

## The study on entrepreneurial education in the university through stakeholder involvement

Lilia COVAȘ<sup>1</sup>, Angela SOLCAN<sup>2</sup>

### Abstract

*This article reports on a study concerning the entrepreneurial potential in the Academy of Economic Studies of Moldova and identifying the peculiarities, being analysed from the stakeholders' perspective. The research was carried out within the project ReSTART - Reinforce entrepreneurial and digital skills of students and teachers to enhance the modernization of higher education in Moldova, funded by Erasmus+ program. Since entrepreneurship education is about developing the ability to act in an entrepreneurial manner, attitudes and behaviors are perhaps more important than the knowledge and skills concerned in running a business. Stakeholders can and should play an important role in tailoring university entrepreneurial strategies and actions and supporting their implementation. This can be done through building stakeholder engagement – with stakeholders as partners in the design, planning, implementing and evaluating of entrepreneurship education policy and activity at all levels. The conclusion of this paper redefine the analysis of local target groups' satisfaction related to entrepreneurial and digital skills, by integrating the needs of all university stakeholders (students, teachers, enterprises, professional association, public institutions and non-commercial organizations).*

**Keywords:** Entrepreneurship, higher education, entrepreneurial education, entrepreneurial skills, university, stakeholder, HEInnovate

**JEL Code:** A20, I23, L26

### 1. Introduction

Entrepreneurship is the driving force of economic development due to creation of new companies and jobs, opening of new markets and developing new skills and qualifications. Entrepreneurship is a very important sector of the economy and contributes significantly to the long-term development of the economy. Entrepreneurial development is an extraordinary chance for Republic of Moldova, this being the most dynamic area of the economy.

Entrepreneurship education has a very important role in stimulating entrepreneurial potential, it “focuses on the development and application of an enterprising mindset and skills in the specific contexts of setting up a new venture,

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<sup>1</sup> Lilia COVAȘ is associate professor at the Academy of Economic Studies, Chisinau, Moldova. E-mail: liliacovas@yahoo.com

<sup>2</sup> Angela SOLCAN is associate professor at the Academy of Economic Studies, Chisinau, Moldova. E-mail: ansolcan@gmail.com

developing and growing an existing business, or designing an entrepreneurial organization”(Quality Assurance Agency for Higher Education UK, 2012).

Developing and promoting entrepreneurship education has been one of the key policy objectives of the EU institutions and Member States for many years.

Accordingly with the publication of European Commission (2015) students participating in entrepreneurship education are more likely to start their own business and their companies tend to be more innovative and more successful than those led by persons without entrepreneurship education backgrounds. Entrepreneurial education contributes to the formation of innovative people who are driven to add value to the enterprises where they will work or start their own business. Entrepreneurship education alumni are at lower risk of being unemployed, and are more often in steady employment. Compared to their peers, they have better jobs and make more money.

In the Republic of Moldova, entrepreneurship education is a cornerstone element in most of the strategies aimed at creating new jobs, increasing the number of start-ups and reducing their bankruptcy rate. Despite the fact that there are already numerous measures taken to encourage entrepreneurship education, it requires a much more complex and scrupulous approach.

From the perspective of the business environment, the inefficiency of education in Republic of Moldova is reflected in the gap between theory and practice. Although many young people graduates come to companies with a solid theoretical baggage, the lack of a real practical training during the faculty is the main criticism brought to the education system.

In 2004 The Republic of Moldova joined the European Charter for Small Enterprises, therefore respecting the stipulations became an imperative goal for us. Nowadays, entrepreneurship courses are taught in most of the economic higher educational institutions from Moldova.

The Academy of Economic Studies of Moldova (ASEM) is one of the first higher educational institutions from the Republic of Moldova to introduce the Entrepreneurship course in 1998. The primary goal was to give theoretical knowledge and develop entrepreneurial abilities, as well as consolidation of entrepreneurial sense.

From the very beginning the course was held for students of only two specialties: Business and Administration or Marketing and Logistics. Subsequently it was included as an optional course in the study schedule at other specialties during the first stage, Bachelors: Cybernetics and Economical Informatics, Informational Technology, Informatics, Accounting, Tourism, Technology and Management of Public Alimentation, Commodities and Commerce.

During the second stage, Master's, the course of Business plan elaboration is proposed for students from Business Administration and Informational Management programs. By working in groups of 3-4 persons, they elaborate a business plan that they subsequently present in front of their colleagues and teacher.

As for now, entrepreneurship education at ASEM includes a series of extra-curricular activities:

- “The Start-up Academy”- meetings with successful entrepreneurs that share their experiences with the students;
- The debate club BIZZClub;
- Contests among students “Today-student, tomorrow-entrepreneur” and “Start-up@Business Model”;
- Start-up in the business incubator ASEM and so on.

During the entrepreneurship education course there are applied a few active teaching methods as: project elaboration, case studies, simulations, meetings with successful entrepreneurs, interviews and so on. However, mostly it is still focused on teaching.

In this way, the study target was to analyse teachers, students` and employer`s attitudes and perceptions, and to collect relevant learning needs with respect to entrepreneurship and digital skills. The research was carried out within the project Reinforce entrepreneurial and digital skills of students and teachers to enhance the modernization of higher education in Moldova.

Thus, the aim of the survey is to identify methods of improving entrepreneurial and innovation competences of higher educational institutions by analysing from the ASEM stakeholders` perspective.

To achieve this, the following objectives are set:

- Interviewing professors who teach the Business Administration;
- A survey for students and all the indirect stakeholders including employers, professional association, public institutions and non-commercial organizations;
- An analysis of the results obtained from interviewing professors, students and companies.

## **2. Literature review**

The European Union`s policy framework on small and medium enterprises (SMEs), through the overarching Small Business Act for Europe and the Entrepreneurship 2020 Action Plan, emphasizes the importance of entrepreneurship education. Entrepreneurship education in higher education was proved to have a positive impact on the entrepreneurial mindset of students, their intention towards entrepreneurship, their employability and finally on their role in the society and the economy (European Commission 2012, a).

Education for entrepreneurship can make a difference as young people who go through entrepreneurial programs and activities start more companies and earlier – the percentage of alumni who become entrepreneurs 3 to 5 years after leaving school is 3-5%, whereas for those who participated in any entrepreneurship education this percentage rises to 15-20%, according with the papers of European Commission (2012, b).

On the one hand, countries like France, the UK, Ireland and the Scandinavian States are ahead in terms of teaching entrepreneurship in universities. The number of young people who are trained in entrepreneurial education is increasing. According to data from (The Danish Foundation for Entrepreneurship, 2016) in 2009/2010 only 8 %

of students at universities took part in an entrepreneurship course or subject, while in 2016/2017 their share was 19% of the total number of students in higher education.

This is explained by the strong input from the government in the form of financial incentives for universities, numerous support initiatives, both national and regional, and the widespread courses offered at all educational levels (under and postgraduate) (Watkins, 2006).

By Martin (2015) entrepreneurial education has seen worldwide exponential growth in higher education institutions, and was in 2001 offered at around 1200 business schools only in United States. On other levels of education such strong growth has not yet been seen, but development is under way with policy pressure exerted on educational institutions worldwide. Today entrepreneurial education has become an important part of both industrial and educational policy in many countries.

Education should be brought to life through practical experiential learning models and experience of real-world entrepreneurs. Defined entrepreneurial learning outcomes for all educators are needed to introduce effective entrepreneurial learning methodologies into the classroom (European Commission, 2015).

However, entrepreneurial education illustrates some unique features, such as focus on value creation to external stakeholders, interaction with the outside world, and artefact creation. Those features explain why entrepreneurial education can trigger much higher levels of motivation, experienced relevancy, engagement and deep learning than can other pedagogical approaches (Daskalou et al, 2016).

### **3. Data and Methodology**

The survey on entrepreneurial education in the university through stakeholder involvement was performed during the period of 13 March – 21 April 2018.

In order to appreciate the entrepreneurial/innovative potential at ASEM and identify the weaknesses was applied the online self-assessment tool for higher educational institutions HEInnovate, developed by the European Commission and OECD. It guides through a process of identification, prioritisation and action planning in seven key areas. HEInnovate also diagnoses areas of strengths and weaknesses, opens up discussions and debates on the entrepreneurial/innovative nature of the institution and it allows comparing and contrasting evolution over time.

Each field has a series of statements that the user has to rate on a scale of 'not applicable' (n/a) to 5, depending on how much they agree or disagree with the statement regarding their institution. On the scale, 1 represents the lowest and 5 the highest score.

The survey was taken by 19 teachers. Out of these, 81 % are Management teachers and the rest of them from other departments of ASEM.

The survey was taken by 101 students from the Business Administration programme. To ensure proportional data repartition, the interviewed students are from both full-time programmes and part-time who took the course in both Romanian and Russian.

The questionnaire for students comprised questions regarding:

- Profile of respondents;
- Entrepreneurship Perception;
- Learning and teaching style;
- Skills assessment.

Students contributed by taking the form online, using Google Forms. Afterwards, the data was collected and analysed on the statistics platform SPSS.

Employers were interviewed in a similar manner. In the survey of the indirect stakeholders were included 31 employers: 20 business partners, 5 public institutions, 3 professional association and 3 civil society organizations.

The Questionnaire for companies covered aspects like:

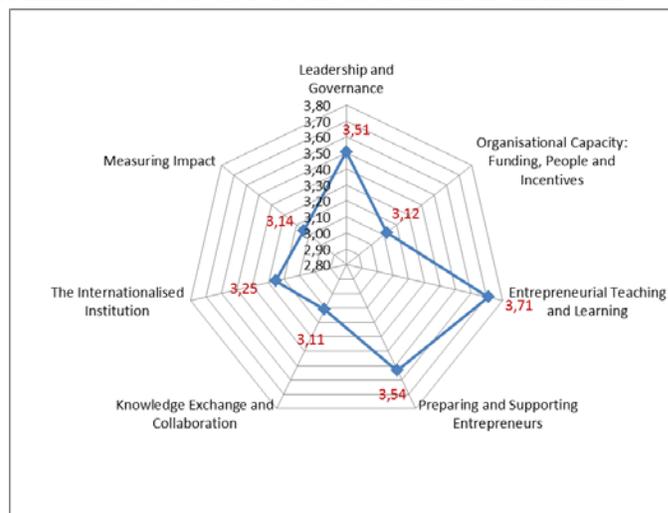
- Profile of company;
- Employer opinion;
- Employer satisfaction;
- Employer criteria for hiring young graduates.

The analysed companies are from various fields of activity: production, trade, services, IT, education. All the people representing entities are part of their management team, having positions such as founder, president, director, manager, administrator, expert, consultant, etc.

#### 4. Results and Findings

One of the most important stakeholders in Entrepreneurial education is **professors**. After applying the HEInnovate self-evaluation tool, 19 teachers have evaluated. Considering all the aspects of HEInnovate, it can be concluded that the best grades ASEM has obtained at Entrepreneurial Teaching and Learning – 3,71; Preparing and Supporting Entrepreneurs – 3,54 and Leadership and Governance – 3,51 (Figure 1).

**Figure 1. The HEInnovate areas for self-assessment from ASEM**



*Source:* Elaborated by authors based on survey results

Respondents gave less credit to such areas as: The Internationalized Institution – 3,25; Measuring Impact – 3,14; Organizational Capacity: Funding, People and Incentives – 3,12 and Knowledge Exchange and Collaboration – 3,11.

- **Leadership and Governance**

Strong leadership and good governance are crucial to developing an entrepreneurial and innovative culture within an HEI. Acknowledging the importance of higher educational institutions in the formation of future entrepreneurs, ASEM, in “Strategic Development Plan for 2018-2022”, is focusing on “creating equilibrium between traditional values such as academic performance and the entrepreneurial pattern that would work best given the current requirements, as well as encouraging an entrepreneurial mind-set and culture at ASEM”.

- **Organizational Capacity: Funding, People and Incentives**

Respecting the commitments regarding the conduction of entrepreneurial activity is impossible if the institution doesn't have key pre-requisites such as finances and investments, human resource, expertise and knowledge, as well as incentive systems to support its entrepreneurial capacity.

In ASEM, there is an efficient collaboration between faculties, students and academic staff as entrepreneurial activities gather students from various study programmes, regardless of the fact if they have entrepreneurship in their curriculum or not.

For instance, on the 10th edition of the economic contest “Student today, entrepreneur tomorrow” from April 2018, 17 teams of students from 3 faculties and 6 study programmes participated developing their own business ideas. However, there is often a lack of detailed knowledge across the HEIs about what entrepreneurship support exists in other faculties.

According to the teachers who took the self-assessment survey, ASEM is lacking an incentives system for stimulating the entrepreneurial agenda. Thus, the statement “Incentives and rewards are given to staff who actively support the entrepreneurial agenda” has accumulated 2,25. Similarly, another weak side seized was the institution's capacity to support entrepreneurial objectives by a wide range of sustainable funding and investment sources – 2,63.

- **Entrepreneurial Teaching and Learning**

The ASEM provides diverse formal learning opportunities to develop entrepreneurial mind-sets and skills. Given the self-assessment results, this affirmation received one of the highest scores for ASEM – 4,11.

Teaching and learning at ASEM implies exploration of new methods of teaching such as Problem Based Learning and project based learning. In order to ensure that students interact directly with entrepreneurs, having the possibility to find out new things from primary sources, they have the task to interview entrepreneurs. Additionally, entrepreneurs are often guests during our classes to share their experiences.

Extracurricular learning opportunities have become an important complement to formal entrepreneurship courses.

- **Preparing and Supporting Entrepreneurs**

Regarding entrepreneurship development, the ASEM is focused not only on entrepreneurial education, but also on supporting students who are willing to start up their own business by guiding and consulting students about the development and facilitation of this process. In this context, there are 2 incubators: the ASEM business incubator and IT Incubator for Business Application (IT4BA). Amongst the benefits of these two is a temporary premise for a lower price, as well as mentoring for the incubated enterprises. This fact explains why, in the process of self-assessment, the statement graded as the best was “The HEI offers or facilitates access to business incubation” – 4,19. The lowest score, as for preparing and supporting entrepreneurs, received facilitates access to financing for its entrepreneurs.

- **Knowledge Exchange and Collaboration**

Given the respondents' answers, the area of Knowledge Exchange and Collaboration received the lowest score out of all the seven dimensions of HEInnovate, being given 3,11 points out of 5.

ASEM took the responsibility to collaborate and exchange knowledge with the industry, public sector and society, to integrate and value new knowledge. The most common collaboration activities in this field include internships for students and mobility internships for teachers in enterprises and public institutions. Also, through the training centres, ASEM offers opportunities of continuing learning for employees from local companies.

- **Internationalised institution**

As for now, ensuring that education and research are at the highest level requires collaboration with international institutions. Therefore, internationalisation activities are a top priority for ASEM, one of its objectives being integration in the European Space of Education and Research and, consequently, to be recognised as an international institution.

In the “Strategic Development Plan for 2018-2022” a separate section is focused on internationalisation, and now an internationalisation strategy is being elaborated in the ASEM. It will comprise measures such as recruiting international students, exchanges with students from abroad and other forms of collaboration.

Also, a study programme's internationalisation level is an important indicator of performance in the process of external evaluation of the undergraduate and master's degree programs.

As a result of the self-assessment in the area of Internationalised Institutions, respondents gave the lowest score – 2,93, to the statement “The HEI seeks and attracts international and entrepreneurial staff”. Because the salaries of professors in the Republic of Moldova are not competitive on an international scale, it is very challenging to attract professors from other countries. On the strength of external funding, ASEM succeeded in inviting international teachers, all the costs being covered by European projects (Erasmus+).

As a consequence of the collaboration in the Erasmus+, L'Agence universitaire de la Francophonie (AUF) programmes, international research projects and internships, ASEM supports the international mobility of its staff and students.

However, The Republic of Moldova is less reputed as an international studying destination.

- **Measuring impact**

Proceeding to measuring the impact of the entrepreneurial agenda in the university, it remains underdeveloped, the average for this area of self-assessment being amongst the lowest ones-3,14.

On the contrary, the highest score was given to regularly assess entrepreneurial teaching and learning across the institution – 4 points. Both on institution level as well as in the Business and Administration programme, the number of people taking part in the entrepreneurial activities is considered.

Another aspect regularly analysed is the curriculum from the perspective of its contribution to the professional development of students and their entrepreneurial competences. These assessments are based on student surveys that cover the competences and skills obtained as a result of their implication in the entrepreneurial education programme, students' opinion regarding their professional career, motivation of participants to start-up a business; the best teaching methods, means through which ASEM could support entrepreneurial spirit development.

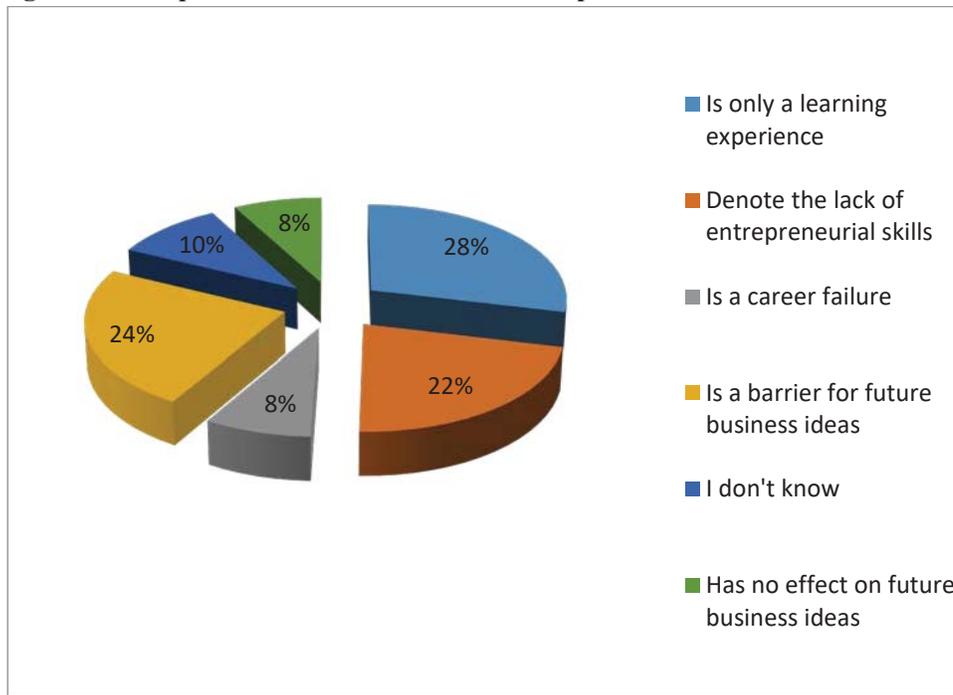
Speaking of other branches of this section, respondents said that another point to work on is assessment regularity of the impact of the entrepreneurial agenda, score-2.93, and assessment of international activities in the entrepreneurial agenda- 3,00, as well as assessment of the impact generated by the support given during the foundation – 3,07.

Another important stakeholder in Entrepreneurial education is **students**.

The first part of Students Questionnaire covers Perception about Entrepreneurship. Studying the Business and Administration, students know the peculiarities of entrepreneurial activity and they are able to assess correctly the qualities needed for being a successful entrepreneur - risk taking, ambition, creativity and innovation, initiative. Most students are already involved in the workforce, so they are familiar with the specifics of entrepreneurial activity.

Given that failure is quite common among start-ups, students were asked to appreciate how business failure is perceived in the Republic of Moldova. Based on the answers collected, the main perceptions are learning experience, a barrier for future business ideas, lack of entrepreneurial skills, career failure and others (Figure 2).

These responses denote the fact, that the major cause of the business failure is associated with the entrepreneur's personal skills and experience.

**Figure 2. Perception of business failure in the Republic of Moldova**

*Source:* Elaborated by authors based on survey results

There is a small but noticeable difference between the answers given by female and male respondents. Women associate business failure more with learning experience, lack of entrepreneurial skills and as a barrier for future business ideas, while the majority of men opt for learning experience and as a barrier for future business ideas.

