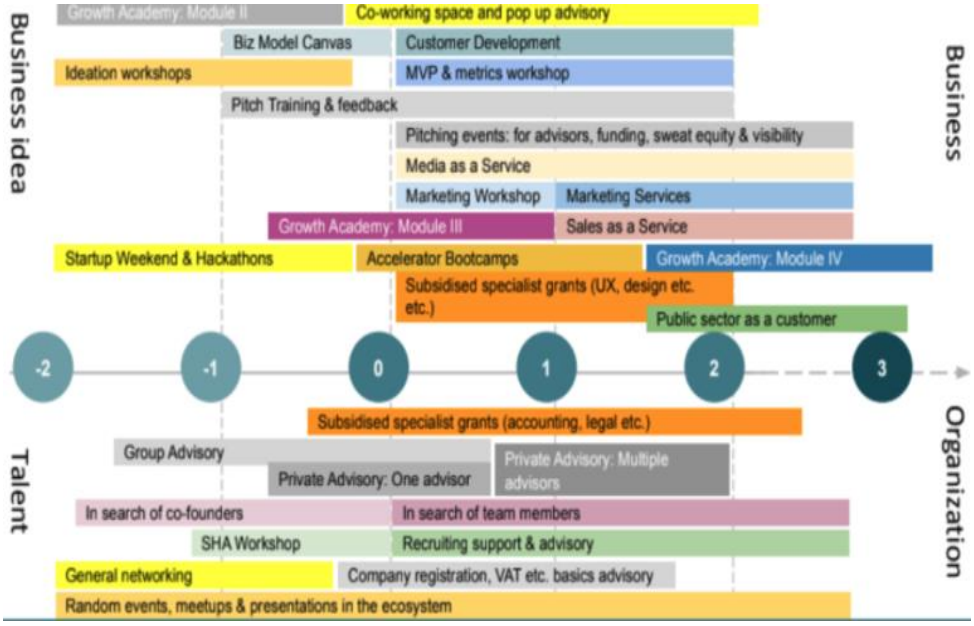

Figure 3 A mapping example for the start-up ecosystem

Source: Startup Commons (2022a)

2.2 Public policies in start-up ecosystems within the European Economic Area

Getting scholars to agree on a single, comprehensive definition of public policy is no easy task. Broadly speaking, we could say that a public policy is simply what the government (any public official who influences or determines public policy, including school officials, city council members, county supervisors, etc.) does or does not do about a problem that is in front of them. (Martinez, 2022)

Public policy generally consists of a set of actions – plans, laws and behaviors – adopted by a government. (Britannica, 202)

Public policy for start-ups represents all the decisions and regulations at the level of a governmental entity that aim to support start-ups and provide socio-economic conditions for the start-up to develop in the regional economy of the country that issues the relevant legislation. (Pickavet, 2016)

Examples of support measures for start-ups may include: non-reimbursable funds offered as capital for new start-ups, reduction of fees and taxes paid when hiring personnel by industry, reduction of fees and taxes paid by growing companies, simplification of bureaucratic processes of establishment, association and investment, increasing entrepreneurial capacity and interest through training courses.

The European Economic Area, with the established acronym EEA, consists of the member states of the European Union (EU) and three countries of the European Free Trade Association (EFTA) (Iceland, Liechtenstein, and Norway, excluding Switzerland). (Eurostat, 2020)

The EEA Agreement entered into force on 1 January 1994. It aims to strengthen trade and economic relations between the contracting parties and mainly concerns the four fundamental pillars of the internal market, namely: the free movement of goods, persons, and services. and the capital. The availability of comparable statistical data is considered relevant to the four freedoms and is therefore included in the agreement. EU enlargements have had a direct impact on the EEA Agreement, and the enlarged EEA now includes 30 countries. (Eurostat, 2020)

One of the evaluation models used at the European level to measure the trends regarding the needs of a start-up is visible in Figure 4 (Autio, 2016). This model groups the multiple needs of a start-up into 3 large categories:

- Ability - the policies that guarantee the conditions needed for the birth of a start-up.
- Attitude - the policies that guarantee the ability of a start-up to develop and grow.
- Aspirations - policies that help start-ups reach international markets and get investments in order to arrive at a valuation of up to €1 billion.