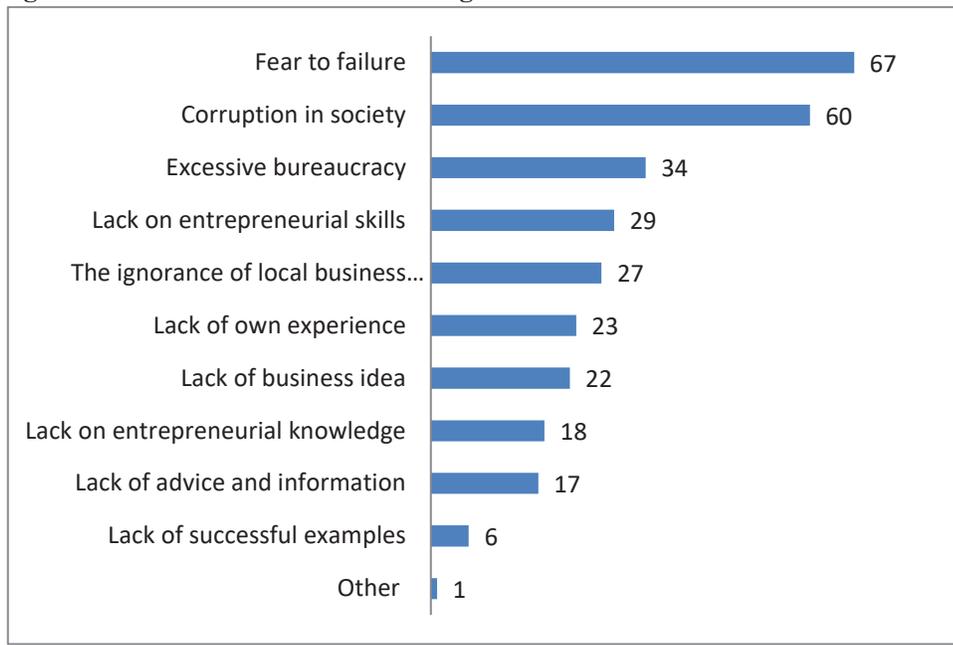
Regarding the willingness to start their own business, there are three significant boundaries, which radically diminish the number of attempts in this direction. These are fear of failure, corruption in society and excessive bureaucracy (Figure 3).

The boundaries delimited by students are mainly a matter of organisation and social issues. It should be noted that all these barriers depend on the existing system in the country and less on the skills and knowledge of the entrepreneur.

It is a positive factor that the lack of business idea, of own experience and of entrepreneurial knowledge are not considered significant barriers, indicating on their self-confidence. Thus, students emphasize the necessity of gaining knowledge in the field of entrepreneurship and developing entrepreneurial abilities.

The solution for this problem is promoting entrepreneurship education.

Entrepreneurship education is an essential element of the curriculum. But by its nature, entrepreneurship cannot be limited to the classroom. Students want the opportunity to do it. Entrepreneurship education should be very closely linked with business practice.

**Figure 3. The main barriers for starting a new business**

*Source:* Elaborated by authors based on survey results

According to students' opinion, the most efficient methods to develop one's entrepreneurial competences are: meetings with entrepreneurs – 49 choices, internships in companies – 47, business simulations – 45, practical study cases on entrepreneurship - 43 (Figure 4).

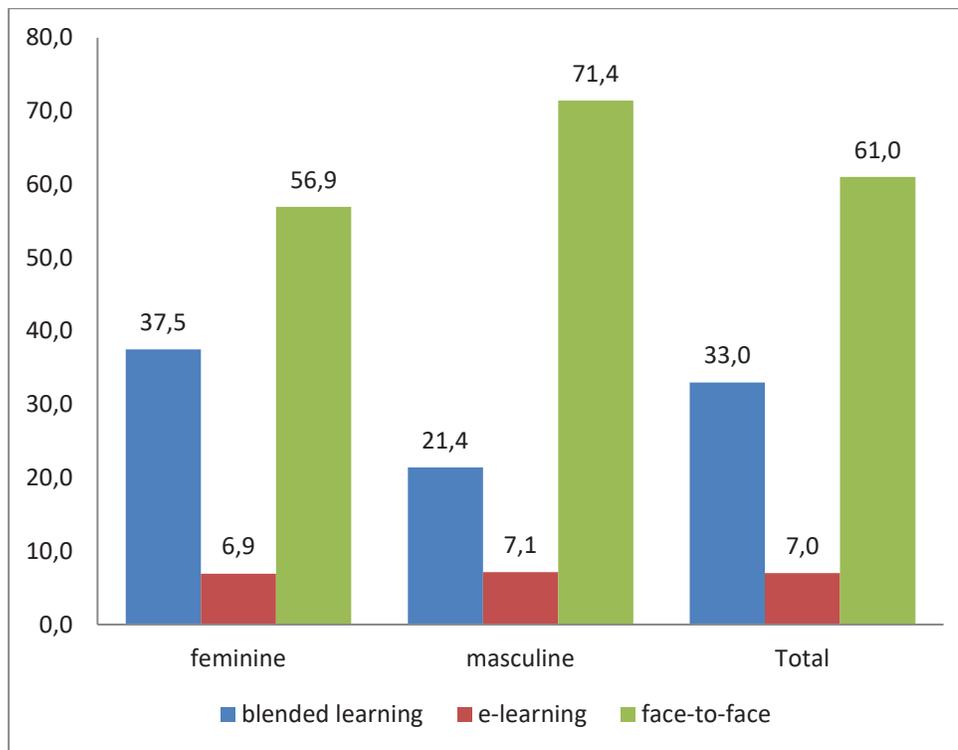
**Figure 4. Solutions for developing entrepreneurial skills and knowledge**

*Source:* Elaborated by authors based on survey results

Teaching entrepreneurship skills should be interactive and must include case studies, games, projects, simulations, real-life actions, internships and other hands-on activities. It was also recognized that the entrepreneurial skill development process required the active involvement of practicing entrepreneurs. Using active learning methods is more complex than traditional teaching methods. It requires engaging students more deeply in the learning process.

Speaking of Learning and teaching style, the survey results denote that the interviewed students mainly opt for traditional teaching strategies (face-to-face) – 61 % (Figure 5).

**Figure 5. Channels for learning Entrepreneurship**

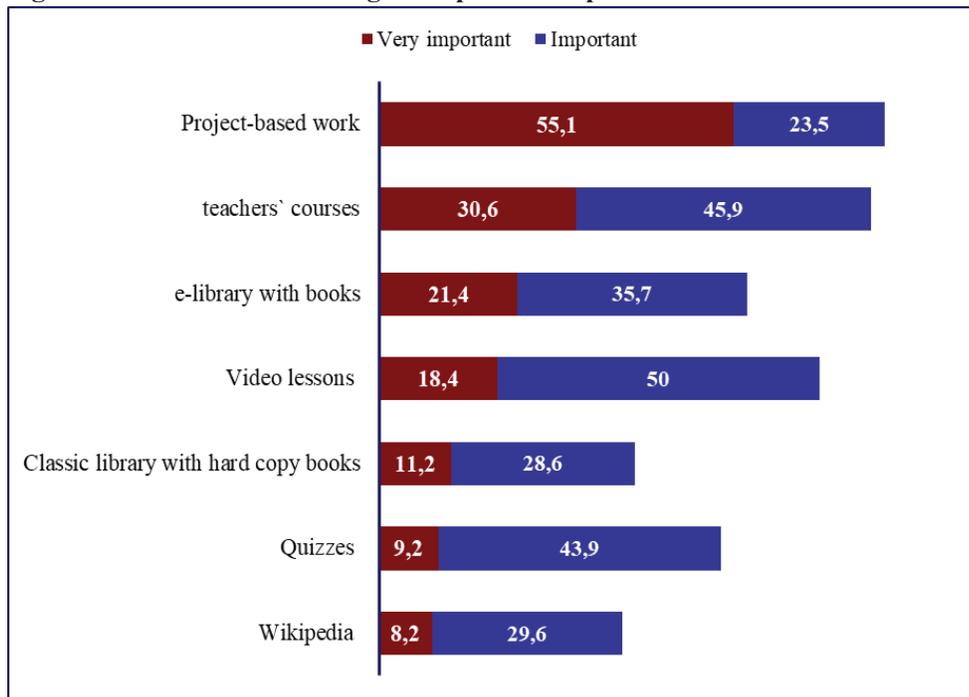


*Source:* Elaborated by authors based on survey results

Entrepreneurial learning depends on the teaching methods and techniques used. At the moment, blending strategies have become an essential pedagogical approach in higher education, where traditional modes of education are combined with digital media.

The number of those who prefer blended learning is 32% out of the total number of respondents and only 7% would choose e-learning as a method of teaching entrepreneurship.

Ranking learning resources, 78,6 % of respondents rated Project Based Learning as important and very important -, 76,5 % - teachers` courses, 68,4 % - video lessons and 57,1 % of respondents have chosen e-library (Figure 6).

**Figure 6. Channels for learning Entrepreneurship**

*Source:* Elaborated by authors based on survey results

Entrepreneurial education must contribute significantly not only to gaining fundamental theoretical knowledge, but also to developing the skills that an entrepreneur needs. Since entrepreneurship education is about developing the ability to act in an entrepreneurial manner, skills and attitudes are perhaps more important than the knowledge and concerned in running a business.

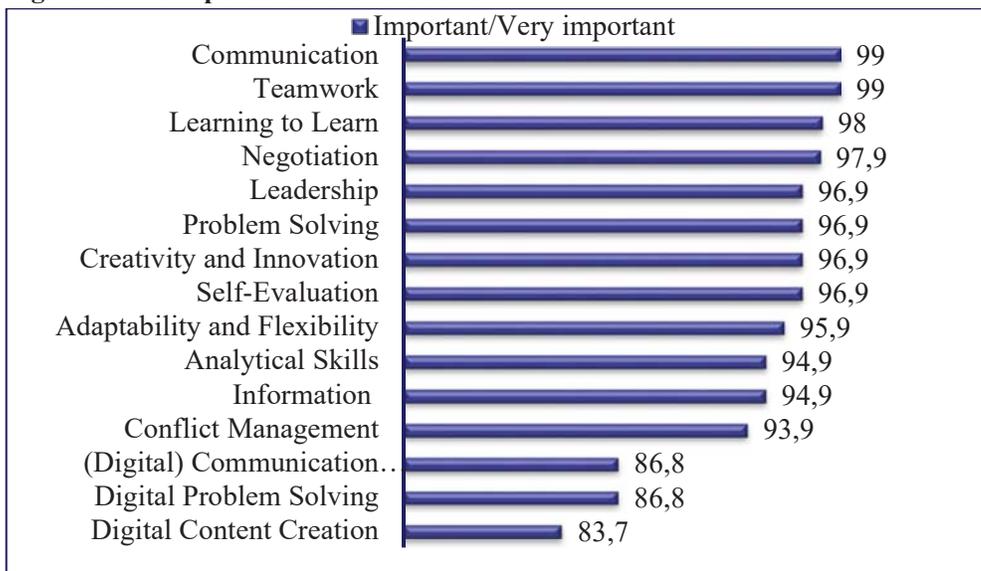
In the questionnaire the skills were grouped in 4 categories (Social, Personal, Methodological, Digital), and the respondents were encouraged to self-evaluate the importance level of each skill.

Each category consists of some skills:

1. Social: Communication, Teamwork, Conflict Management and Negotiation;
2. Personal: Leadership, Self-Evaluation and Adaptability and Flexibility;
3. Methodological: Learning to Learn, Analytical Skill, Creativity and Innovation, Problem Solving;
4. Digital: Information and Data Processing, Digital Communication, Digital Content Creation and Digital Problem Solving.

In Figure 7 all the skills included in the analysis are presented in descending order according to the importance grade given by the students. It is noticeable that students find social abilities the most important, followed by personal, methodological and, lastly, digital.

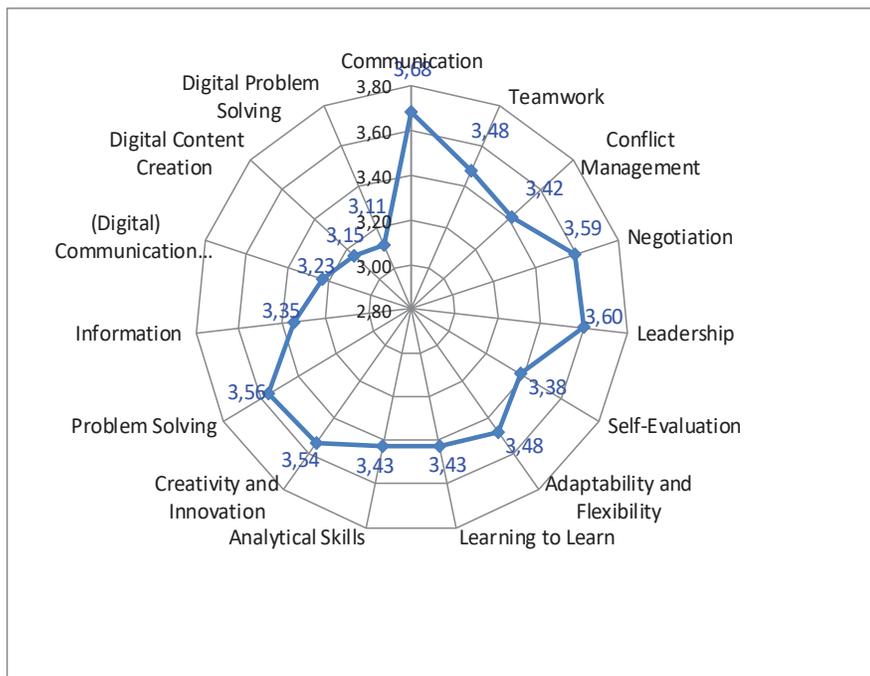
**Figure 7. The importance level of each skill**



Source: Elaborated by authors based on survey results

Regarding entrepreneurial skills, students, as well as employers, find communication skills, and team-work paramount, but do not give enough importance to digital abilities (Figure 8).

**Figure 8. Students` opinion regarding entrepreneurial skills**



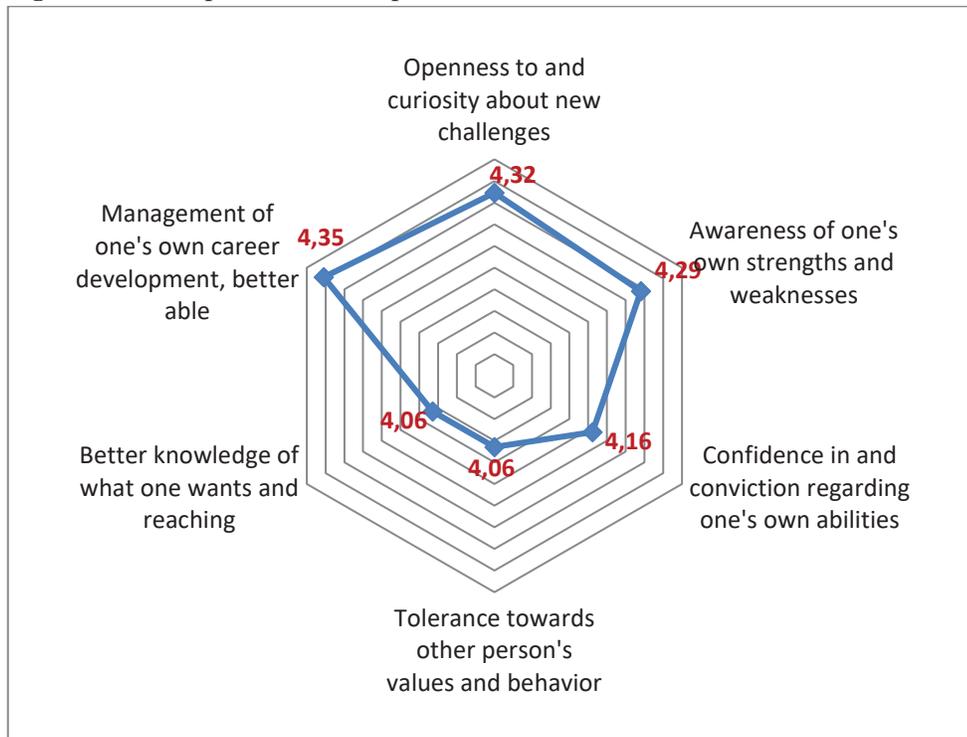
Source: Elaborated by authors based on survey results

Despite the fact that youngsters are those who use the Internet and digital technologies most of all and consider digital competences very important, as shown by the self-evaluation results, they are still lagging behind and think they have insufficient knowledge of digital competences such as:

- following information presented in hyper-linked and non-linear form;
- adapting search strategies to a specific search engine, application or device;
- creating different e-profiles according to my needs or targets (e.g. professionals, friends etc.).
- sharing contents and information using social networks and collaborative platforms (e.g. Google drive, Dropbox etc.) to collect feedback;
- knowledge of the latest digital technologies used by others and of their potential;
- exploitation technological potentials in order to represent and solve problems;
- gaining meaningful knowledge through interaction with digitally available resources.

In the survey of the **indirect stakeholders** were included 31 employers: business partners, public institutions, professional association and civil society organization. The following rating is based on the interviewed companies' outlook on the qualities an employee must possess (Figure 9).

**Figure 9. The importance of the personal characteristics for staff**



Source: *Elaborated* by authors based on survey results

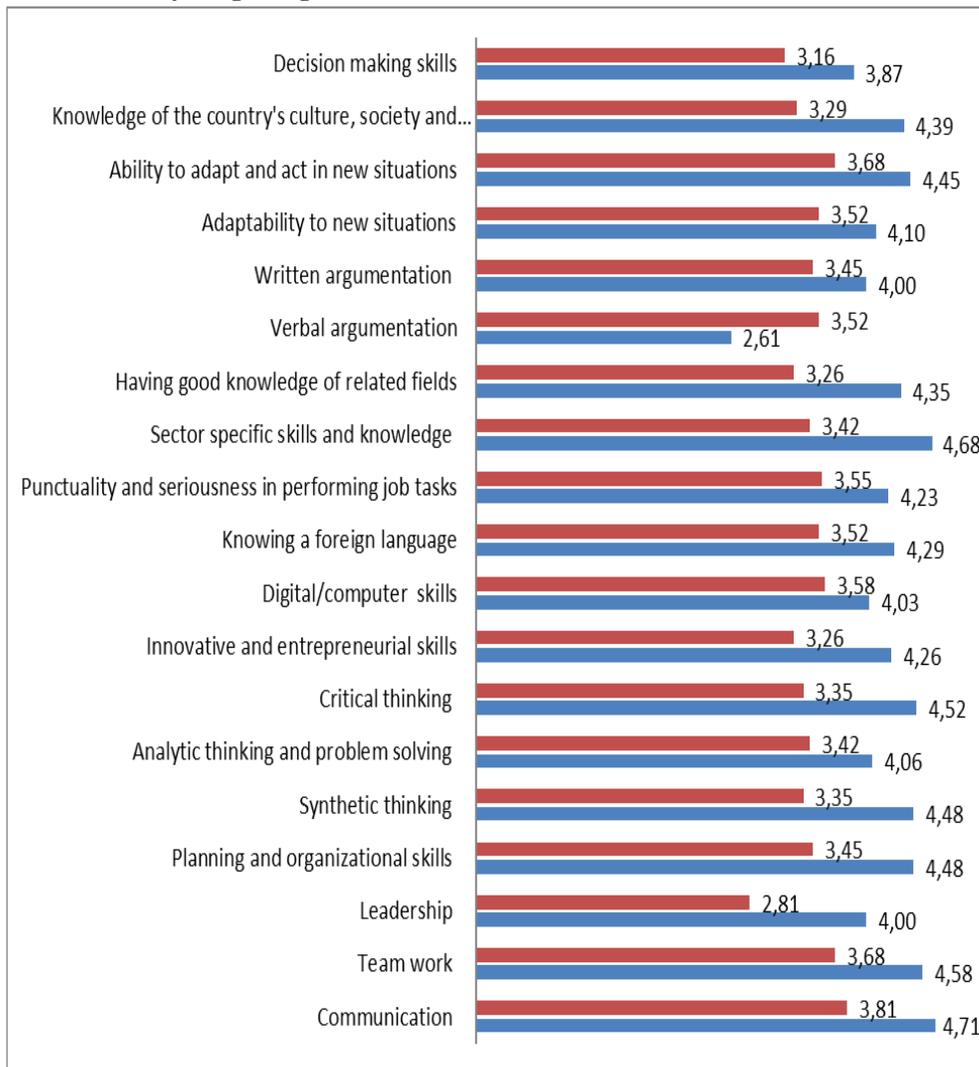
As has been noted, amongst the priorities is management of one’s own career development - 4,35, openness to new challenges – 4,32 and awareness of one’s own strengths and weaknesses – 4,29, while tolerance towards other people’s values and behaviour as well as a better knowledge of what one wants are considered less important.