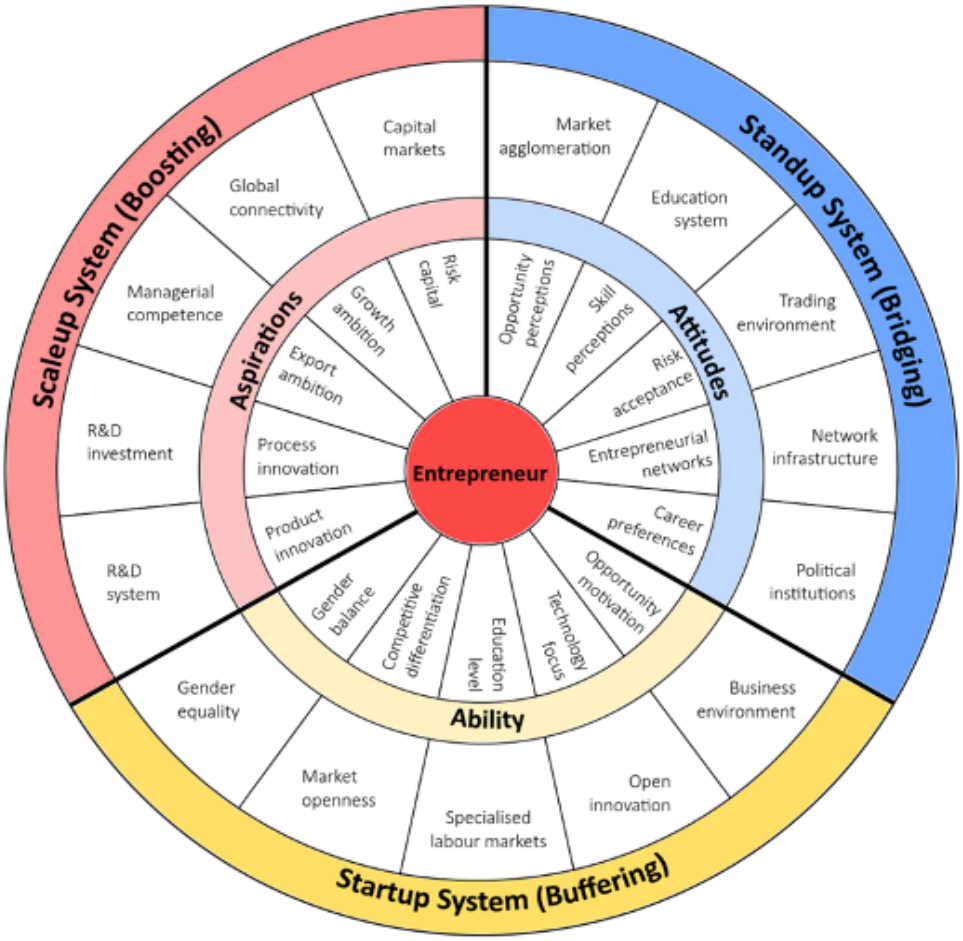

Figure 4 Start-up needs segmentation

Source: Autio (2016).

3. METHODOLOGY

This section describes the methodology applied for this. The process of carrying out the research included the following steps: formulating the research questions, selecting the relevant documents, filtering the documents, extracting the necessary data, analyzing and synthesizing the data, respectively describing the results.

In the first phase, we defined the research questions - clear questions to help shape this analysis. For the current case study, we identified the documents that resulted from the online search, filtering through an initial screening, and then examined the eligibility of each document. The included results were then evaluated and interpreted to provide answers to the research questions.

We formulated the following research questions:

Q1. *How many member states of the European Economic Area have comprehensive documents that serve as national start-up ecosystem strategies, respectively what is the source of these documents?*

Q2. *To which of the development phases of a start-up is a national start-up strategy most often oriented?*

Q3. *How do national strategies for start-ups in the European Economic Area compare with those of the following 10 countries?*

Q4. *Under what circumstances does a national start-up strategy appear?*

Within the selection process, in order to identify the documents, we used the Google search engine. The keywords used for this data collection applied on each European Economic Area member were: "Start-up Ecosystem National Strategy", "Start-up Ecosystem National Manifesto", "Start-up Ecosystem National Whitepaper". In total, we were able to identify 52 documents developed between 2015-2021, all materials collected were in English. The data collection happened until February 2022.

We used the same keywords to identify documents relevant to the following 10 countries with the highest number of unicorns, according to the Statista website. The chosen countries, external to the European Economic Area, were the following: United States of America, China, Japan, Israel, Singapore, Canada, Brazil, India, South Korea, Indonesia. The data was collected in April 2022. A total of 12 documents resulted. A total of 64 documents were included in this study.

For the inclusion and exclusion of the documents, the PRISMA methodology was applied. As can be seen in the Figure. 5, after the initial identification, a first examination of each document followed, as well as an elimination of documents that were not as relevant to the current study, as well as the selection of a single relevant document for each country.