The survey amongst employers remarked the fact that the most important qualities a higher educational institution graduate must possess is the ability to communicate, sector specific skills and knowledge, ability to work in a team, critical thinking.

However, students have hardships mastering these areas. There are aspects of entrepreneurial skills which must be improved.

Comparing employer’s expectations with satisfaction level regarding youngsters’ competences we can notice a few discrepancies (Figure 10).

**Figure 10. Comparison between employer’s satisfaction level and expectations related to the young HE graduates’ skills**



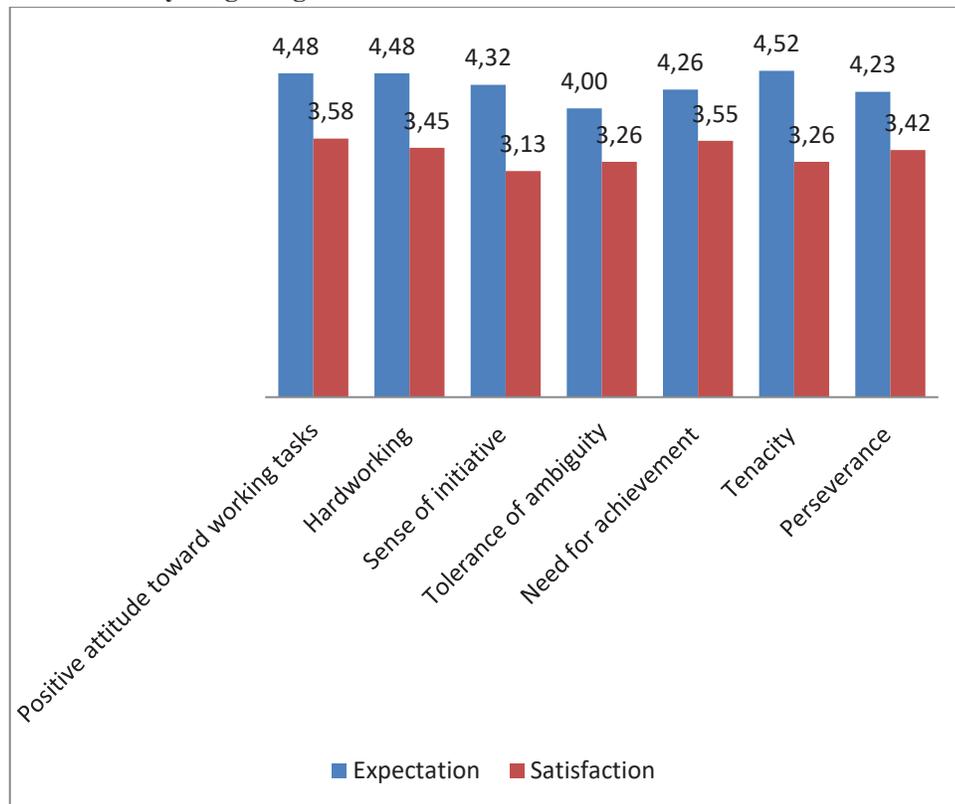
Source: Elaborated by authors based on survey results

In most of the cases, employers show a reduced level of satisfaction compared to their expectations regarding graduates' competences, except for verbal argumentation. The most significant difference can be noticed on such capacities as knowledge and field-related competences, critical thinking, leadership, etc.

It is noteworthy that innovative abilities and entrepreneurial spirit both fall short of local stakeholders' expectations.

Executing a comparative analysis between employers' perception of youngsters' attitude towards the job and their level of satisfaction, based on gained experience, it can be noticed that local stakeholders have expectations which considerably exceed graduates' real behaviour (Figure 11).

**Figure 11. Comparison between employer's satisfaction level and expectations related to the young HE graduates' attitudes**



**Source:** Elaborated by authors based on survey results

Being asked to appreciate the priority criteria when employing young specialists, employers emphasized the candidate's personal qualities, knowledge of foreign languages, field-related knowledge, and less the graduate's grades obtained throughout his studies and experience gained abroad.

## 5. Conclusions

Entrepreneurial education is one of Europe's most profitable branches to invest in, researches (European Union, 2012, b) show that pupils and students involved are from 3 to 6 times more likely to start-up their own business afterwards, at a particular point in their lives, compared to those who don't benefit of entrepreneurial education.

Recognizing the importance of education for enhancing graduates' entrepreneurial perceptions, the ambition of providing an education that stimulates ideas and entrepreneurship is currently included in the agenda of many HEIs.

The goal of entrepreneurship education is to help students build and acquire the skills, knowledge and attitudes to act in an entrepreneurial way.

The university should be structured in such a way that it stimulate and support entrepreneurial learning. Staffs should take an entrepreneurial approach to teaching in all departments, promoting diversity and innovation in teaching and learning.

Furthermore, the entrepreneurial studies should be compatible with the students' curricula. This means that the curriculum is flexible enough and these entrepreneurial studies can be included into the students' personal study plans.

Therefore, ASEM's aim is to become a research and educational university, its strengths being high performance research, active presence of entrepreneurial activities, including by expanding the programmes of continuing formation and supporting entrepreneurial activities of its students, as well as expanding the ASEM Business Incubators.

Thus we should use different actions in order to improve Entrepreneurial education in the ASEM.

Entrepreneurship curricula should propose an active, process-based, project centric, collaborative, experiential and multidisciplinary approach.

Pedagogical approaches that present similarities to the "entrepreneurial" paradigm are experiential learning, situated learning, problem/project-based learning, adult learning, cognitive apprenticeship and social constructivist learning.

Problem/project-based learning (PBL) is a new entrepreneurship education concept in the Republic of Moldova, thus the implementation would assume changing both the structure and curriculum content of Entrepreneurship. In regard to the structure, it must be designed in such a way that the modules would include the key competences of entrepreneurship, meanwhile being flexible and updated periodically. Implementing PBL will demand changing the teaching methodology because the students are not given anymore the right answer that they have to remember. Contrariwise they are stimulated to find solutions from real-life experience.

Given the analysis of the results of survey, we can state that the university pays attention to entrepreneurial education, applying various mechanisms to support the students, including offering them the experience of starting a business in the university incubators.

But some aspects can be improved:

- Revising the curricula in order to stimulate and develop entrepreneurial spirit and relevant abilities.

- Introducing entrepreneurial courses as a selective course in other programmes.
- Inter-university cooperation and elaborating shared/interdisciplinary programs in the field of entrepreneurship, especially for master degrees.
- Putting in practice student-centered learning methods, including PBL, the courses are focusing more on teaching through and for entrepreneurship rather than about entrepreneurship.
- Promoting stories of successful entrepreneurs, graduates of the university, amongst students.
- Engaging entrepreneurs as teachers or mentors.
- Intensifying collaboration with stakeholders: representatives of external organizations, representatives of state institutions, university alumnus and others, in order to organize public lessons, meetings and visits to the enterprises.

Entrepreneurship education should be very closely linked with business practice. Organizing extracurricular activities (workshops, debates, contests of business ideas, meetings with entrepreneurs etc.) we can contribute at sustaining and developing entrepreneurial abilities amongst students.

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## **A View on Education, Life and Attitudinal Aspects for Violence in Arab Sector of Israel**

Adelina STEFARTA<sup>1</sup>, Eman AYOUB<sup>2</sup>

### **Abstract**

*Violence provides its presence in a wide spectrum of everyday life. In these days we are witnesses of violence in high levels. Problems are not solved, and that gives us a look to that life accompanied with torture and suffering, although that logic leads a person that suffer to try to change their realty but that's mostly do not happens. It is clearly seen that family violence cases and couples difficult situation lead to a continuous suffering and daily violence. This research describes people's attitude for violence of Arab Sector of Israel.*

Keywords: education, violence, families, Arab Sector, conflicts, women, men, kids.

JEL Code: I21

### **1. Introduction**

The contemporary world shows the increased interest for the problem of space of familial life. The actual specific evolutions concerning the violence in this space oblige the majority of democratic states to assume the responsibilities for each citizen, even in the "closed door" spaces. There is a specific perception of the problem on local level, because general population sees it as being a private problem because it speaks about the internal and informal character of the relations between aggressor and the victim in family (domestic) space. The people that suffered domestic violence should learn to teach themselves, to acquire social experiences and knowledge on their own, to learn how to develop their relationships with other people on the basis of confidence and partnership and be gender sensitive, to learn to collaborate, to make a team successfully, and to learn how to exchange generously their experiences with others.

### **2. Literature review**

The violence is considered to be an verbal of physical action made with an intention by one family's member against another family's member. This action provoces physical, psycho-emotional, sexual suffering and material damages. The violence is also considered to be an action that stops a woman to realize her fundamental rights and freedoms. Domestic violence is considered to have 5 aspects: pain/suffering,

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<sup>1</sup> Adelina STEFARTA is PhD, associated professor, scientific supervisor, ULIM, Chişinău, Republic of Moldova. E-mail: adelinasmd@gmail.com.

<sup>2</sup> Eman AYOUB is a coordinator of student's health service in special education, Israel. PhD student, ULIM, Chişinău, Republic of Moldova. E-mail: eman.ayo64@gmail.com.

an action made on discriminatory basis with an intention to punish, to intimidate, to oppress a person. The theories of violence are classified in 4 big concepts:

- instinctual theories,
- reactive theories,
- theories of learned behavior,
- cognitive theories.

The violence also is researched from different perspectives:

- a) psychological, with 4 models (physiological/individual; psycho-pathological; the theory of social learning; eco-systemic model.
- b) sociological: the theory of social systems; feminist theories; the theory of social exchange and theory of social control; micro-political theory; socio-cultural theory.
- c) integrative perspective of domestic violence: psycho-social model; multi-factorial model.

The conditions that generate the familial violence are:

- educational errors of environment;
- gender and social inequality (including economical one);
- socio-economical errors;
- increasing level of social permissivity;
- increasing level of mental disorders;
- the lacunar view on others rights for personal life and right to do mistakes;
- the habit to use power for getting a goal;
- consideration of family problems and family violence as a social tabu.

The literature review showed that no one explanation is complete because all of them are researching separate aspects of the phenomena of violence: focusing on a person, focusing on external premises, cultural influences, learned models transmitted from parents to kids and so on.

There is also a small researches of (family) violence on Arab Sector of Israel, that drives the author to the necessity to study this phenomena according sexual identification, age, education, family status, the living environment, working conditions and life satisfaction of women and men of this geographical area.

### **3. Data and methodology**

There was applied a questionnaire for 120 women and 120 men of different ages: 40 women and 40 men of age between 20-40; 40 women and 40 men of age between 41-60; 40 women and 40 men of age between 61+. There was found the women and the men perception of violence according the respondents age, education, family status, living environment, working condition, income, living condition, financial situation, meal and alimentation, satisfaction of actual financial and material conditions, the level of your education and professional instruction and professional career.

Figure 1. The age distribution of respondents (women and men 20-40 y.o.)

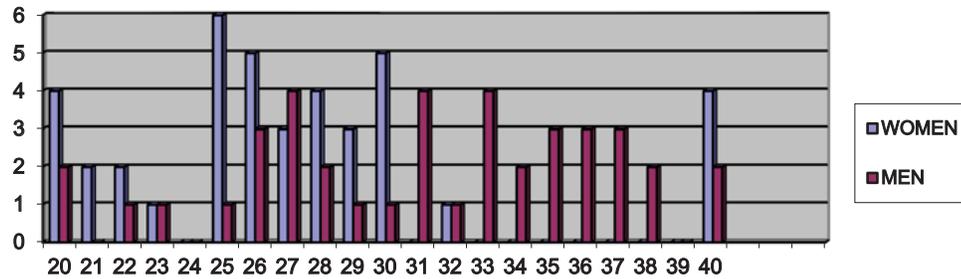


Figure 2. The age distribution of respondents (women and men 41-60 y.o.)

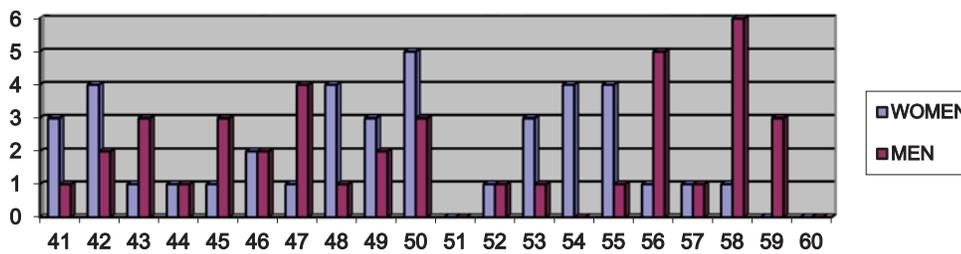


Figure 3. The age distribution of respondents (women and men 61+ y.o.)

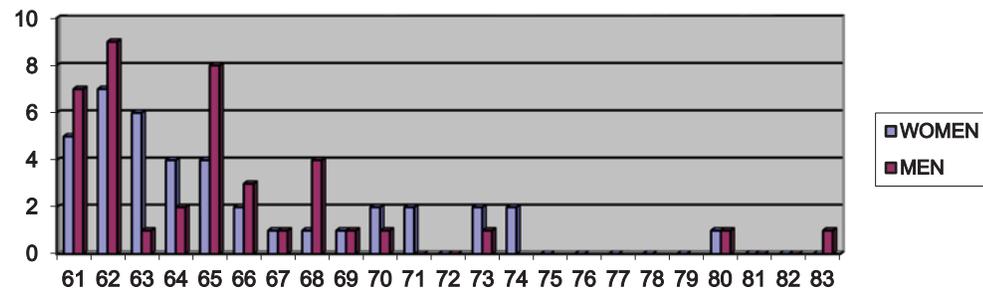


Figure 4. The family status of respondents (women and men 20-40 y.o.)

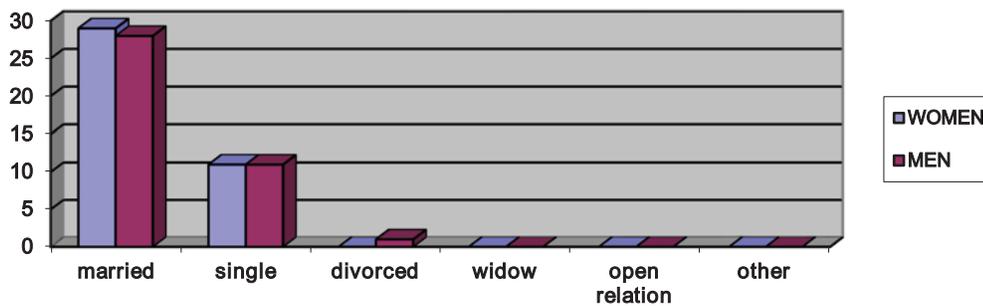


Figure 5. The family status of respondents (women and men 41-60 y.o.)



Figure 6. The family status of respondents (women and men 61+ y.o.)

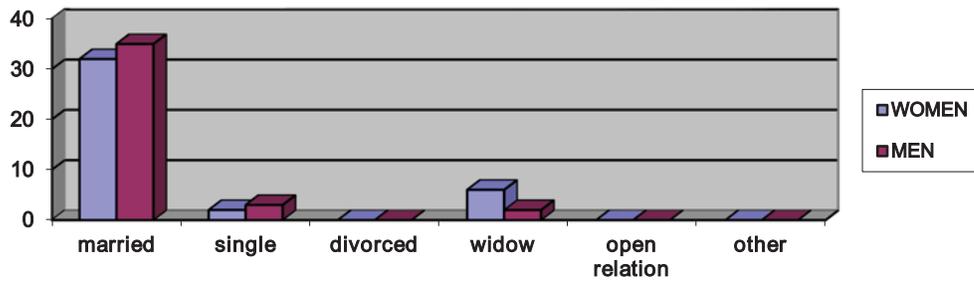


Figure 7. The living environment of respondents (women and men 20-40 y.o.)

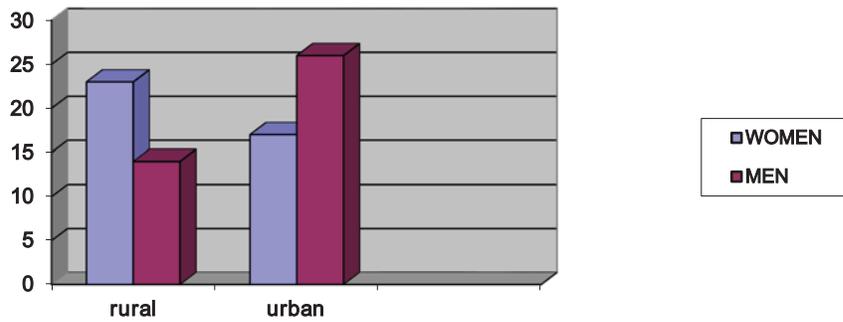
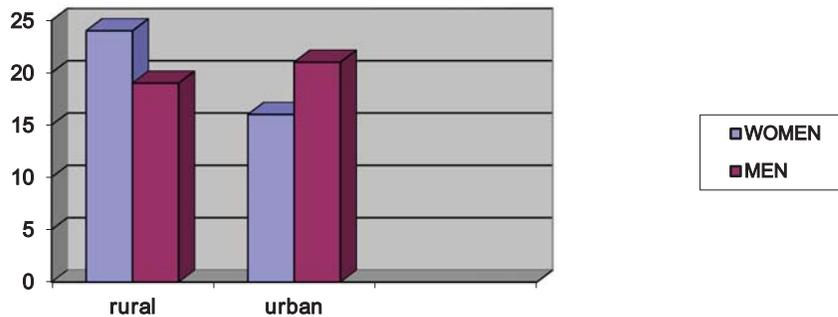
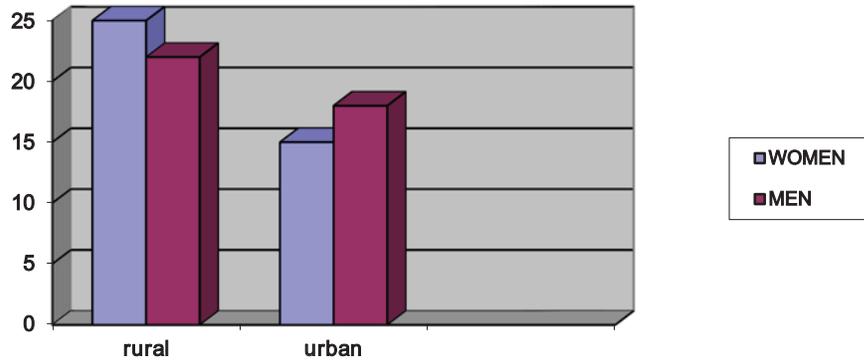


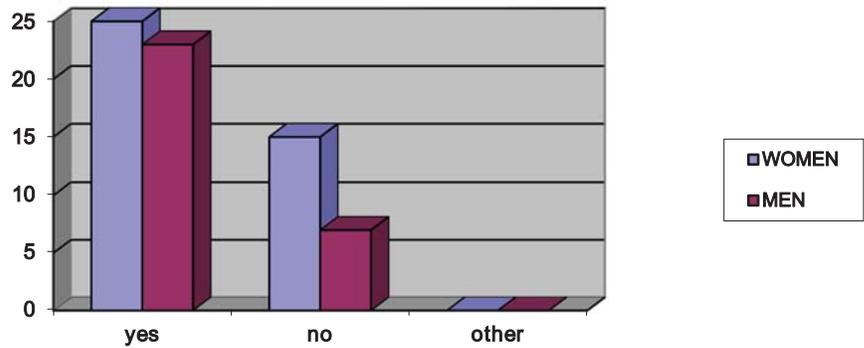
Figure 8. The living environment of respondents (women and men 41-60 y.o.)



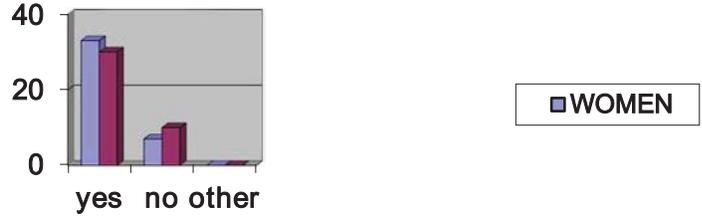
**Figure 9. The living environment of respondents (women and men 61+ y.o.)**



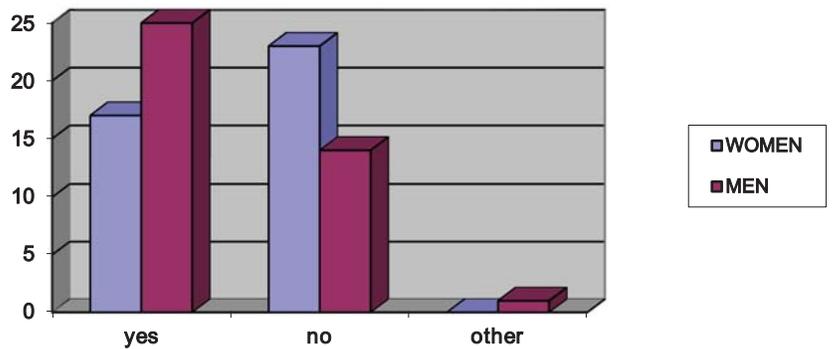
**Figure 10. The working condition of respondents (women and men 20-40 y.o.)**



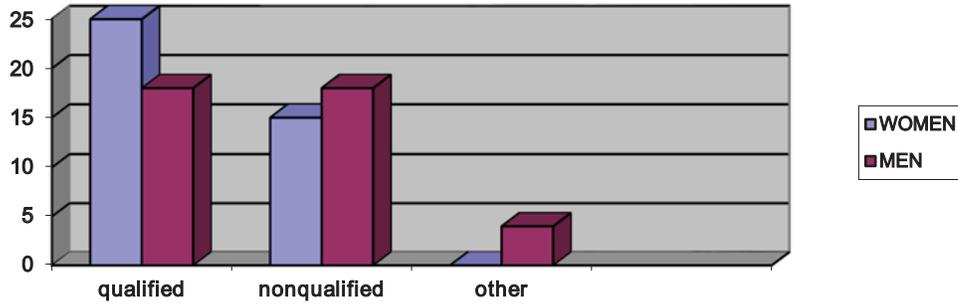
**Figure 11. The working condition of respondents (women and men 41-60 y.o.)**



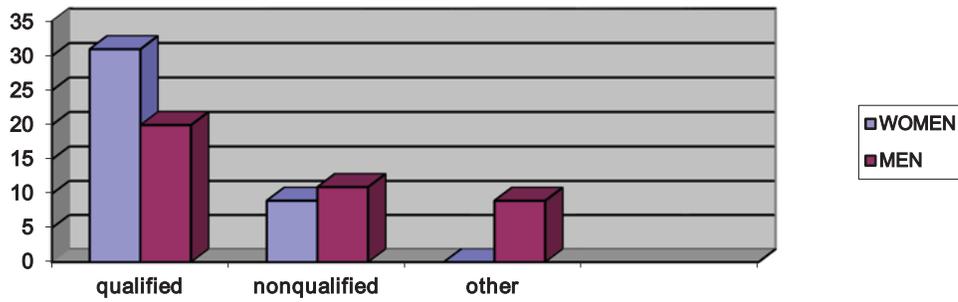
**Figure 12. The working condition of respondents (women and men 61+ y.o.)**



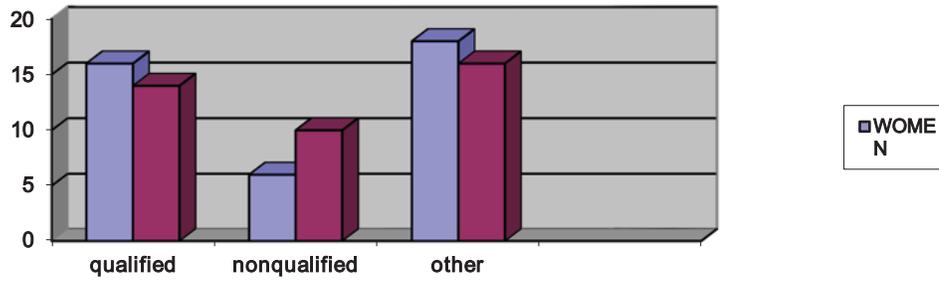
**Figure 13. The condition work of respondents (women and men 20-40 y.o.)**



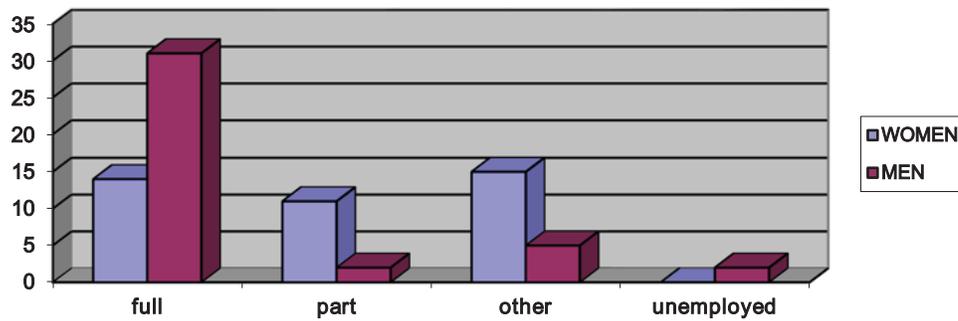
**Figure 14. The condition work of respondents (women and men 41-60 y.o.)**



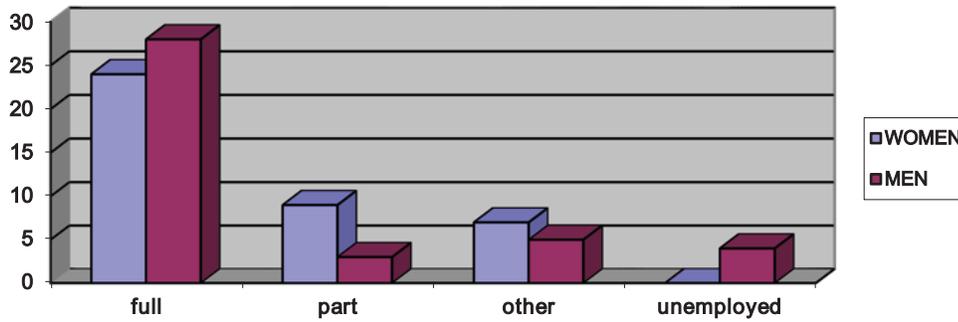
**Figure 15. The condition work of respondents (women and men 61+ y.o.)**



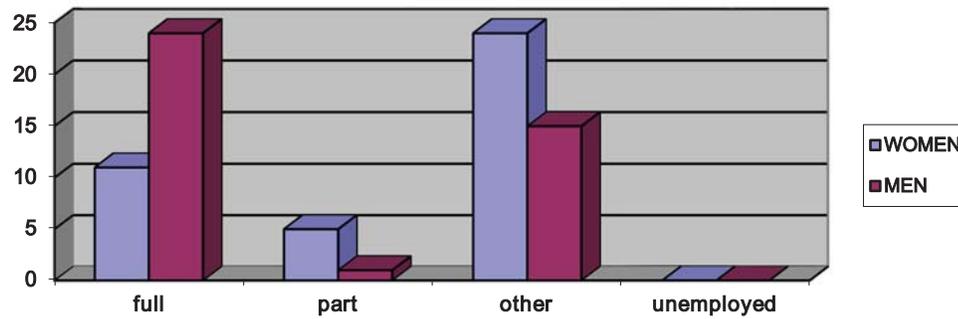
**Figure 16. The condition work (full-, part-time) of respondents (women and men 20-40 y.o.)**



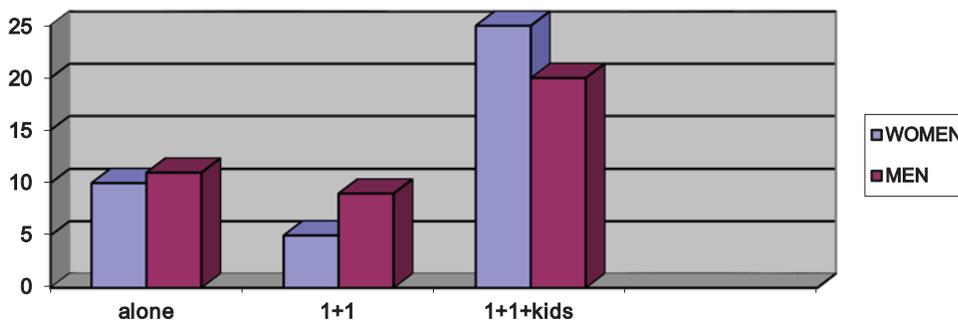
**Figure 17. The condition work (full-, part-time) of respondents (women and men 41-60 y.o.)**



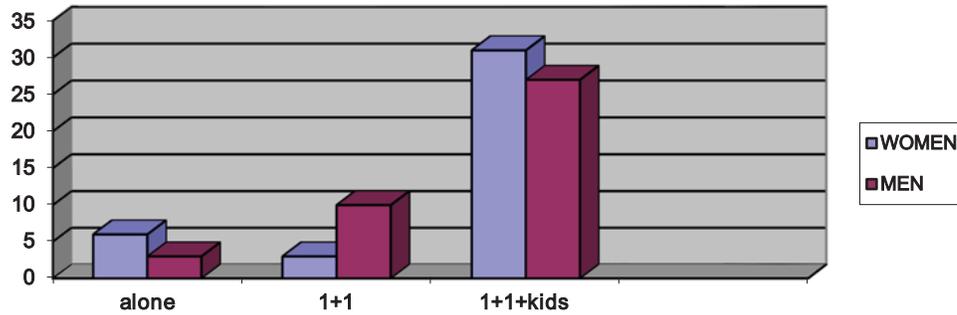
**Figure 18. The condition work (full-, part-time) of respondents (women and men 61+ y.o.)**



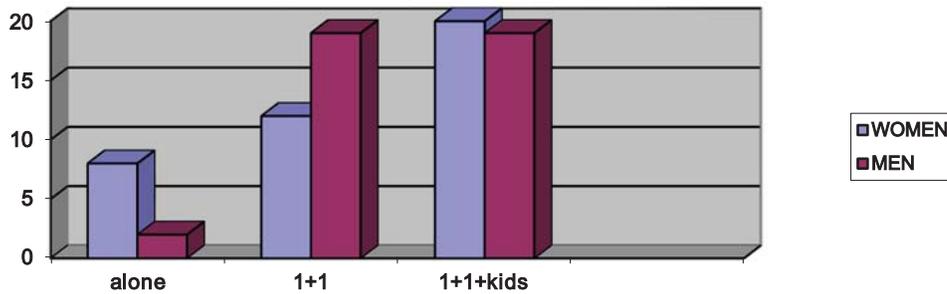
**Figure 19. The family composition of respondents (women and men 20-40 y.o.)**



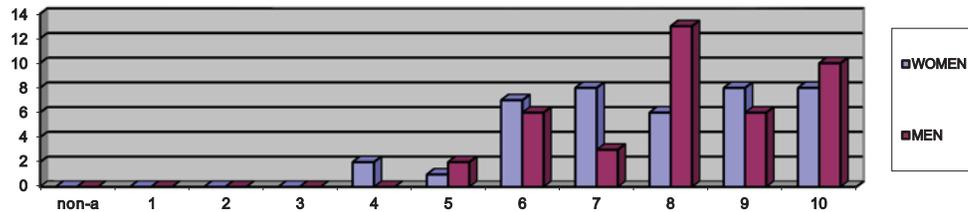
**Figure 20. The family composition of respondents (women and men 41-60 y.o.)**



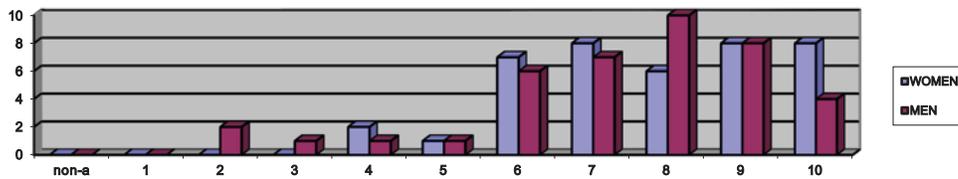
**Figure 21. The family composition of respondents (women and men 61+ y.o.)**



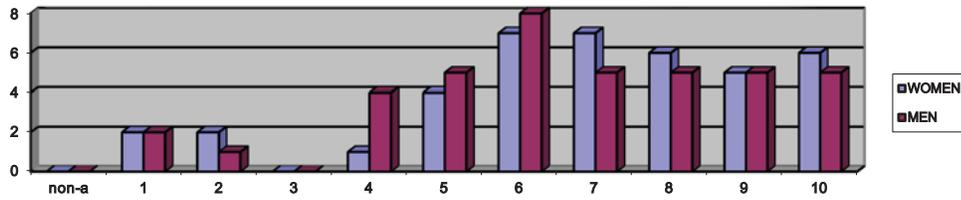
**Figure 22. The satisfaction of level of education and professional instruction of respondents (women and men 20-40 y.o.)**



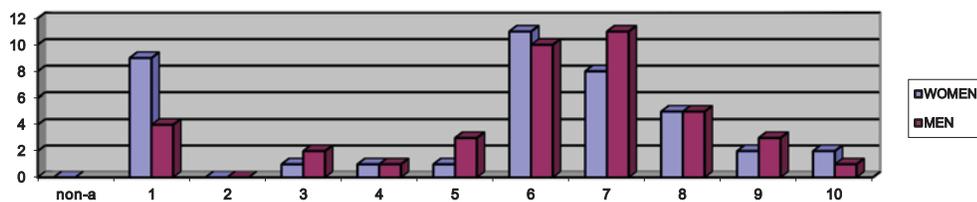
**Figure 23. The satisfaction of level of education and professional instruction of respondents (women and men 41-60 y.o.)**



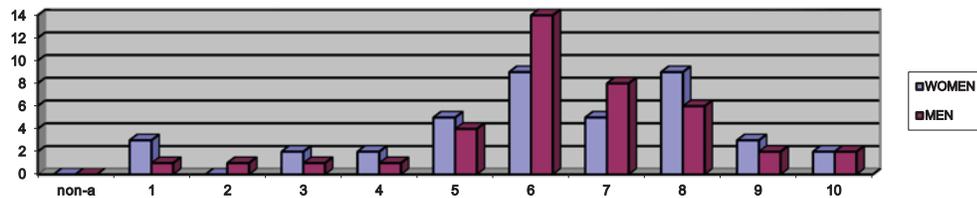
**Figure 24. The satisfaction of level of education and professional instruction of respondents (women and men 61+ y.o.)**



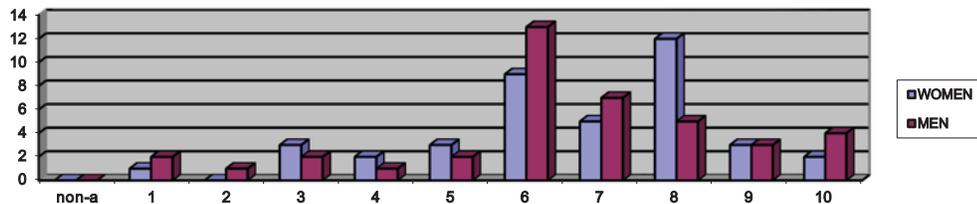
**Figure 25. The level of satisfaction of respondents for income they have (women and men 20-40 y.o.)**



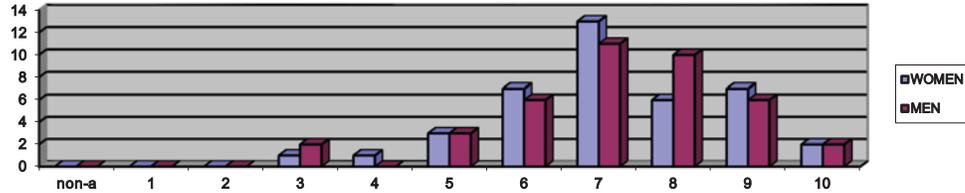
**Figure 26. The level of satisfaction of respondents for income they have (women and men 41-60 y.o.)**



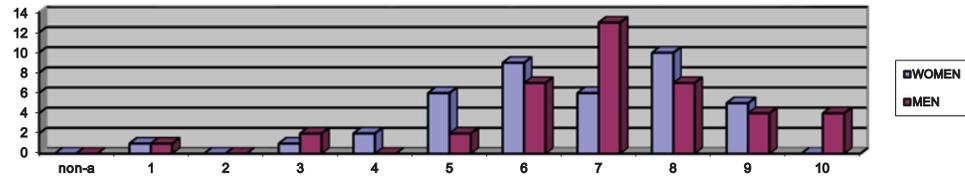
**Figure 27. The level of satisfaction of respondents for income they have (women and men 61+ y.o.)**



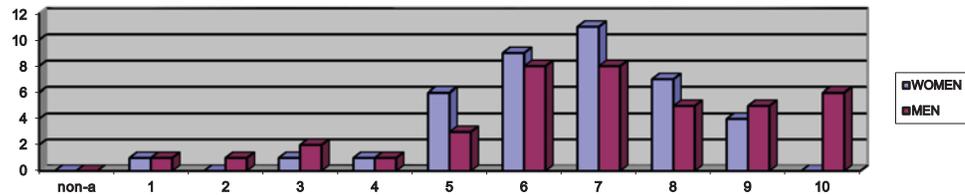
**Figure 28. The level of satisfaction of respondents for living conditions (women and men 20-40 y.o.)**



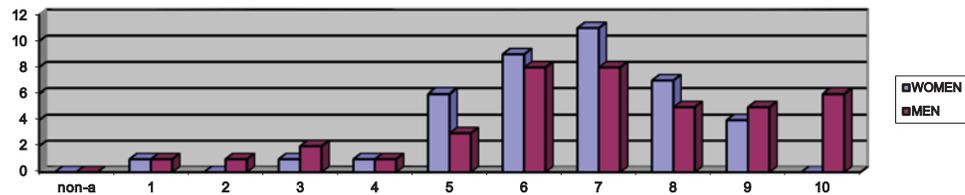
**Figure 29. The level of satisfaction of respondents for living conditions (women and men 41-60 y.o.)**



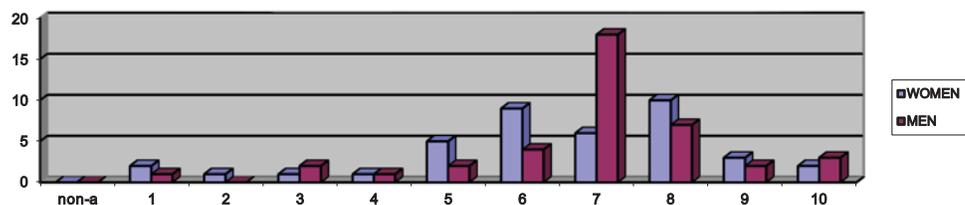
**Figure 30. The level of satisfaction of respondents for living conditions (women and men 61+ y.o.)**



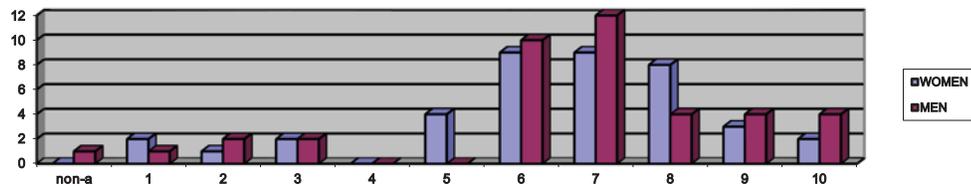
**Figure 31. The level of satisfaction of respondents for financial situation (women and men 20-40 y.o.)**



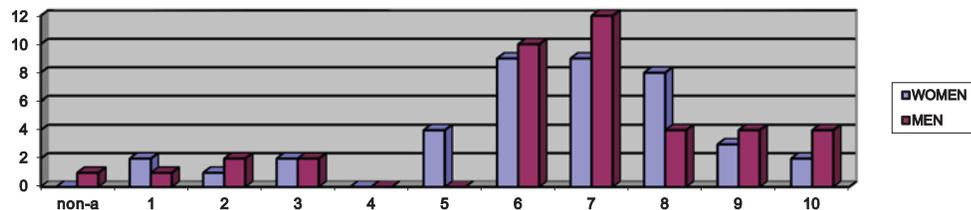
**Figure 32. The level of satisfaction of respondents for financial situation (women and men 41-60 y.o.)**