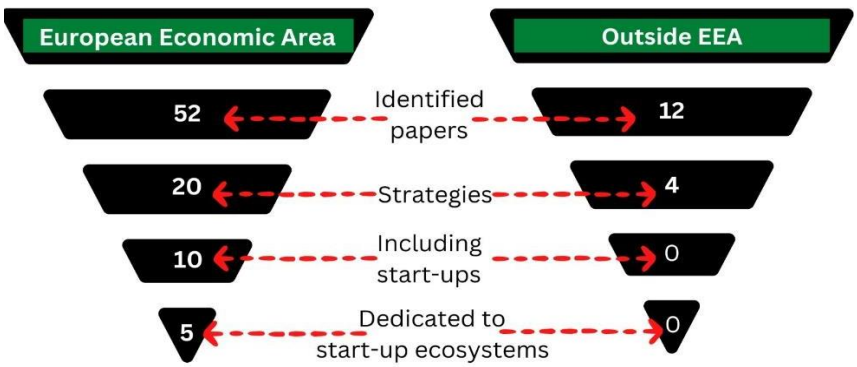

Figure 5 The selection process according to PRISMA

After a first examination, we selected 20 documents from the European Economic Area and 4 documents from outside the EEA, which can support and help the construction of a national start-up strategy. Then we eliminated the documents that aimed to analyze and offer proposals, respectively the documents that did not include innovative technology in entrepreneurship, as well as local and regional strategies, thus reaching a total number of 10 published documents that can be defined as relevant strategies for the start-up ecosystem -up, all belonging to the EEA. After further examination, we reached a total of 5 comprehensive national strategies dedicated to the existing start-up ecosystem in the European Economic Area and no nationally relevant documents for an ecosystem outside the EEA.

The areas served by each document have been divided according to the number of pages dedicated to each of the 3 maturity levels (Ability, Attitude, Aspirations) and their specific policies. To analyze the circumstances under which a start-up ecosystem strategy can emerge, we have collected the following data from the following sources (Table 1):

Table 1 The list of chosen indicators and their sources

Indicator	**Source**
Number of start-ups	Startup Ranking
Global Entrepreneurship Index	Global Entrepreneurship Index 2019
Number of unicorns	Google searches, news sites
GDP per capita	World Bank
Population	World Bank
The ranking of the best educational institution	Round Ranking

To observe potential patterns and analyze the data of the countries included in the study, we used Tableau software.

4. RESULTS AND DISCUSSION

4.1. The results of the research

After analyzing the obtained data (see Appendix 1), we concluded that most of the documents that help the start-up ecosystem do not focus efforts concretely in the direction of start-ups.

Accordingly, we can provide an answer for Q1. Only 5 of the 32 member states of the European Economic Area (see Appendix 2) have formulated a comprehensive strategy that strictly addresses the start-up ecosystem.

Among the 5 strategies, 4 of them (Estonia, Hungary, Italy, and Romania) have documents created with the help of government agencies, or in partnership with them. The notable exception is Cyprus, whose "Start-up manifesto" was created by the private sector.

It should be noted that some documents that refer to the start-up ecosystem have names such as "*National Innovation Strategy*", or "*National Digitalization Strategy*",

respectively "*Strategy for the development of the entrepreneurial ecosystem*". It is relevant to mention the distinction between innovation ecosystems, respectively the entrepreneurial and the start-up ecosystem.

Strategies and documents of other types, which provide support for certain components of the start-up ecosystem, but are not based on the interests and needs of a start-up, may provide benefits to a start-up ecosystem, but cannot guarantee a public policy comprehensive and applied on the particularities and specific needs of the climate in which start-ups proliferate.

4.2. Comparative analysis within the European Economic Area

Following the content analysis of the national start-up strategies, visible in Figure 6 and Figure 7, we can see a major difference in the way each of the start-up strategies allocated their resources.

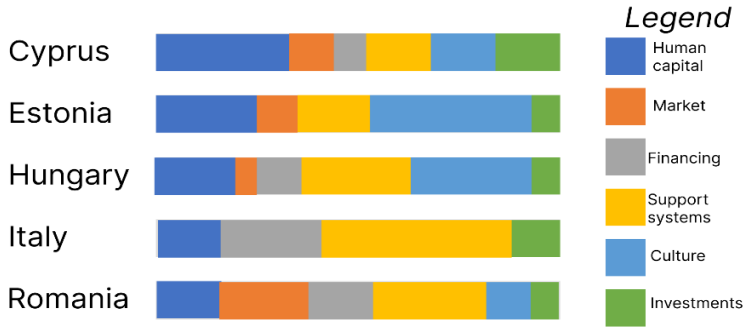

Figure 6 Content distribution of the start-up ecosystem strategies

In Figure 7 we can see some relevant values in the $_{\text{distribution}}$ model, Italy allocating 47% of the national start-up strategy to solidify support mechanisms and organizations for start-ups, respectively Estonia allocating 40% of the national start-up strategy up to in order to cultivate the start-up culture.

Once we aggregated these results, we can see in Figure 8 to which maturity level of the ecosystem each of the mentioned countries allocate their resources. We can see a relatively balanced distribution, the visible extreme being Italy, which allocates more than 70% of resources to financing and support systems for start-ups.

The other ecosystems have a relatively balanced distribution, reflecting the context in which each of these ecosystems find themselves in, and the needs that ecosystem members face in the current climate.