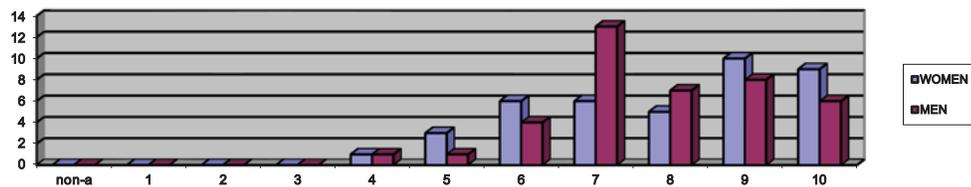
**Figure 33. The level of satisfaction of respondents for financial situation (women and men 61+ y.o.)**



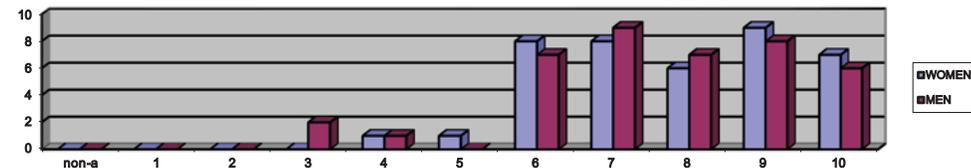
**Figure 34. The level of satisfaction of respondents for meal and alimentation (women and men 20-40 y.o.)**



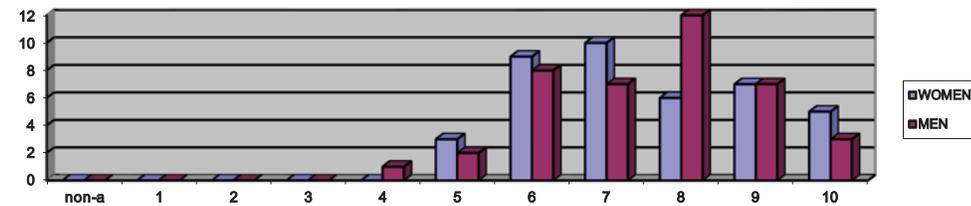
**Figure 35. The level of satisfaction of respondents for meal and alimentation (women and men 41-60 y.o.)**



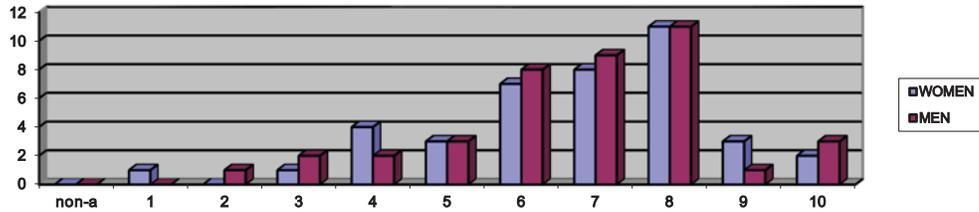
**Figure 36. The level of satisfaction of respondents for meal and alimentation (women and men 61+ y.o.)**



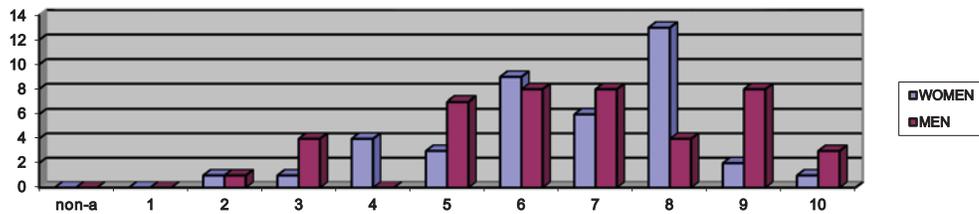
**Figure 37. The level of satisfaction of respondents for actual financial and material conditions (women and men 20-40 y.o.)**



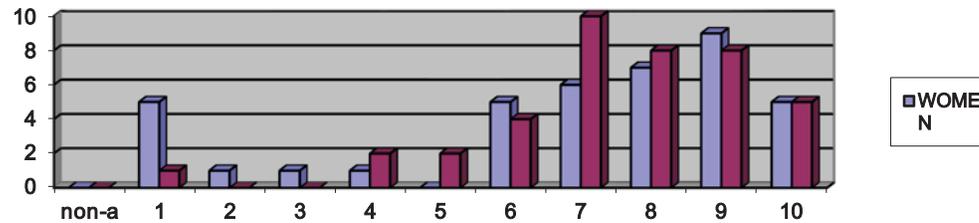
**Figure 38. The level of satisfaction of respondents for actual financial and material conditions (women and men 41-60 y.o.)**



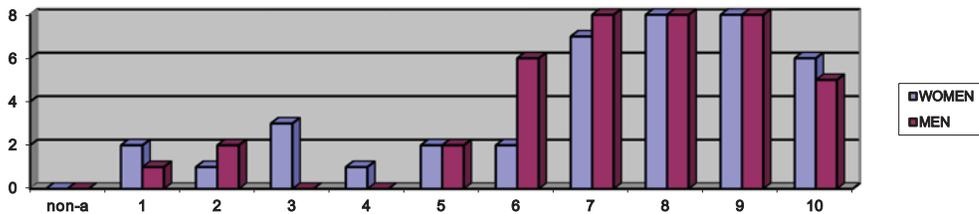
**Figure 39. The level of satisfaction of respondents for actual financial and material conditions (women and men 61+ y.o.)**



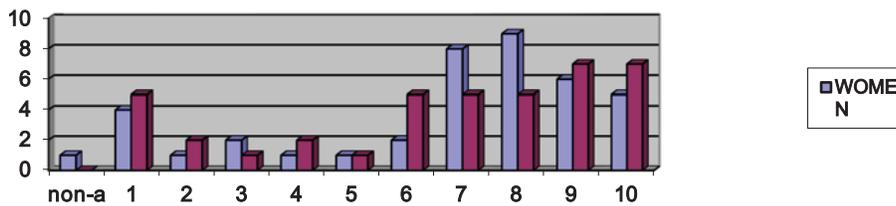
**Figure 40. The level of satisfaction of respondents for professional careers (women and men 20-40 y.o.)**



**Figure 41. The level of satisfaction of respondents for professional careers (women and men 41-60 y.o.)**



**Figure 42. The level of satisfaction of respondents for professional careers (women and men 61+ y.o.)**



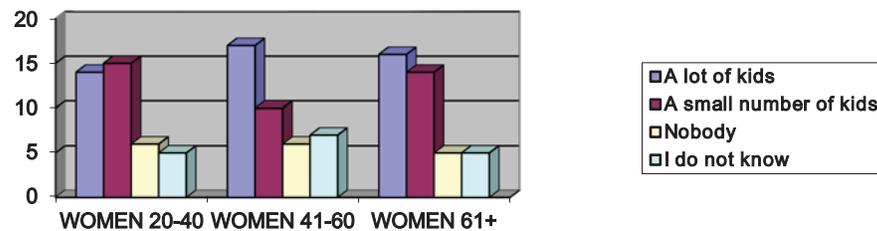
#### 4. The Model and Findings

The questionnaire was applied on 240 respondents: 120 women and 120 men of different ages (40 women and 40 men of age between 20-40; 40 women and 40 men of age between 41-60; 40 women and 40 men of age between 61+).

The respondents were given some situations and they were asked about their opinions on these situations. First situation was about a kid named Peter that was humiliated with different words by his parents. We asked the respondents if, in their opinion, there are:

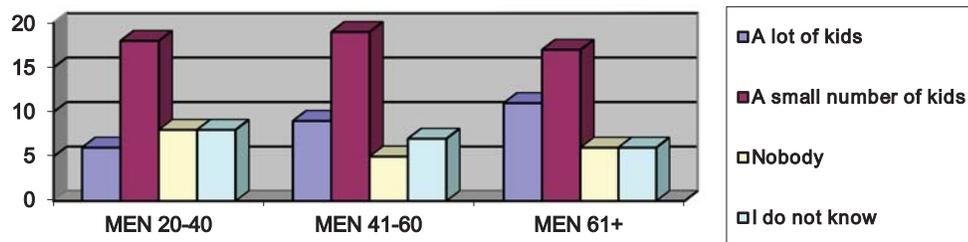
- A. A lot of kids.
- B. A small number of kids.
- B. Nobody.
- Г. I do not know.

**Figure 43. The answers of respondents for situation nr. 1 for kids living in a similar situation (women)**



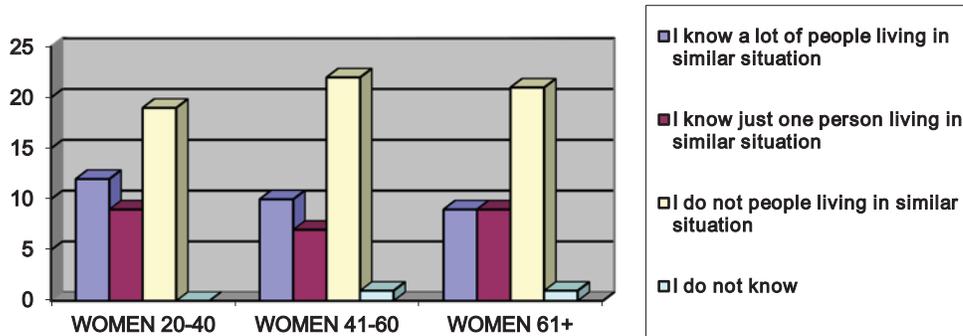
The answers for the situation nr. 1 showed that there are almost equal answers for option nr.1 (“a lot of kids”) and option nr. 2 (“a small number of kids”) for the situation when a kid is humiliated with different words by his parents: 35,0% and 37,5% for women of age 20-40; 42,5 % and 25,0% for women of age of 41-60 and 40,0% and 35,0% for women of age 61+. The rate of undecided un-known answers and also almost equal: 15,0% and 12,5 % for women of age 20-40; 17,5% and 15,0% for women of age 41-60; 12,5% and 12,5% for women of age 61+.

**Figure 44. The answers of respondents for situation nr. 1 for kids living in a similar situation (men)**



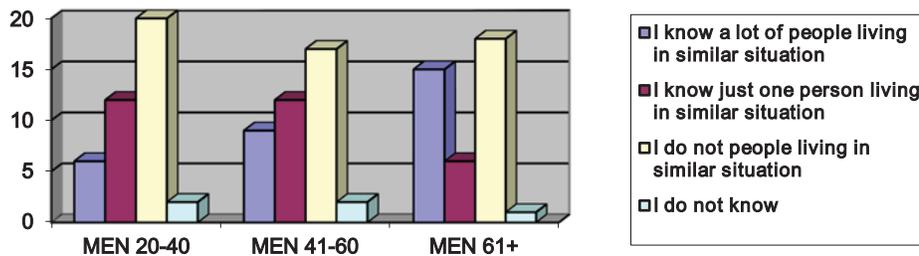
The answers for the situation nr. 1 showed that there is the biggest part of opinions for the option nr. 2 (“*a small number of kids*”) for the situation when a kid is humiliated with different words by his parents. Men consider that there is just a small part of kids that are bad-treated by their parents: option nr. 1 (“*a lot of kids*”) – 15,0% for men of age 20-40; 22,5% for men age of 41-60; 27,5% of men of age 61+; option nr.2 (“*a small number of kids*”) – 45,0% men of age 20-40; 47,5% of men of age 41-60; 42,5% for men of age 61+. The answers for the option nr.3 (“*nobody*”) and option nr. 4 (“*I do not know*”) are almost equal: 20,0% and 20,% for men of age 20-40; 12,5 and 17,5% for men of age 41-60; 15,0% and 15,0% for men of age 61+.

**Figure 45. The answers of respondents for situation nr. 1 for knowing kids/somebody living in a similar situation (women)**



In the case of situation nr. 1 for knowing kids/somebody living in a similar situation the answers' distributions goes to the option nr. 3 (“*I do not know people living in similar situation*”): 47,5% for women of age 20-40; 55,0% for women of age 41-60; 52,5% for women of age 61+. The answers distribution for the option nr. 1 (“*I know a lot of people living in similar situation*”) and option nr. 2 (“*I know just one person living in similar situation*”) is almost equal: 30,0% and 22,5% for women of age 20-40; 25,0% and 17,5 % for women of age 41-60; 22,5% and 22,5 % for women of age 61+.

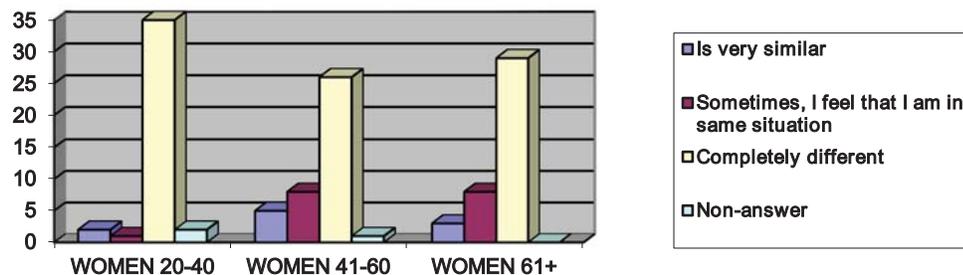
**Figure 46. The answers of respondents for situation nr. 1 for knowing kids/somebody living in a similar situation (men)**



In the case of situation nr. 1 for knowing kids/somebody living in a similar situation the men answers' distributions goes also to the option nr. 3 (“*I do not know people living in similar situation*”): 50,0% for men of age 20-40; 42,5% for men of age

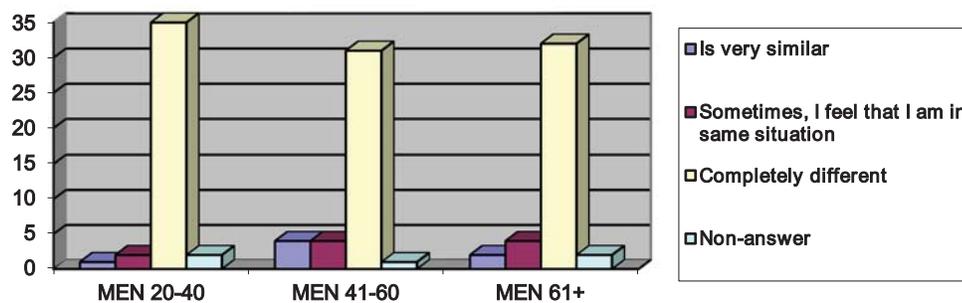
41-60; 45,0% for men of age 61+. The answers distribution for the option nr. 1 (“*I know a lot of people living in similar situation*”) and option nr. 2 (“*I know just one person living in similar situation*”) is: 15,0% and 30,0% for men of age 20-40; 22,5% and 30,0% for men of age 41-60; 37,5% and 15,0% for men of age 61+. But, here, there is a small number of undecided answers: 5,0% for men of age 20-40; 5,0% of men of age 41-60 and 2,5% of men of age 61+.

**Figure 47. The answers of respondents for situation nr. 1 as similar to their family’s situation (women)**



In the case of situation nr. 1 where the situation is recognized *as similar to their family’s situation*, the respondents opinions’ distribution when almost to the option nr. („*Completely different*”): 87,5% for women of age 20-40; 65,0% for women of age 41-60; 72,5% for women of age 61+. The answers for options nr. 1 („*Is very similar*”), nr.2 („*Sometimes, I feel that I am in same situation*”) and nr. 4 („*non-answers*”) are different: 5,0%, 2,5% and 5,0% for women of age 20-40; 12,5%, 20,0% and 2,5% for women of age 41-60; 7,5%, 20,0% and 0% for women of age 61+.

**Figure 48. The answers of respondents for situation nr. 1 as similar to their family’s situation (men)**



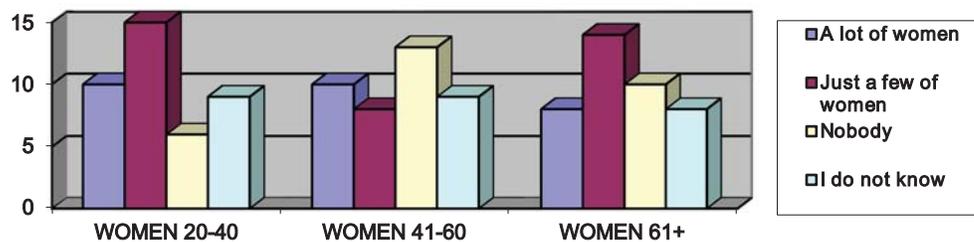
In the case of situation nr. 1 where the situation is recognized *as similar to their family’s situation*, the respondents opinions’ distribution when almost to the option nr. („*Completely different*”): 87,5% for men of age 20-40; 77,5% for men of age 41-60; 80,0% for men of age 61+. The answers for options nr. 1 („*Is very similar*”), nr.2 („*Sometimes, I feel that I am in same situation*”) and nr. 4 („*non-answers*”) are different:

2,5%, 5,0% and 5,0% for men of age 20-40; 10,0%, 10,0% and 2,5% for men of age 41-60; 5,0%, 10,0% and 5,0% for men of age 61+.

Another given situation (nr. 2) was about a husband that beats his wife. We asked the respondents if, in their opinion, in this situation there are:

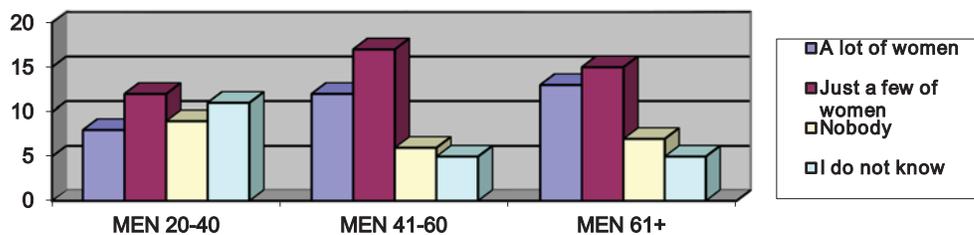
- A. A lot of women.
- B. Just a few of women.
- B. Nobody.
- Γ. I do not know.

**Figure 49. The answers of respondents for situation nr. 2 as similar to their family's situation (women)**



For given situation nr. 2 the women opinion distribution is different: the option nr. 1 (“a lot of women”) – 25,0 % for women of age 20-40; 25,0 % for women of age 41-60; 20,0% of women of age 61+; nr. 2 (“just a few of women”) – 37,5% for women of age 20-40; 20,0 % for women of age 41-60; 35,0% for women of age 61+; the option nr. 3 (“nobody”) – 15,0% for women of age 20-40; 32,5 % for women of age 41-60; 25,0% for women of age 61+ ; option nr. 4 (“I do not know”) – 22,5% for women of age 20-40; 22,5% for women of age 41-60; 20,0% for women of age 61+.

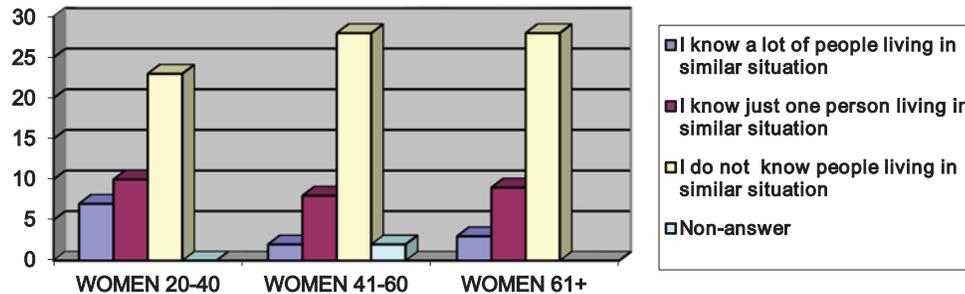
**Figure 50. The answers of respondents for situation nr. 2 as similar to their family's situation (men)**



For given situation nr. 2 the men opinion distribution is different: the option nr. 1 (“a lot of women”) – 20,0% for men of age 20-40; 30,0% for men of age 41-60; 32,5% of men of age 61+; nr. 2 (“just a few of women”) – 30,0 % for men of age 20-40; 42,5% for men of age 41-60; 37,5% for men of age 61+; the option nr. 3 (“nobody”) – 22,5 % for men of age 20-40; 15,0% for men of age 41-60; 17,5% for men of age 61+ ; option

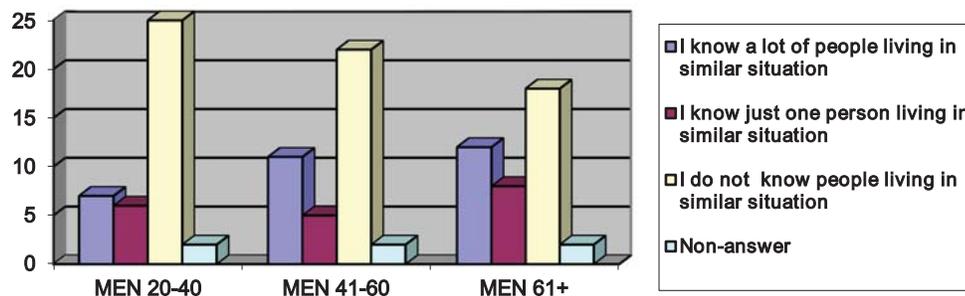
nr. 4 (“I do not know”) – 27,5 % for men of age 20-40; 12,5 % for men of age 41-60; 12,5 % for men of age 61+.