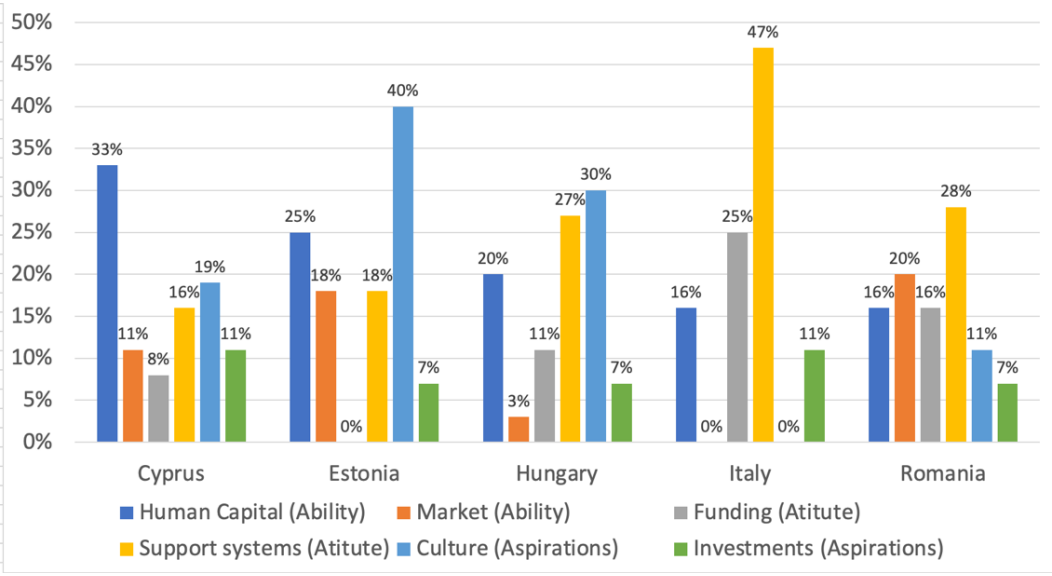

Figure 7 Distribution of the content into 6 start-up needs

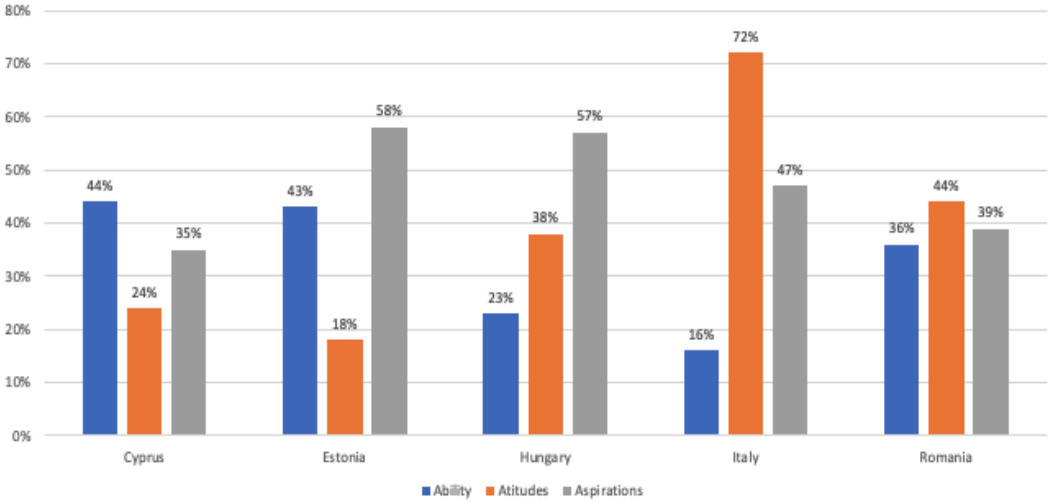

Figure 8 Distribution of the content based on maturity level

Consequently, we cannot provide a decisive answer to question Q2, given that national ecosystem strategies respond to the current needs of the ecosystem for which they were designed, namely the circumstantial differences that make it possible to implement certain measures in favor of others.

However, we can note the beginning of the ecosystem in Cyprus, the maturity of the ecosystem in Estonia, the mature development of the ecosystem in Hungary, an accelerated

development of the Italian ecosystem, respectively an incipient but accelerated development of the Romanian ecosystem.

4.3. Circumstances under which a national start-up ecosystem strategy may appear

Given the fact that, surprisingly, none of the top 10 countries with the highest number of unicorns outside the EEA has a national strategy dedicated to the start-up ecosystem, we cannot provide a proper response to the question Q3. Although this may seem surprising, it is necessary to consider the fact that within this analysis, we only included the strategies on start-up ecosystems targeted towards the national level.

Most of the states in the top 10 unicorn producers are often states that have already been experiencing results, major successes for a while. Their focus is fixated towards regional development, not on standardized development at the national level.

We may only conclude that the phenomenon of the national start-up ecosystem strategy is a European one, having no other strategies or papers that can indicate otherwise.

In order to infer a potential correlation between the presence of a strategy dedicated to the start-up ecosystem and the causative factors, we used Tableau software. After analyzing potential causative factors mentioned in Table 1 (GDP, number of start-ups, number of start-ups per capita, number of unicorns per capita, number of unicorns per start-up, quality of education offered by the most successful university from the country), we could not deduce any visible correlation that would give us an explanation for the emergence of the start-up ecosystem strategy phenomenon.

Following the analysis using Tableau software, we came to the conclusion that there is no visible trend that indicates the presence of a driving factor that would guarantee the presence of a start-up ecosystem strategy.