**Figure 51. The answers for situation nr. 2 as being similar with somebody known by the respondents (women)**



For given situation nr. 2 when the situation is recognized *as being similar with somebody known by the respondents* the women opinion distribution is different: the option nr. 1 (“I know a lot of people living in similar situation”) – 17,5% for women of age 20-40; 5,0 % for women of age 41-60; 7,5% of women of age 61+; nr. 2 (“I know just one person living in similar situation”) – 25,0 % for women of age 20-40; 20,0 % for women of age 41-60; 22,5% for women of age 61+; the option nr. 3 (“I do not know people living in similar situation”) – 57,5 % for women of age 20-40; 70,0 % for women of age 41-60; 70,0% for women of age 61+ ; option nr. 4 (“non-answer”) – 0 % for women of age 20-40; 5,0 % for women of age 41-60; 0 % for women of age 61+.

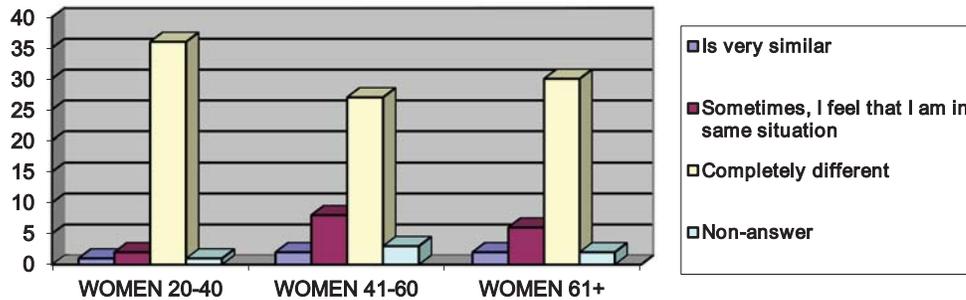
**Figure 52. The answers for situation nr. 2 as being similar with somebody known by the respondents (men)**



For given situation nr. 2 when the situation is recognized *as being similar with somebody known by the respondents* the men opinion distribution is different: the option nr. 1 (“I know a lot of people living in similar situation”) – 17,5% for men of age 20-40; 27,5% for men of age 41-60; 30,0% of men of age 61+; nr. 2 (“I know just one person living in similar situation”) – 15,0% for men of age 20-40; 12,5% for men of age 41-60; 20,0% for men of age 61+; the option nr. 3 (“I do not know people living in similar situation”) – 62,5 % for men of age 20-40; 55,0% for men of age 41-60; 45,0% for men

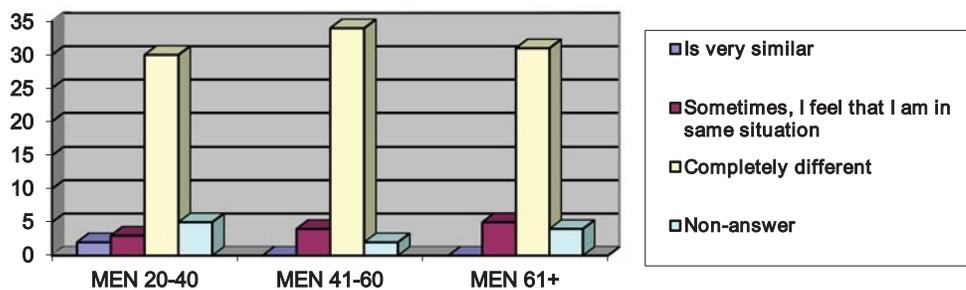
of age 61+ ; option nr. 4 (“*non-answer*”) – 5,0% for men of age 20-40; 5,0 % for men of age 41-60; 5,0 % for men of age 61+.

**Figure 53. The answers of respondents for situation nr. 2 as similar to their family (women)**



For given situation nr. 2 when the situation is recognized *as being similar to their family* the women opinion distribution is different: the option nr. 1 (“*Is very similar*”) – 2,5% for women of age 20-40; 5,0% for women of age 41-60; 5,0% of women of age 61+; nr. 2 (“*Sometimes, I feel that I am in same situation*”) – 5,0% for women of age 20-40; 20,0 % for women of age 41-60; 15,0 % for women of age 61+; the option nr. 3 (“*Completely different*”) – 90,0 % for women of age 20-40; 67,5 % for women of age 41-60; 75,0% for women of age 61+ ; option nr. 4 (“*non-answer*”) – 2,5% for women of age 20-40; 7,5% for women of age 41-60; 5,0 % for women of age 61+.

**Figure 54. The answers of respondents for situation nr. 2 as similar to their family (men)**

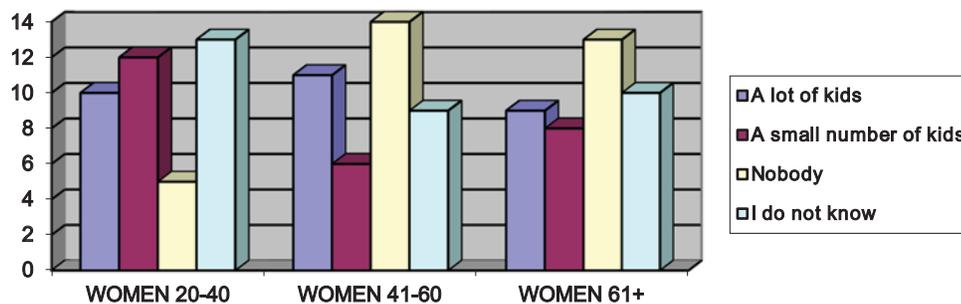


For given situation nr. 2 when the situation is recognized *as being similar to their family* the men opinion distribution is different: the option nr. 1 (“*Is very similar*”) – 5,0 % for men of age 20-40; 0 % for men of age 41-60; 0 % of men of age 61+; nr. 2 (“*Sometimes, I feel that I am in same situation*”) – 7,5% for men of age 20-40; 10,0% for men of age 41-60; 12,5% for men of age 61+; the option nr. 3 (“*Completely different*”) – 75,0% for men of age 20-40; 85,0% for men of age 41-60; 77,5% for men of age 61+ ; option nr. 4 (“*non-answer*”) – 12,5% for men of age 20-40; 5,0% for men of age 41-60; 10,0% for men of age 61+.

Given situation nr. 3 was about parents that beat their kid and they do not clarify or explain the reasons they do this. We asked the respondents if, in their opinion, in this situation there are:

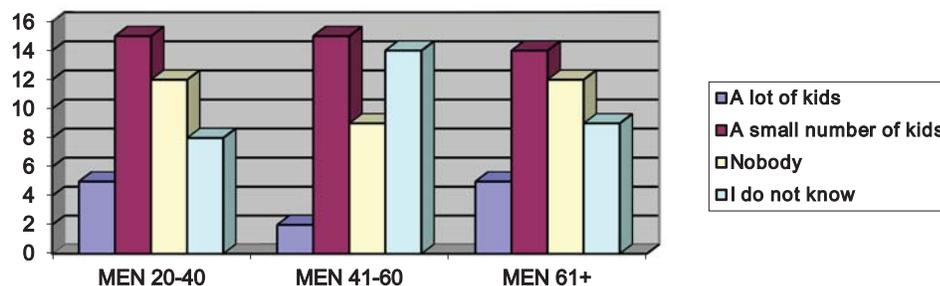
- A. A lot of kids.
- B. A small number of kids.
- B. Nobody.
- Γ. I do not know

**Figure 57. The answers for situation nr. 3 for kids living in a similar situation (women)**



For given situation nr. 3 about parents that beat their kid and they do not clarify or explain the reasons they do this the women opinion distribution is: the option nr. 1 (“A lot of kids”) – 25,0% for women of age 20-40; 27,5% for women of age 41-60; 22,5% of women of age 61+; nr. 2 (“A small number of kids”) – 30,0% for women of age 20-40; 15,0% for women of age 41-60; 20,0% for women of age 61+; the option nr. 3 (“Nobody”) – 12,5% for women of age 20-40; 35,0% for women of age 41-60; 32,5% for women of age 61+ ; option nr. 4 (“I do not know”) – 32,5% for women of age 20-40; 22,5% for women of age 41-60; 25,0% for women of age 61+.

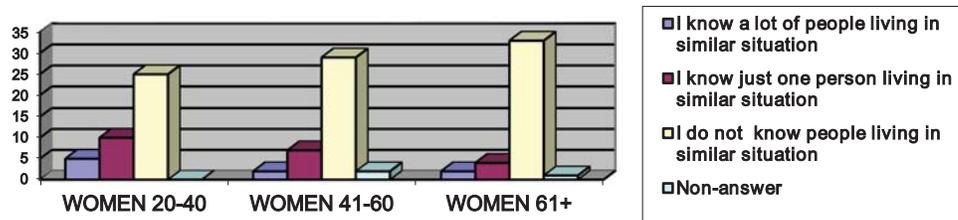
**Figure 58. The answers for situation nr. 3 for kids living in a similar situation (men)**



For given situation nr. 3 about parents that beat their kid and they do not clarify or explain the reasons they do this the men opinion distribution is: the option nr. 1 (“A lot of kids”) – 12,5% for men of age 20-40; 5,0% for men of age 41-60; 12,5% of men of age 61+; nr. 2 (“A small number of kids”) – 37,5% for men of age 20-40; 37,5% for

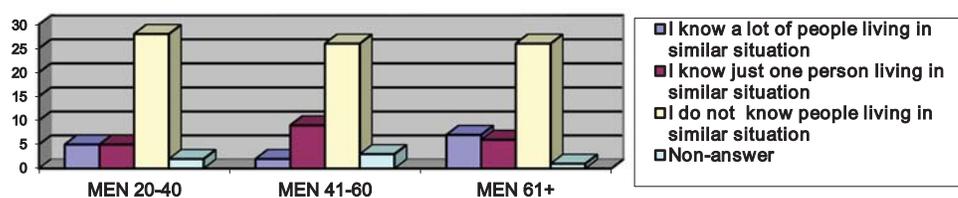
men of age 41-60; 35,0% for men of age 61+; the option nr. 3 (“*Nobody*”) – 30,0% for men of age 20-40; 22,5% for men of age 41-60; 30,0% for men of age 61+ ; option nr. 4 (“*I do not know*”) – 20,0% for men of age 20-40; 35,0% for men of age 41-60; 22,5% for men of age 61+.

**Figure 59. The answers for situation nr. 3 for knowing kids/somebody living in a similar situation (women)**



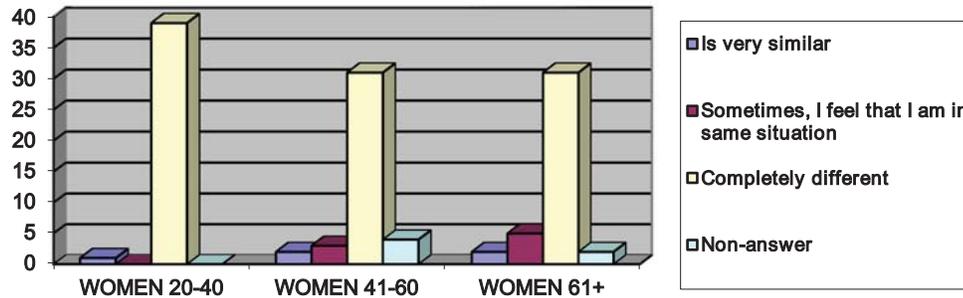
For given situation nr. 3 for knowing kids/somebody living in a similar situation the women opinion distribution is: the option nr. 1 (“*I know a lot of people living in similar situation*”) – 12,5% for women of age 20-40; 5,0% for women of age 41-60; 5,0% of women of age 61+; nr. 2 (“*I know just one person living in similar situation*”) – 25,0% for women of age 20-40; 17,5% for women of age 41-60; 10,0% for women of age 61+; the option nr. 3 (“*I do not know people living in similar situation*”) – 62,5% for women of age 20-40; 72,5% for women of age 41-60; 82,5% for women of age 61+ ; option nr. 4 (“*Non-answer*”) – 0% for women of age 20-40; 5,0% for women of age 41-60; 2,5% for women of age 61+.

**Figure 60. The answers for situation nr. 3 for knowing kids/somebody living in a similar situation(men)**



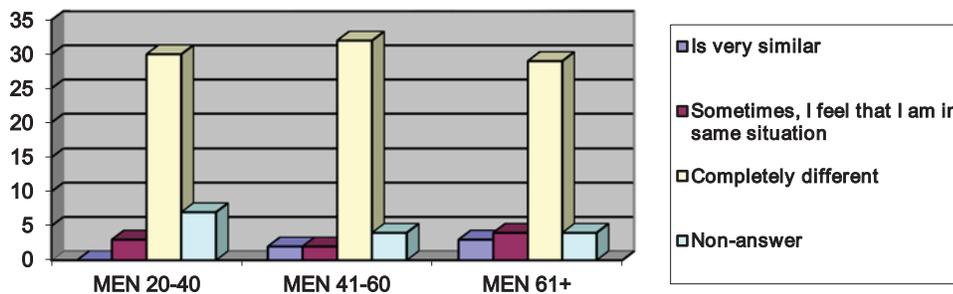
For given situation nr. 3 for knowing kids/somebody living in a similar situation the men opinion distribution is: the option nr. 1 (“*I know a lot of people living in similar situation*”) – 12,5% for men of age 20-40; 5,0% for men of age 41-60; 17,5% of men of age 61+; nr. 2 (“*I know just one person living in similar situation*”) – 12,5% for men of age 20-40; 22,5% for men of age 41-60; 15,0% for men of age 61+; the option nr. 3 (“*I do not know people living in similar situation*”) – 70,0% for men of age 20-40; 65,0% for men of age 41-60; 65,0% for men of age 61+ ; option nr. 4 (“*Non-answer*”) – 5,0% for men of age 20-40; 7,5% for men of age 41-60; 2,5% for men of age 61+.

**Figure 61. The answers for situation nr. 3 as similar to the respondents family (women)**



For given situation nr. 3 *as similar to the respondents family* for the men opinion distribution is: the option nr. 1 (“*Is very similar*”) – 2,5% for women of age 20-40; 5,0 % for women of age 41-60; 5,0 % of women of age 61+; nr. 2 (“*Sometimes, I feel that I am in same situation*”) – 0 % for women of age 20-40; 7,5 % for women of age 41-60; 12,5 % for women of age 61+; the option nr. 3 (“*Completely different*”) – 97,5 % for women of age 20-40; 77,5 % for women of age 41-60; 77,5 % for women of age 61+ ; option nr. 4 (“*Non-answer*”) – 0 % for women of age 20-40; 10,0 % for women of age 41-60; 5,0 % for women of age 61+.

**Figure 62. The answers for situation nr. 3 as similar to the respondents family (men)**



For given situation nr. 3 *as similar to the respondents family* for the men opinion distribution is: the option nr. 1 (“*Is very similar*”) – 0 % for men of age 20-40; 5,0% for men of age 41-60; 7,5% of men of age 61+; nr. 2 (“*Sometimes, I feel that I am in same situation*”) – 7,5% for men of age 20-40; 5,0 % for men of age 41-60; 10,0 % for men of age 61+; the option nr. 3 (“*Completely different*”) – 75,0 % for men of age 20-40; 80,0 % for men of age 41-60; 72,5% for men of age 61+ ; option nr. 4 (“*Non-answer*”) – 17,5% for men of age 20-40; 10,0 % for men of age 41-60; 10,0 % for men of age 61+.

## 5. Conclusion

There is present verbal violence in Arab Sector of Israel. 39,16% of women answers and 21,66% of men answers showed that there are a lot of kids that are humiliated by their parents. 32,5% of women answers and 45 % of men answers showed

that there is a small number of kids humiliated by their parents. 15% of women answers and 15,83 % of men answers showed the opinion that there is no one kids that suffers from his/her parents` humiliation and 13,33% of women answers and 17,5% of men have no opinion about this subject.

The perception of verbal violence from parents to their kids in other families is different from the mentioned perception of verbal violence inside of the respondents' personal families. When it comes to other families and for knowing kids/somebody living in a similar situation: 25,83 % of women answers and 25 % of men answers showed the opinion that they know a lot of people living in similar situation. 20,83 % of women answers and 25% of men answers showed that there are unique cases of verbal violence in other families of Arab Sector of Israel. 51,66 % of women answers and 45,83 % of men answers showed that they think that there is nobody living in a situation of humiliation in Arab Sector of Israel and 2,5 % of women answers and 4,16% of men answers that they do not have any opinion about the subject.

When speaking about their own family and possible verbal violence, the majority of respondents answered that the situation in their family is completely different from described situation. 8,33 % of women answers and 5,83% of men answered that the situation in their family is similar to the described situation, it means, there is space for humiliation and screaming. 14,16 % of women answers and 8,3 % of men answered that they think that sometimes, they feel being in the same situation of screaming and humiliation. 75 % of women answers and 81,66 % of men answered that they think that the situation in their families is completely different from the described situation and there were 2,5 % of women and 4,16% of men of non-answers.

The situation nr. 2 was about the physical violence. 23.33% of women answers and 27,5 % of men think that there are a lot of women in situation of physical violence supported in their families. 30,83% of women answers and 36,66% of men answered that, in their opinion, there are just a few women in the situation of supporting physical violence. 24,16% of women answers and 18,33 % of men think that there is nobody suffering of physical violence in families of Arab Sector of Israel and there are 21,66 % of women and 17,5% of men non-answers.

For the option of knowing somebody that is living in a similar situation of physical violence, there are 10 % of women answers and 25 % of men answered that they know a lot of people living in similar situation. 22,5 % of women answers and 15,83% of men answered that they know just one person living in similar situation. 65,83% of women answers and 54,16 % of men answered that they do not know any person living in the situation of physical violence in Arab Sector of Israel and 1,66 % of women and 5,0 % of men non-answers.

When asked if the given situation is similar to the situation in their own family, the respondents gave answers as are: 4,16 % of women answers and 1,66 % of men answered that the situation is very similar. 13,33 % of women answers and 10 % of men answered that her/him sometimes, I feels that her/him am in same situation of domestic physical violence. 77,5% of women answers and 79,16 % of men told that the

situation in their families is completely different from given situation. There were 5 % of women and 9,16 % of men non-answers.

For given situation nr. 3 of kids suffering from their parents' physical violence, there were found answers: 25,0 % of women answers and 10 % of men think that there are a lot of kids in Arab Sector of Israel. 21,66% of women answers and 36,66% of men answered that they think that there is a small number of kids in situation of physical violence. 26,66% of women answers and 27,5 % of men answered that they do not know any kids suffering of physical violence from their parents. There were 26,66% of women answers and 25,83 % of men answered that they do not know any kid in the situation of suffering of physical violence from their parents.

When asked if they know somebody that is living in a situation similar – 7,5 % of women answers and 11,66 % of men answered that they know a lot of people living in similar situation. 17,5 % of women answers and 16,66 % of men answered that they know just one person living in similar situation. 72,5 % of women answers and 66,66 % of men answered that they do not know any people living in similar situation and there were 2,5 % of women and 5,0 % of men non-answers.

The last option for the given situation nr.3 was asking the respondents if the situation in their own family is similar to the described situation. 4,16 % of women answers and 4,16 % of men think that the situation in their own family is very similar to the described situation. 6,66% of women answers and 7,5 % of men answered that sometimes, they feel that they are in same situation of physical violence. 84,16% of women answers and 75,83 % of men answered that the situation in their own family is completely different. It mean there is no physical violence and there were found 7,5 % of women answers and 12,5% of men non-answers.