Although we have some promising results, as in the case of Figure 9, which represents the level of entrepreneurship, respectively Figure 10 which indicates the number of start-ups per capita, there is no decisive correlation that guarantees the emergence of a start-up ecosystem strategy.

It is, however, necessary to mention the importance of the entrepreneurial spirit and culture that can be deduced from the mentioned analysis. Although it is not a factor that guarantees or decisively correlates with the emergence of a national start-up ecosystem strategy (considering that some of the equally influential states involved in the mentioned figures do not have a national start-up ecosystem strategy start-up), it is still important to note that entrepreneurial culture seems to be a relevant factor in the states where this national start-up ecosystem strategy does appear.

We have noticed, however, that this phenomenon appears only in states that have had previous success (have had a first unicorn), but do not have a considerable number of

major successes. These circumstances can be explained by the phenomenon called the „first unicorn effect". The states that took part in a period relatively close to the first major success, the first unicorn, are influenced by this success in a way that encourages them to adopt an economic strategy oriented towards start-ups (Ionita, 2021).

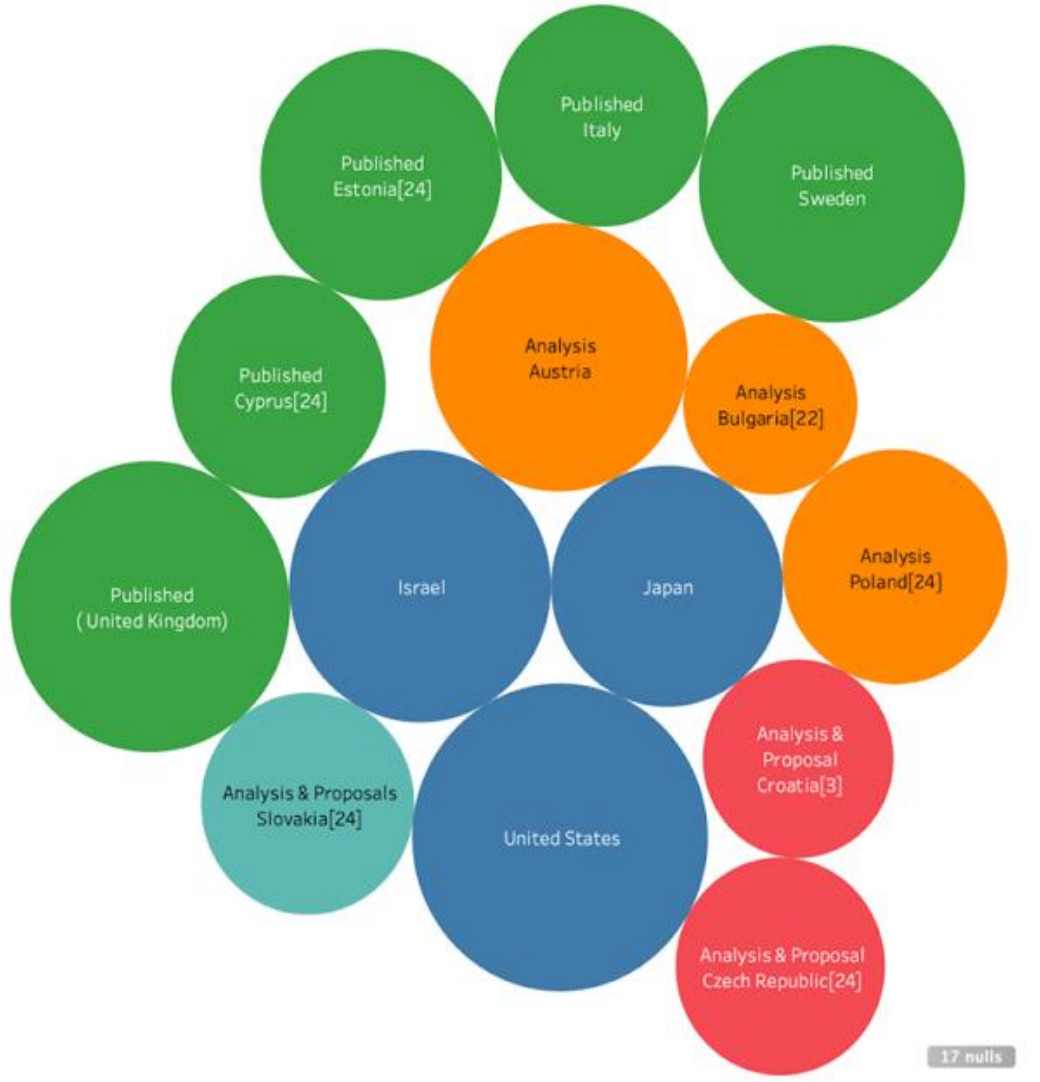

Figure 9 Comparison of the states involved in the study compared by the Global Entrepreneurship Index

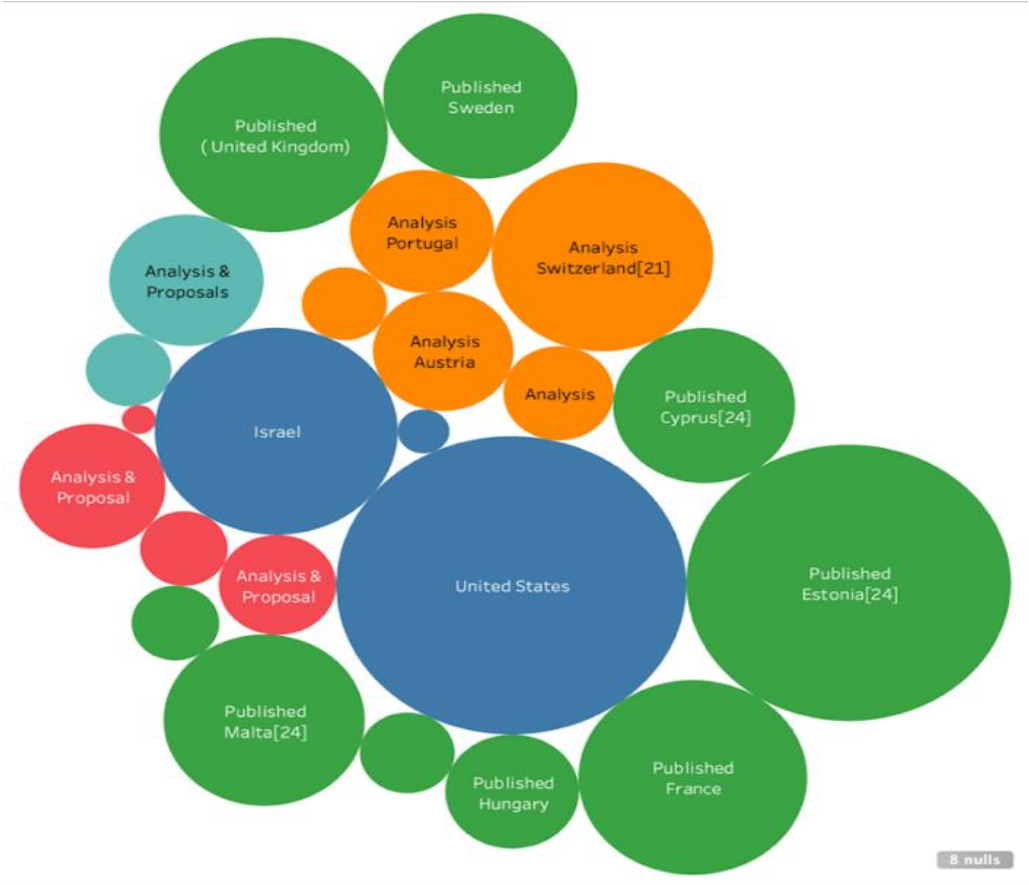

Figure 10 Comparison of the states involved in the study compared by the number of start-ups per capita

We can thus formulate an answer for Q4. The emergence of national strategies aimed at start-up ecosystems is a European phenomenon that appeared in the last 5 years, encountered in the states where the impact brought by the first unicorn greatly influences the economy and especially the culture of that country.

5. CONCLUSIONS

Through our research approach we tried to answer the 4 research questions in this study. We identified a number of five national start-up strategies among member states in the European Economic Area, representing only 15.6% of the EEA member states.

Surprisingly, the most successful countries in terms of start-ups do not have national start-up ecosystem strategies. We can conclude that the macroeconomic factors present prior to unicorn economic successes, as well as the circumstances that encouraged

innovation, were a strong enough enabling framework to propel countries such as the United States of America, respectively China into the top unicorn producers, without needing a national strategy for the development of start-up ecosystems.

It is also necessary to bring into discussion the fact that the absence of national start-up ecosystem strategies does not automatically mean a general lack of strategy. In most of the cases encountered in the data collection, documents that serve as a start-up ecosystem strategy are mainly addressed to the regional development within a state, such as Silicon Valley and smaller countries, such as Estonia.

We were able to observe the fact that the existence of a national start-up strategy is a European phenomenon, which is not present in other states with a significant number of start-ups that reach the rank of unicorn. We can conclude that the national start-up strategy is a recent phenomenon that appears only in the states that enjoy the first major economic successes and whose success significantly influences the local economy and culture, respectively that the influences of the European space greatly impact the existence or non-existence of the respective strategies.

Considering the data set used in the present research to observe any kind of correlation between the emergence of a start-up ecosystem, no visible trends emerged that could be considered in order to clarify the circumstances in which such national start-up ecosystem strategies do emerge in.

It is also relevant to mention the limitations of the present study. Only 40 internationally relevant countries were considered in the current research. The study may certainly be expanded to include a larger number of countries, with more international and inclusive coverage.

This study could be done again in several years. Because these national start-up ecosystem strategies are a phenomenon that has emerged in the last 5 years, we could see different results if the study were implemented again over a period of 3 or 5 years.