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## **European initiatives for a competitive economy in a globalised world- Entrepreneurial innovation as a pivotal stake**

SIRBU Olesea<sup>1</sup>, CRUDU Rodica<sup>2</sup>, IGNATOV Augustin<sup>3</sup>

### **Abstract**

*The global economic crisis has revealed the main weaknesses of the European Union's economy, including slow decision making, over-regulation and excessive bureaucratisation, lack of economic cohesion among the various nations of the EU, uneven competitive readiness and poor economic performance & development. Less flexible and more regulated, the European Union's entrepreneurial environment is undermined by excessive governmental intervention justified by "soziale Marktwirtschaft" or the social market economic principles. The main stake of the European Union and member countries' decision making factors and elites relies on stimulating entrepreneurial and public innovation as to raise the level of economic competitiveness. In such a way, it is possible to keep the present standards of living imposed by the principles of social market economy, and report at the same time competitiveness of more liberal-capitalistic economies. Taking into account these circumstances, the present research has established the goal to identify to which extent the initiatives promoted by the European Union in the area of innovation and entrepreneurship proved to have a beneficial effect upon community's economic competitiveness taking into account the modern day economic challenges. As a result, there have been formulated two main hypotheses and namely, H1, which states that entrepreneurial innovation could not be compensated with public driven innovation policies and, H0, identifying the vice-versa and namely that governmental supported innovation can offset entrepreneurial innovation.*

**Key-words:** entrepreneurial innovation; public innovation; economic competitiveness; the European Union; globalisation;

**JEL-classification:** F02; F15; F63; G38; J88;

### **Introduction**

The global economic crisis has revealed the main weaknesses of the European Union's economy, including slow decision making, over-regulation and excessive

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1 Olesea SIRBU is the Director of the Centre for Studies in European Integration, Academy of Economic Studies of Moldova

2 Rodica CRUDU is Associate Professor, Jean Monnet Professor, Department of International Economic Relations, Academy of Economic Studies of Moldova

3 IGNATOV Augustin is the Head of the Research and Promotion Department, Centre for European Integration Studies, Academy of Economic Studies of Moldova, Chisinau, the Republic of Moldova, [augustinignatov1@gmail.com](mailto:augustinignatov1@gmail.com)

bureaucratisation, lack of economic cohesion among the various nations of the EU, uneven competitive readiness and poor economic performance & development. Accordingly, European economy, on overall, has not reached the pre-crisis growth rates and is still stagnating while other global powers including the USA and China have faced a relatively faster recovery. Less flexible and more regulated, the European Union's entrepreneurial environment is undermined by excessive governmental intervention justified by "*soziale Marktwirtschaft*" or the social market economic principles. Additionally, the European Union is aiming to develop in the spirit of the "welfare state", promoting these ideas across the whole territory regardless of the regions' development level, the fact suppressing entrepreneurship. Since reformation of the present economic system requires large social consensus, renouncing to this development model certainly does not meet society's aspirations and therefore politicians promoting these principles can face marginalisation. In these conditions, the main stake of the European Union and member countries' decision making factors and elites relies on stimulating entrepreneurial and public innovation as to raise the level of economic competitiveness. In such a way, it is possible to keep the present standards of living imposed by the principles of social market economy, and report at the same time competitiveness of more liberal-capitalistic economies.

Taking into account these circumstances, the present research has established the goal to identify to which extent the initiatives promoted by the European Union in the area of innovation and entrepreneurship proved to have a beneficial effect upon community's economic competitiveness taking into account the modern day economic challenges. To reach this aim, there were established two objectives and namely: first, assess the interdependency between entrepreneurial innovation and economic competitiveness indicators. Or, evaluate the degree to which entrepreneurship is capable of boosting innovation and therefore economic competitiveness. Secondly, it is supposed to compare the influence of entrepreneurial innovation with the governmental supported innovation. Thus, it is possible to determine to which extent public innovation can compensate the loss of entrepreneurial innovation which the European Union faces as a result of bureaucratisation. Taking into consideration these objectives and the main goal of the research, there have been formulated two main hypotheses and namely, H1, which states that entrepreneurial innovation could not be compensated with public driven innovation policies and, H0, identifying the vice-versa and namely that governmental supported innovation can offset entrepreneurial innovation. The hypotheses will be tested based on both qualitative and quantitative research methods which will comprise the analysis of the main actions undertaken by the European Union in the area of innovation including the public driven and entrepreneurial one. Also, how these actions affected quantitative indicators of innovation and economic competitiveness.

Afterwards, the present research provides several policy recommendations addressed to European policy makers underlining which actions are advised to reinforce entrepreneurship in the EU and to overpass the present socio-economic difficulties. Moreover, there are identified which levers the European Union can apply to raise

economic competitiveness of its member countries through advancement of communitarian policies.

### **Literature review**

In order to have a better understanding upon the matters related to the European initiatives for a competitive economy in a globalised world, a subset of relevant literature has been selected. Thus, according to Wennekers & Thurik (1999) entrepreneurs are the people who are willing to undertake, organise and lead business activities incurring the related risks in their pursuit of profit. The meaning of entrepreneurship should not be summarised only to launching and running of new businesses its framework being wider comprising the ability of the organisations to develop new, more competitive initiatives and products through the implementation of innovation and technologies. The commercialisation of innovation in this regard is of determinative importance since it allows maximisation of economic benefits obtained by businesses. Accordingly, it can be underlined the idea that entrepreneurship is the main source of economic development since it fosters innovation and technology progress. Moreover, Varis & Littunen (2010) mentioned that innovation i.e. novel product, process or market innovation leads to firms' development and improved market positions and not necessarily enhanced profitability. Governments should provide clear and transparent support services for the firms developing innovative products in order to enhance regional competitive edges as to create more efficient networks and supply chains. Landabaso (2014) & Kehm (2014) underlined that the European Union should reinforce its public sector and entrepreneurial policies to enhance its business culture through applying the bottom-up approach, or otherwise said by consolidating microeconomic foundation. The smart specialisation direction of development of the European Union empowered by research and innovation initiatives should allow the promotion of locally oriented business models- so called place-based approach. Innovation is a determining factor of economic development, while the public and governmental support is crucial in implementing efficient innovation policies at the local level.

Ignatov (2017) determined that entrepreneurship requires favourable macroeconomic conditions and optimal level of bureaucratic control. By fostering these two dimensions, an economy is capable of enhancing its potential through developing both extensively, by enlarging the number of participants to the economic activity, and intensively by increasing effectiveness and efficiency of these activities by implementing innovation and technologies. At the same time, Lofgren & Benner (2011) highlighted that the European Union needs consolidated innovation policies to be able to enhance its economic competitiveness. In intent to overtake the USA as a global economic power, the EU needs more integration legitimised on common European identity. Present innovation initiatives are not suitable for a globalised society since they have reduced economic efficiency and market fundament. To have a stronger "rhetoric" in issues related to innovation, the European Union is obliged to re-think its present institutional arrangements. Mendoza et al (2010) as well as Tiberghien et al (2017) determined that the main difference between entrepreneurial environments of the European Union and

the United States of America is that the first face more regulatory pressure increasing bureaucratisation of the economy. The difference is accentuating not in the favour of the European Union since more regulations and rules are adopted. This fact hinders the development of financial markets, new businesses, and existing European corporations. European listed firms are subject to considerable costs generated by red-tape. Changing economic environment should motivate European decision makers to undertake actions to reduce the influence of the public sector in economic activities as to be able to face the present and future global challenges. Furthermore, Sirbu et al (2017) found that entrepreneurship certainly consolidated the economic power of the Baltic States. Nevertheless, the degree to which entrepreneurial policies proved to be successful alternates, Estonia being the leading business power in the region followed by Lithuania and Latvia. The achievements of Estonia are more prominent as compared to the neighbouring nations due to the promotion of innovation driven business alongside with traditional one. Thus, this small nation succeeded in reaping the benefits of technology and digitalisation considerably enhancing its economic potential.

Miles et al (1995) & Wullweber (2014) highlighted that technology and innovation are the main contributors to long run economic development. Innovation policies should be directed towards stimulating development and implementation of research outputs in the real economy as to reap the benefits of the improved technology. Industrialised states must be particularly concerned by innovative projects since this fact contributes to their competitiveness in a permanently changing society. Van Someren & Someren-Wang (2013) as well as Kovalčíková (2014) stated that the role of market driven processes in the promotion of innovation is by far more important in the USA than in the EU. The fragmentation of the European market weakens the capacity of the EU based businesses to innovate since they are subject to increased regulation, the situation which is not present in the USA. The EU is obliged to change policy priorities in the field of entrepreneurship as to strengthen the business environment as it is the main guarantee of enhanced long run development and competitiveness. Tiberghien (2017) and Mason & Brown (2014) highlighted that the main task of the government is to assure a stable and propitious ecosystem for entrepreneurship and no interference in the business processes are required. Business environment in the European Union is undermined by excessive bureaucracy as over-regulations leads to increased entrepreneurial costs. The support the institutions offer towards the business sector is not sufficient as to compensate the increased costs. Moreover, the interference of the government through this support leads to economic distortions, irregularities which reduce the quality of growth and development. Henrekson & Stenkula (2010) mentioned that it can be observed that more and more countries are changing their priorities related to business sector. Thus, if the past SMEs were the main policy focus, then, in the present entrepreneurship regardless of the organisational size are sought as the targets. Moreover, public policies are aimed to stimulate both so called productive entrepreneurship and the high impact one. Developed economies should develop policies which are concentrated on innovation since these nations cannot exploit costs as to face rising global competition.

At the same time, Knight (2015) said that the crisis in the European Union has considerably increased the level of entrepreneurial uncertainty which in the conditions of high bureaucratic pressure diminish the competitiveness of European business on the world arena. Despite of multiple initiatives the European Union has developed in the area of innovative economy including such as clean and secure energy, it is necessary a radical change of the present economic system to free the EU from excessive red tape. Moreover, Singh (2012) underlined that the European Union has paid increased attention to the re-definition of its economy by extensively implementing modernisation policies. The existing shortage of e-skills determined the growth of technology and innovation literate graduates who presently represent an important capital resource fostering the competitiveness of the European economy. Thus, it can be observed that the European economy is consistently moving towards digitalisation. Nevertheless, further effort is needed to be made in this area which can be assured only through developing suitable innovation public policies.

Bongardt & Torres (2010) found that Europe 2020 strategy was designed as a response of the EU to world challenges which worsened as a result of the crisis of 2008. This initiative is aimed to mobilise the European efforts towards enhancing common economic competitiveness through efficiently dealing with the existing structural weaknesses. In the conditions of declining European economic power on the global arena, Europe 2020 is directed towards assuring a stable basis for innovation and technological development. Accordingly, Europe 2020 is the EU main initiative to reinforce its economy as to be able to increase overall competitiveness. Meanwhile, Buch-Hansen & Wigger (2011) the European Union needs structural change in the area of competitive regulation to be capable of overpassing the modern global challenges. Bureaucracy is one of the main weaknesses of the EU's economy. Over-institutionalisation of the European Union's economy, where the market is highly influenced by the governmental interference, makes the community's economy less flexible having a reduced capability of adapting to changing environment. This fact characterises the slow recovery of the EU from the crisis and weak development in the following period. Finally, Lagendijk & Varró (2013) came to the conclusion that innovation policies are seen by the European decision makers as solutions to global challenges. However, innovation without proper entrepreneurial policies is not sustainable since innovation needs commercialisation. Accordingly, business innovation is much more important for an economy as compared to publicly financed innovation since it is self-sufficient and it is economically efficient and justifiable. The EU offers extensive support for publically generated innovation and undermines business innovation through excessive bureaucratisation. In such a way, the community is facing stagnation as public innovation is less efficient than private one.

According to the literature examined, it can be stressed the following ideas, and namely: entrepreneurship is the main driving force "boosting" innovation and economic development. The European Union developed specific sectorial policies to strengthen innovation capacities of the community, yet they are less efficient than the business innovation due to the varying efficiency of implementation in the real economy. Thus, it

has been reached the general conclusion that the European Union needs to de-bureaucratise its economy and re-inforce entrepreneurship to be capable of re-ignite its economic competitiveness and development in a permanently changing global environment.

### **Methodology**

The present research applies both qualitative and quantitative research methods to improve readers' understanding of the issues related to the European Union's initiatives for a competitive economy in a globalised world. Particularly, it is analysed the effect of European policies upon entrepreneurial innovation which is considered to be the main driver of economic development and growth both extensively and intensively by growth of the resource inputs involved in the economy and consequently by increasing their efficiency. Qualitative analysis is used to identify and assess the impact of the main European policies in the area of innovation and entrepreneurship. Accordingly, it is designed the theoretical framework on which the further research is constructed. In other words, the qualitative assessment is applied to recognise the main policies areas which the European Union has prioritised as to improve its competitive edges in a globalised society. Afterwards, the present research reflects the efficiency of the examined policies through the prism of entrepreneurial innovation which in its turn is identified through the quantitative measure of per capita R&D expenditure made by the Business of EU countries. At the same time, it is analysed the governmental supported R&D investments made by the European Union in the period of 2006-2016. Consequently, it is applied quantitative analysis to assess the impact of entrepreneurial innovation, and governmental backed innovation upon the European Union's economy. In such a way, it is evaluated the following indicator: the share of full-time equivalent high tech business R&D personnel in the total number of persons with tertiary education and employed in science and technology. Hence, it is possible to identify the impact of business innovation upon human capital formation inside the European Union which is a crucial pre-condition for future economic development. Secondly, it is assessed the gross fixed capital formation (investments) in the European Union which is an important component establishing the fundamental basis for further economic development of the EU. Afterwards, it is analysed the impact of the entrepreneurial and governmental supported innovation upon the intra-European per capita exports and the extra-European per capita exports, in such a way, it will be possible to increase readers' understanding upon the effect of business/ public innovation upon external competitiveness. At the same time, it is evaluated the dynamics of the resource productivity and domestic material consumption, Euro per kilogram since this dimension represents a crucial indicator expressing how innovation affects economic efficiency. Further, it is examined energy productivity, Euro per kilogram of oil equivalent, to assess the impact of business/ public innovation upon energy efficiency, an important condition for the European Union facing energy supplies deficiencies. Finally, there are calculated the correlations coefficients between entrepreneurial/ public innovation and indicators of economic competitiveness previously mentioned to identify whether innovation investments made

by the business sector of the European Union are interconnected with economic efficiency and competitiveness performance.

Accordingly, it can be underlined to which extent entrepreneurial innovation surpasses the governmental financed one and why the European Union should decrease bureaucratisation of its economy, liberalise the market and, consequently decrease the governmental intervention in the economy. Thus, there are recommended several policy directions which should be followed by European decision makers in order to re-define entrepreneurial environment as the main pre-condition of fostering economic growth and boost of the innovation capacities in the community.

## Results

### 1. The initiatives of the European Union in the field of entrepreneurship and innovation

One of the main initiatives of the European Union regarding promotion of entrepreneurship and innovation is Horizon 2020 programme which is allocated 80 billion EUR for the period of 2014-2020. This initiative represents the eighth framework programme funding research, technological development, and innovation. Horizon 2020 is implemented by the European Commission through various structures including the Directorate general for research and innovation, the Directorate general for communications networks, content and Technology, the Research Executive Agency, the Executive Agency for SMEs, the ERC Executive Agency (ERCEA). Horizon 2020 is also implementing different strategies and policies developed by the European Union including Europe 2020, European environmental research and innovation policy, EU's industrial policy and European Innovation Council pilot. The main aims of the programme is to assure the European Union with "excellent science", foster the EU's industrial competitiveness or "industrial leadership" and improve the community's abilities in dealing with societal challenges. Besides Horizon 2020, the European Union provides funding for entrepreneurial and innovation related activities through European Structural and Investment Funds which allocates around €110 billion to innovation activities, ICT, small and medium-sized enterprise (SME) competitiveness, and the low carbon economy. Top priorities of the European Union in this regard are: fostering key enabling technologies; promotion of advanced manufacturing; bio-based products; creative industries and tourism. In such a way, the European Union is directing efforts towards promotion of smart specialisation of its regions. The European Union enhances its entrepreneurship and innovation competitiveness also through European Fund for Strategic Investments. It is "*one of the three pillars of the Investment Plan for Europe and aims to overcome current market failures by addressing market gaps and mobilising private investment*" (European Commission, 2017). The funds are allocated towards developing infrastructure, improving the quality of research and innovation, fostering the efficiency of education, enhancing renewable energy and energy efficiency as well as reduce the risks of financing small and medium-sized enterprises (SMEs). The institution responsible for the distribution of funding is the European Investment Bank (EIB). All these programmes, including Horizon 2020, European Structural and

Investment Funds and European Fund for Strategic Investments are the financing “arms” of the European Union to implement its innovation policies including: Social innovation, Design for innovation, Demand-side innovation policies, Public sector innovation and Workplace innovation.

One of the particular initiatives of the European Union in the area of entrepreneurship is The Entrepreneurship 2020 Action Plan. The main priorities set up by the European Union through the implementation of this initiative are: provision and stimulation of the entrepreneurial education, enhancing the quality of training to support growth and business creation. Second priority is related to the removal of the existing barriers, including the bureaucratic ones and development of means of supporting entrepreneurs in crucial phases of the business lifecycle. Finally, it is aimed to reignite the business culture in the European Union through nurturing new generations of entrepreneurs. At the national level, entrepreneurship is boosted through SME Envoys Network comprising both supranational and national representatives. Supranational representatives are set “*to open up channels of communication between the European Commission, SMEs, and their representative organisations and, therefore, promote SMEs’ interests throughout the whole Commission and ensuring that the ‘think small principle’ is applied effectively in the new Europe 2020 strategy*”. At the same time, national envoys are aimed “*to promote SMEs’ interests throughout all government bodies and ensure that the ‘think small first’ principle is integrated into their policy-making and regulatory proposals, act as the main interface between the Commission and national policy-makers and report on the uptake of the SBA in EU countries, step up efforts to distribute information on SME policy actions, and promote the exchange of good practices*” (European Commission, 2017). The Entrepreneurship 2020 strategy is set as a comprehensive part of the European Union’s industrial and competitiveness policy and is aimed towards bringing the community a new quality of entrepreneurial activity.

It is necessary to underline that the European Union is paying increased attention towards supporting SMEs since they account for 99% of all business in the community providing 2/3 of the total employment, “*the European Commission considers SMEs and entrepreneurship as key to ensuring economic growth, innovation, job creation, and social integration in the EU*” (European Commission, 2017). The EU fosters the development of SMEs through the following actions: establishing an entrepreneurial friendly environment (Small Business Act for Europe); fostering entrepreneurship (Entrepreneurship Action Plan); consolidating access to new markets and internationalisation (SMEs’ access to markets); facilitating accessibility to finance and supports SME competitiveness and innovation capacities. Also, the EU is providing the possibility to SMEs to exploit market opportunities through different support networks including Enterprise Europe Network.

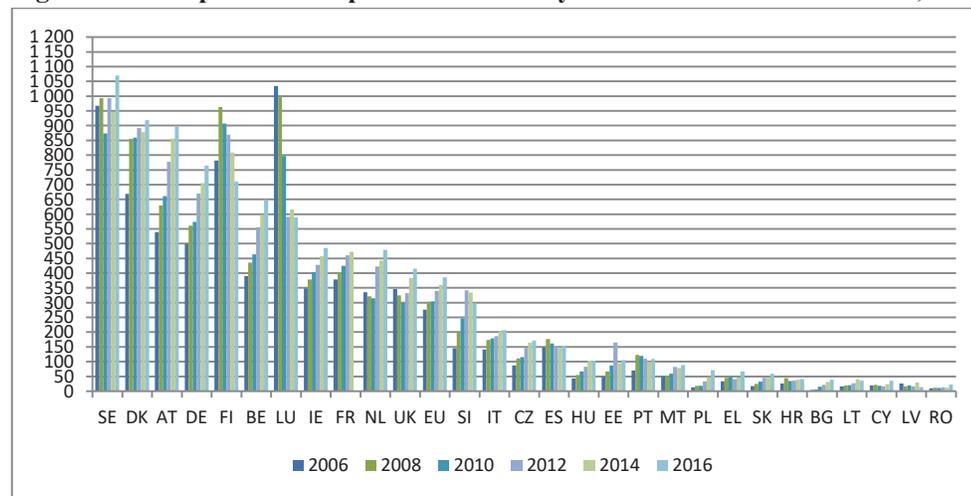
As a result, it can be remarked that the European Union has developed many policies, strategies and instruments to enhance the business environment competitiveness, innovation achievements and as to boost overall economic development. The goal of the present research is to identify the extent to which

innovation and economic competitiveness is stimulated by entrepreneurial environment and market or by direct governmental intervention. It can be noted that the European Union has developed multiple policies to stimulate business and research and development activities. It is of key relevance to find out the way to which the European can reinforce its competitiveness edges in a globalised environment either by assuring favourable to business conditions by decreasing states intervention or by keeping it at the same level yet centralised directing more financial resources towards innovation activities.