Only documents in English were included in the present study, using only English search keywords. The present study could benefit from a deepening of the research using searches in the main language for each of the states included in this study respectively.

This research can also be deepened by analyzing the comparison between local start-up ecosystem strategies and national start-up strategies. The existence of local start-up ecosystem strategies can have relevant effects on the existence of a structured strategy at the national level. It is also relevant to consider the capacity to produce results for ecosystems that have a national strategy compared to those that only have a local strategy, as well as to those that have both a national and a local strategy.

In conclusion, we can say that we have made relevant contributions to the topic of start-up ecosystems, both at the European level and at the trans-national level. This research topic is still at an early stage.

We can see a growing intrigue both from the private sector as well as from the government space for the topic of ecosystem development of start-ups.

Certainly, the start-ups, as well as the organizational models of the systems that make their emergence and development possible from a cultural, economic, legislative, and procedural point of view, will gain momentum in the coming years.

It is relevant to note that although the organization and systematization of start-up ecosystems appears to be an initiative that produces results, each region and state benefits to a different extent from any implementation of the support provided in order to produce results. Although the systematic mapping and systematization of a well-defined ecosystem, directed by and for the good of start-ups may seem a favorable initiative, more in-depth research is needed on the real results produced by the systematization of ecosystems and the analysis of the real benefits produced inside such an ecosystem, compared to its non-intentional development.

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APPENDICES

Appendix 1 – List of all documents identified for each member country of the European Economic Area

No. Crt.	Country	Document issued by governmental agencies	Document issued by the private sector	Year	Human Capital (Ability)	Market (Ability)	Financing (Attitude)	Support systems (Attitudes)	Culture (Aspirations)	Investmenets (Aspirations)
1a	Austria		Austrian Startup Monitor	2018	18	5	5	4	3	6
1b	Austria		Making Vienna Leading Start-up Ecosystem in Europe	2016	-	-	15	-	-	85
2	Belgium	Migratory Pathways for Start-ups and Innovative Entrepreneurs in Belgium		2020	20		8	10	4	-
3	Bulgaria		The Start-up and Innovation Ecosystem in Sofia	2019	1	1	1	3	4	2
4	Croatia		Digital Footprint - Exploring the transformation of Croatian Start-ups and companies in the new market circumstances	2020	3	12	1	1	5	2

No. Crt.	Country	Document issued by governmental agencies	Document issued by the private sector	Year	Human Capital (Ability)	Market (Ability)	Financing (Attitude)	Support systems (Attitudes)	Culture (Aspirations)	Investmenets (Aspirations)
5a	Cyprus		http://www.startup-cyprus.com/startup_manifesto	2016	12	4	3	6	7	4
5b	Cyprus		Deloitte - Cyprus - An emerging startup ecosystem in the crossroads of Europe	2019	1	2	7	3	1	2
6	Czech Republic		Aspen Institute - Czech Startups	2016	4	8	4	2	5	3
7	Denmark		Mapping the Danish Cleantech Startup Ecosystem	2019	3	9	4	2	1	7
8a	Estonia	Startup Estonia Whitepaper		2020	7	2	0	5	11	2
8b	Estonia	Fostering startup & innovation ecosystems in Europe (INNOVA FOSTER) - Tartu Action Plan		2018						
9	Finland		https://finestfuture.org/startup/							

No. Crt.	Country	Document issued by governmental agencies	Document issued by the private sector	Year	Human Capital (Ability)	Market (Ability)	Financing (Attitude)	Support systems (Attitudes)	Culture (Aspirations)	Investmenets (Aspirations)
10a	France	Shaping the future through innovation: French tech at the forefront of change		-	5	6	3	0	2	3
10b	France		The French tech revolution	2020	7	12	4	3	11	2
11	Germany		Munich as a growing hotspot for innovation and entrepreneurship	2021	8	5	3	3	2	4
12	Greece		Greece's Startup ecosystem	2018	3	4	2	5	4	2
13a	Hungary	Case Study on the Hungarian new tech entrepreneurial ecosystem		2018	2	4			10	
13b	Hungary		Hungarian Startup Report - 2020	2020	18	19	14	12	16	20

No. Crt.	Country	Document issued by governmental agencies	Document issued by the private sector	Year	Human Capital (Ability)	Market (Ability)	Financing (Attitude)	Support systems (Attitudes)	Culture (Aspirations)	Investmenets (Aspirations)
13c	Hungary	https://digitalisjoletprogram.hu/files/89/ea/89eac5ce5f74178f3f527945f7edd08f.pdf		2016	15	2	8	20	22	5
14	Iceland									
15a	Iceland	Alliance for an innovation driven recovery (Budget 2022)		2022	-	-	4	-	-	6
15b	Ireland	Review of EIIS Support for high-growth start-ups and scale-ups		2020	-	-	-	-	-	6
16a	Italy	The Italian Startup Act		2019	6	-	9	17	-	4
16b	Italy	Italy's national strategy for competitiveness and innovation		2018	-	2	2	2	5	1
16c	Italy		The Startup and scaleup ecosystem in Italy	2020	2	5	2	6	8	2

No. Crt.	Country	Document issued by governmental agencies	Document issued by the private sector	Year	Human Capital (Ability)	Market (Ability)	Financing (Attitude)	Support systems (Attitudes)	Culture (Aspirations)	Investmenets (Aspirations)
17	Latvia	https://www.liaa.gov.lv/en/invest-latvia/start-ecosystem?utm_source=https%3A%2F%2Fwww.google.com%2F			-	-	-	-	-	-
18	Liechtenstein				-	-	-	-	-	-
19	Lithuania				-	-	-	-	-	-
20	Luxembourg	https://digital-luxembourg.public.lu/sites/default/files/2020-11/DL_202009082_ECOSYSTEM-MAPS_DIGITALPUB_01.pdf			-	-	-	-	-	-
21a	Malta	Local Ecosystem Diagnosis Malta		2018	1	1		3	1	

No. Crt.	Country	Document issued by governmental agencies	Document issued by the private sector	Year	Human Capital (Ability)	Market (Ability)	Financing (Attitude)	Support systems (Attitudes)	Culture (Aspirations)	Investmenets (Aspirations)
21b	Malta	Fostering startup & innovation ecosystems in Europe (Local Action Plan)		2019	9	2	10	12	8	2
22a	Holland	Strategy to Strenghten Research and Innovation Ecosystems								
22b	Holland	Govtech in the Netherlands								
23	Norway		National Strategy for Artificial Intelligence							
24	Poland		The Startup Ecosystem in Poland		1	1	6	13	4	6
25a	Portugal	Inclusive Entrepreneurship Policies, country assement notes - Portugal 2016		2016	2	-	2	2	2	-
25b	Portugal		Portugal Sttartup Index ~ IDC	2021	11	10	8	9	5	9

No. Crt.	Country	Document issued by governmental agencies	Document issued by the private sector	Year	Human Capital (Ability)	Market (Ability)	Financing (Attitude)	Support systems (Attitudes)	Culture (Aspirations)	Investmenets (Aspirations)
26a	Romania	Specific Support to Romania (Start-ups, Scale-ups, Entrerepneurship) ~ Horizon 2020		2020	11	2	6	28	5	28
26b	Romania	Romania startup ecosystem whitepaper		2021	7	9	7	12	5	3
27a	Slovakia	Specific Support to Slovakia (Start-ups, Scale-ups, Entrerepneurship) ~ Horizon 2020		2020	5	3	13	21	4	13
27b	Slovakia		Slova Startups Report ~ 2016	2016	5	15	6	4	0	2
27c	Slovakia		Startup Ecosystem Survey ~ KPMG	2016	10	24	14	46	4	8

No. Crt.	Country	Document issued by governmental agencies	Document issued by the private sector	Year	Human Capital (Ability)	Market (Ability)	Financing (Attitude)	Support systems (Attitudes)	Culture (Aspirations)	Investmenets (Aspirations)
28a	Slovenia	Slovenia ~ The Land of Innovative Startup Enterprises (written in slovenian)								
28b	Slovenia	In-depth country analysis		2020	7	4	6	8	6	11
29	Spain	Spain Entrepenruail Nation Strategy		2021	3	2	1	2	3	1
30a	Sweden	Swedish Innovation Strategy		2020	9	11	2	10	10	0
30b	Sweden		National Strategy for Sweden			40		1		
31a	Switzerland	Swiss Innovation Landscape								
31b	Switzerland	The Swiss Entrepreneurial Ecosystem Report		2016	2	13	1	1	1	1
32a	United Kingdon	UK innovation strategy		2021	12	8	11	24	23	0
32b	United Kingdom		Charting a course for the future	2018	3	24	0	8	0	0

No. Crt.	Country	Document issued by governmental agencies	Document issued by the private sector	Year	Human Capital (Ability)	Market (Ability)	Financing (Attitude)	Support systems (Attitudes)	Culture (Aspirations)	Investmenets (Aspirations)
32c	United Kingdom		https://startupsoflondon.com/london-startup-ecosystem-ultimate-report-2020/	2020						

Appendix 2 – List of national start-up ecosystem strategies identified among the member countries of the European Economic Area integrated in this study

No. Crt.	Country	Document Name	Issued by	Author	Year	Human Capital (Ability)	Market (Ability)	Financing (Attitude)	Support systems (Attitudes)	Culture (Aspirations)	Investments (Aspirations)
1	Cyprus	Cyprus Start-up Manifesto	Private space	Startup Cyprus	2016	33	11	8	16	19	11
2	Estonia	Startup Estonia Whitepaper	Government entity	Startup Estonia	2020	25	18	0	18	40	7
3	Hungary	Digital Startup Strategy of Hungary	Government entity	Digital Success Program	2016	20	3	11	27	30	7
4	Italy	The Italian Startup Act	Government entity	Ministry of Economic Development Italy	2019	16	0	25	47	0	11
5	Romania	Romania startup ecosystem whitepaper	Government entity	ROStartUp	2021	16	20	16	28	11	7