## 2. Main driver of economic competitiveness: entrepreneurial vs public innovation

Entrepreneurial innovation is quantitatively reflected by the per capita R&D expenditure made by the business sector of EU countries. According to the figure 1, it can be remarked that the strongest nations of the European Union in terms of entrepreneurial innovation are Sweden spending more than 1069 EUR per capita on R&D, followed by Denmark, 918 EUR, Austria, 896 EUR, and Germany, 764 EUR. The least competitive nations of the European Union according to the same indicator are Romania, 23 EUR, Latvia, 14 EUR, Cyprus, 36 EUR, and Lithuania, 36 EUR. It is necessary to underline that the EU average in 2016 was 386 EUR. In such a way, it can be underlined that the business sector in the community is unevenly developed, the Western and Northern EU being considerably more competitive than the Eastern and Southern parts. It is necessary to highlight that on overall the dynamics of entrepreneurial innovation in the community is favourable, thus in the period of 2006 till 2016, this indicator has grown from 276 to 386 EUR. The highest growth was registered by Austria, +357 EUR, followed by Germany, +265 EUR, Belgium, +257 EUR and Denmark, 250 EUR. The poorest performance in terms of the dynamics were reported by Luxembourg, -445 EUR, Finland, -71 EUR, Latvia -12 EUR and Spain, +6 EUR.

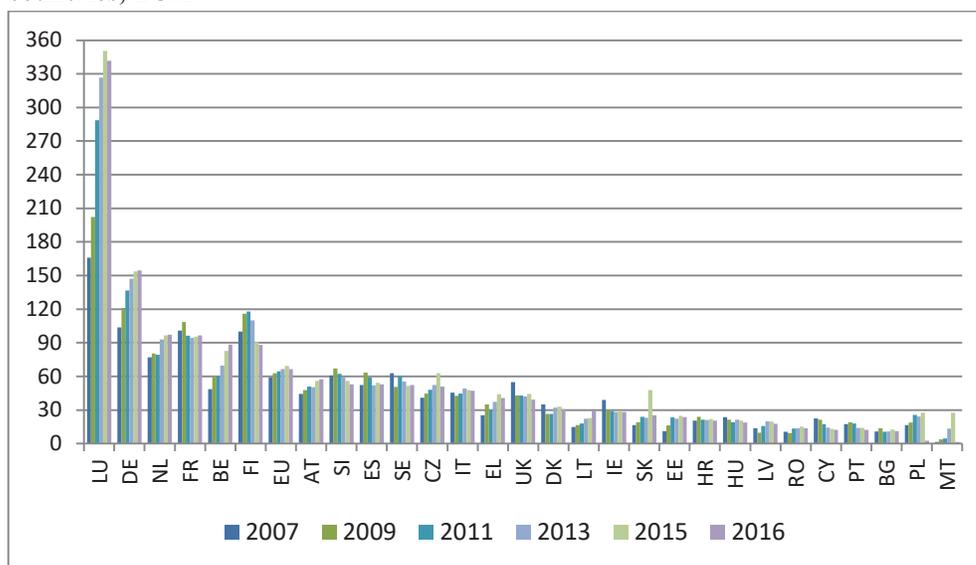
**Figure 1. Per capita R&D expenditure made by the Business of EU countries, EUR**



Source: Eurostat, indicator's code [rd\_e\_gerdtot].

The secondary source of financing innovation is governmental funding. The highest publically supported innovation is characteristic for Luxembourg where the government allocates per capita financing of more than 341 EUR for 2016 (figure 2). This nation is followed by Germany, 154 EUR, Netherlands, 97 EUR, France, 97 EUR, and Belgium, 88 EUR. The lowest public funding for innovation is allocated in Malta, 1.5 EUR, Poland, 2.7 EUR, Bulgaria, 11.1 EUR and Portugal, Romania and Cyprus around 12-13 EUR. In the period of 2007-2016, the highest growth in terms of public innovation funding is characteristic for Luxembourg, +175 EUR, Germany, 50 EUR, Belgium, 40 EUR, and Netherlands, 20 EUR. At the same times, the weakest dynamics could be remarked for UK, -16 EUR, Poland, -14 EUR, Finland, -12 EUR, Sweden and Ireland, -11 EUR, and Cyprus, -10 EUR. It can be remarked that, there is a considerable difference between the “old” and “new” member countries of the European Union, yet less evident as compared to the entrepreneurial innovation. The overall per capita public financing of innovation in the European Union is 67 EUR increasing in dynamics with 7.4 EUR.

**Figure 2. Per capita R&D expenditure made by the Governmental sector of EU countries, EUR**

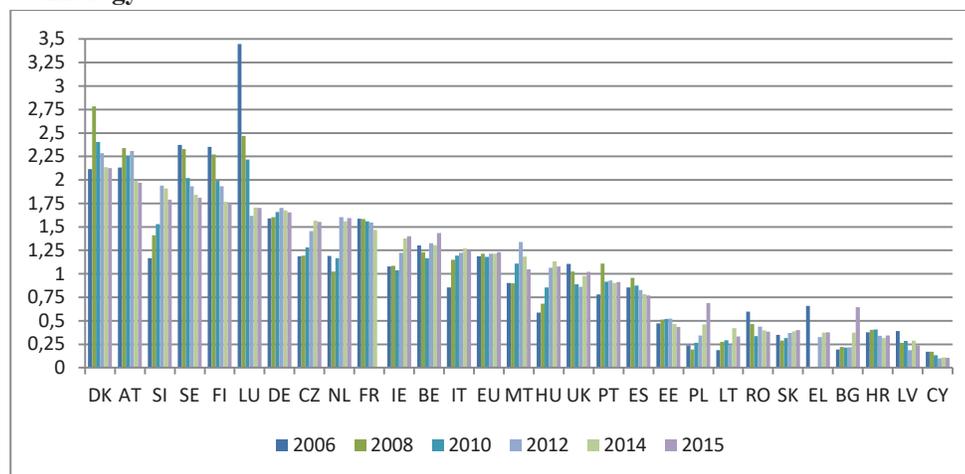


Source: Eurostat, indicator's code [rd\_e\_gerdtot].

The share of the full-time equivalent high tech business R&D personnel in the total number of persons with tertiary education and employed in science and technology show how many full time R&D business work places are available in the total number employed in science and technology. Thus, the higher is this share of people employed in this area the higher is the orientation of an economy towards business research and development with stronger potential of commercialisation. In 2015, this indicator in the European Union accounted for 1.25%. The leading countries are Denmark, 2.12%, Austria, 1.97%, Slovenia, 1.79%, Sweden, 1.81%, and Finland, 1.75%. The European

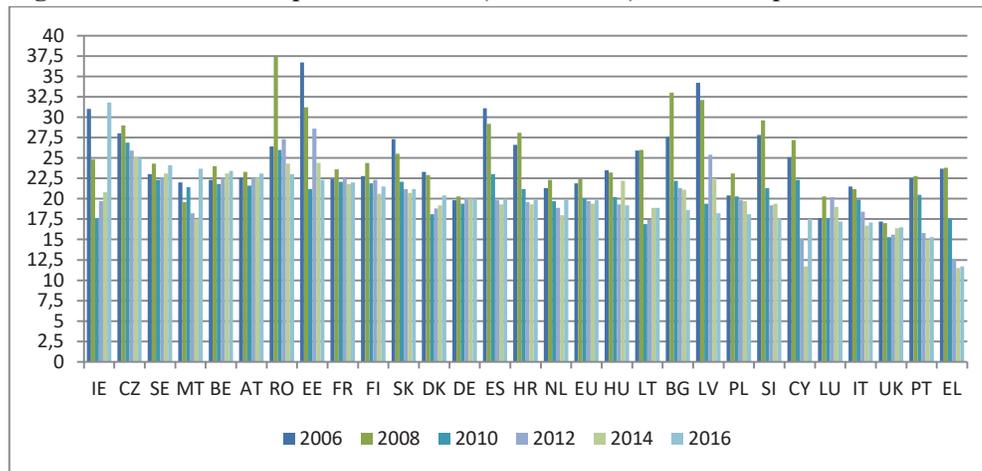
nations registering the lowest indicators are Cyprus, 0.10%, Latvia, 0.23%, Croatia, 0.34%, Greece, 0.37, and Bulgaria, 0.64% (figure 3). As it can be observed, the dynamics at the level of the European Union are more or less stable the share ranging between 1.20%.

**Figure 3: Share of full-time equivalent high tech business R&D personnel in the total number of persons with tertiary education and employed in science and technology**



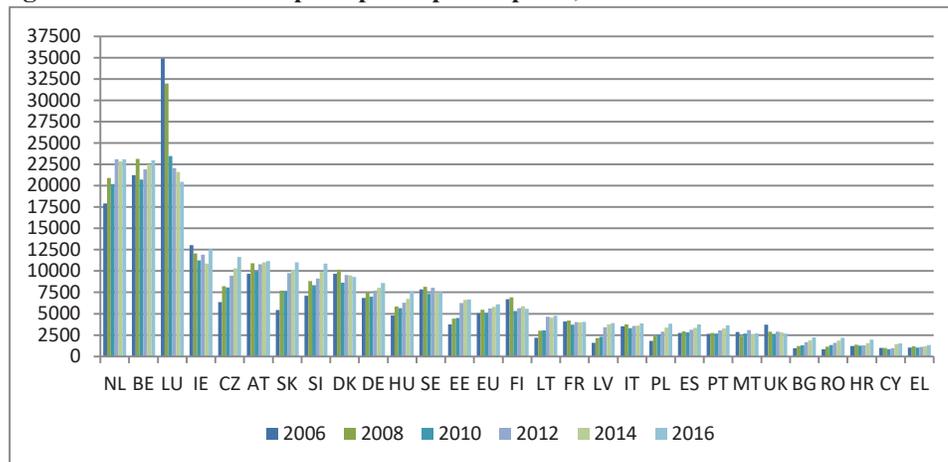
Source: Own calculation based on data provided by Eurostat, indicators' code [htec\_sti\_pers2 and hrst\_st\_ncat]

Gross fixed capital formation is an important indicator showing the degree to which an economy is capable of assuring long run development since it reflects how much investments are directed towards infrastructural and real-capital development. According to the information presented in the figure 4, it can be remarked that fixed capital formation has decreased at the level of the European Union in the period of 2006-2016 with almost 2.2%. The only countries which reported increase of fixed capital formation in the EU are Malta, +1.7%, followed by Sweden, +1.1%, Belgium, +1.1%, Ireland, 0.8%, Austria, +0.5%, and Germany, 0.2%. The rest of the European Union nations faced drop of the capital formation, the fact demonstrating the unfavourable economic development direction. The highest decrease can be observed for Latvia, -16%, Estonia, -14.4%, Greece, -12%, Spain, -11%, Slovenia, -10%, Bulgaria, -9%, Cyprus, -7.6% and Portugal, -7.2%. Nations facing fall of the gross fixed capital formation demonstrate the lack of viability to sustain long run development through improvement of capital economic base.

**Figure 4. Gross fixed capital formation (investments) at current prices % of GDP**

Source: Eurostat, indicator's code [tec00011]

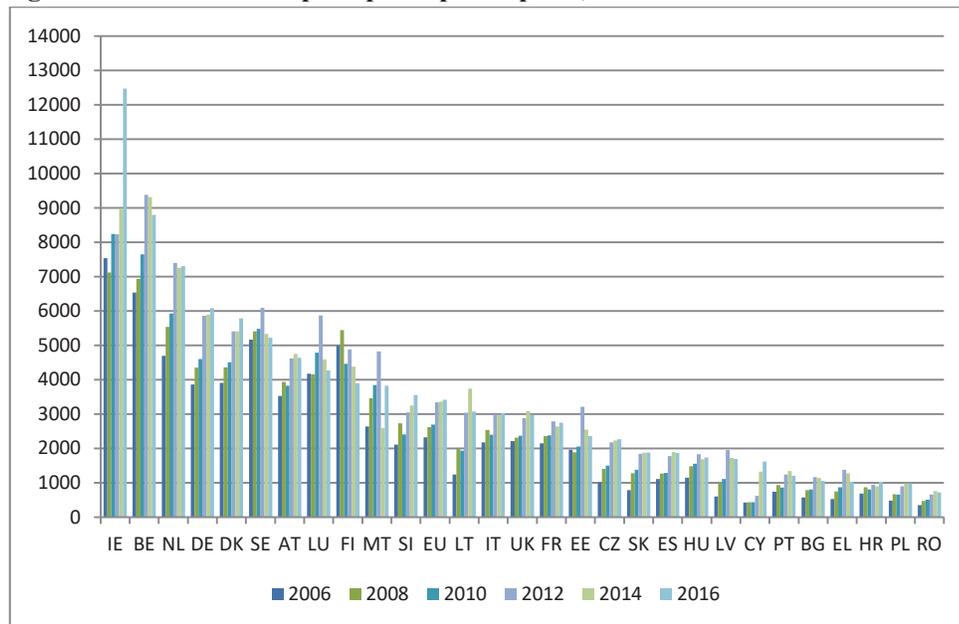
An important indicator showing the effects of improved economic competitiveness is reflected through the prism of per capita exports, i.e. intra or extra communitarian ones. According to the figure 5, it can be noted that within the period of 2006-2016, the value of intra – European per capita exports has slightly changed, from around 5100 EUR in 2006 to almost 6100 EUR in 2016. The countries with the highest among of intra-community per capita exports are Netherlands, 23100 EUR, followed by Belgium, 23000 EUR, Luxembourg, 20600 EUR, Ireland, 12000, and the Czech Republic, 11700 EUR. The nations registering the lowest indicators are Greece, 1327 EUR, Cyprus, 1536 EUR, Croatia, 1952 EUR, Romania, 2180 EUR, and Bulgaria, 2226 EUR. Considerable improvements of the dynamics were reported by the Czech Republic, +5282 EUR, Slovakia, +5617 EUR, Netherlands, +5186 EUR, Hungary, 2824 EUR, and Estonia, 2927 EUR (figure 5).

**Figure 5. The intra-European per capita exports, million EUR**

Source: Eurostat, indicator's code [ext\_lt\_intratrd] & [tps00001]

The information provided in the figure 6 underlined the idea that the European Union in the period of 2006-2016 has increased its export competitiveness since at the beginning of the period the extra community per capita exports accounted for 2321 EUR, while at the end these made up 3417 EUR. The European Union nations which export the most in the extra community space are: Ireland, per capita exports accounting for 12472 EUR, followed by Belgium, 8793 EUR, Netherlands, 7300 EUR, Germany, 6081 EUR, Denmark, 5787 EUR, and Sweden, 5223 EUR. At the opposite end there are Romania, 724 EUR, Poland, 985 EUR, Croatia, 1027 EUR and Greece, 1032 EUR. It is necessary to mention that several developed nations of the European Union registered below average indicators including Italy, UK and France. The leading nation in terms of the dynamics reported is Ireland, +4932 EUR. This country is followed by Belgium, Netherlands and Germany.

**Figure 6. The extra-European per capita exports, million EUR**

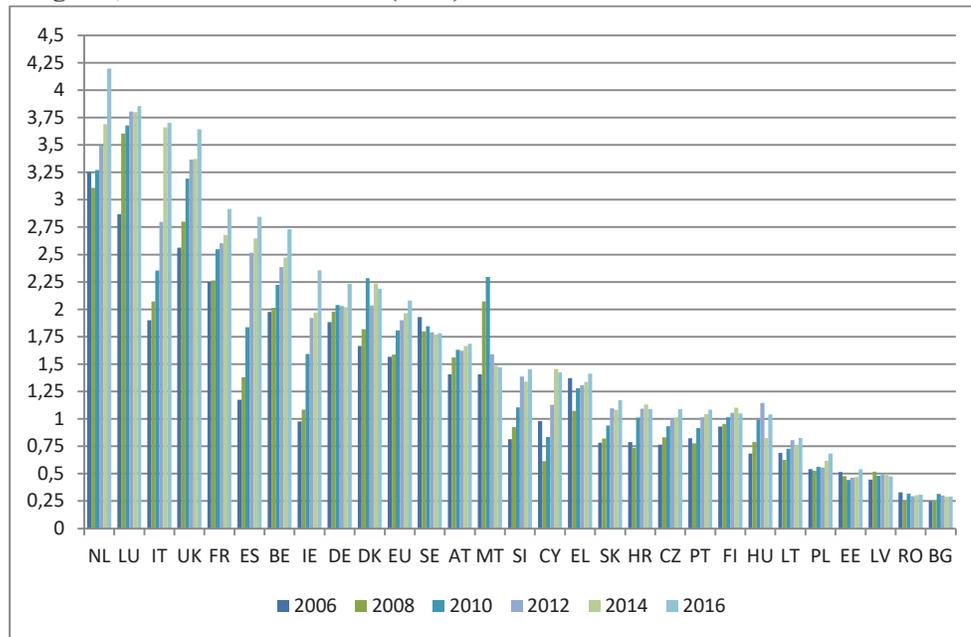


Source: Eurostat, indicator's code [ext\_lt\_extratrd] & [tps00001]

Resource productivity is an important indicator demonstrating the level of economic competitiveness since it shows the efficiency of material production. By analysing the information provided in the figure 7, it can be remarked that the European Union's countries with the highest level of resource productivity in 2016 were Netherlands, 4.19 EUR per kilogram of material consumption, followed by Luxembourg, 3.85 EUR, Italy, 3.7 EUR, UK, 3.64 EUR and France, 2.91 EUR. At the opposite end there are situated Bulgaria, 0.29 EUR, Romania, 0.30 EUR, Latvia, 0.47 EUR, Estonia, 0.54 EUR, and Poland, 0.68 EUR. The most favourable dynamics in the period of 2006-2016 were registered by Italy, +1.80 EUR, followed by Spain, +1.67 EUR, Ireland, +1.37 EUR, and UK, +1.07 EUR. Sweden, Romania, Estonia, Latvia, Bulgaria, Greece and

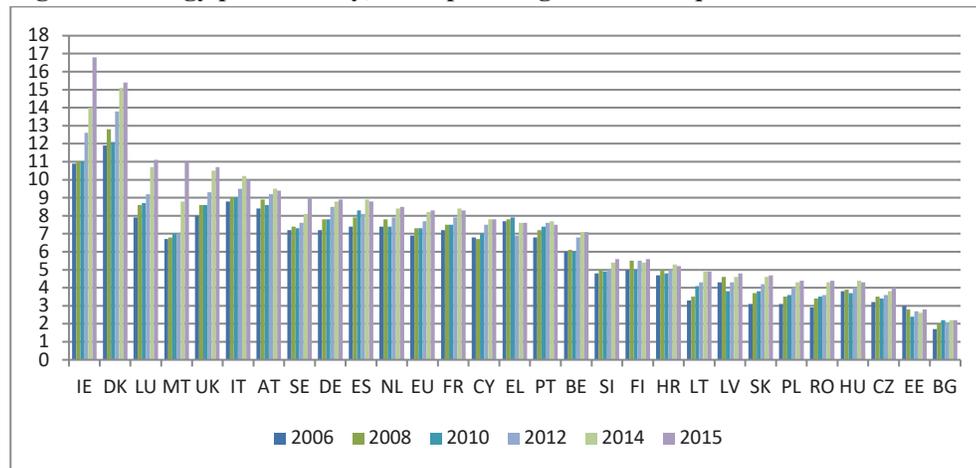
Malta registered the weakest dynamics and namely, -0.14 EUR, -0.02 EUR, 0.024 EUR, 0.03 EUR, 0.04 EUR, 0.042 EUR and 0.627 EUR respectively (figure 7).

**Figure 7. Resource productivity and domestic material consumption, Euro per kilogram, chain linked volumes (2010)**



Source: Eurostat, indicator's code [sdg\_12\_20]

The last indicator analysed in this article describing economic competitiveness of the European Union countries is energy productivity (figure 8). As it can be observed, Ireland is the most energy efficient country of the European Union with an output of 16.8 EUR per kilogram of oil consumed. This nation is followed by Denmark, 15.4 EUR, Luxembourg, 11.1 EUR, Malta, 11 EUR, UK, 10.7 EUR, and Italy, 10 EUR. The least efficient European Union nations in terms of energy productivity are Bulgaria, 2.2 EUR, Estonia, 2.8, the Czech Republic, 4 EUR, Hungary, 4.3 EUR, and Romania & Poland, 4.4 EUR. The overall energy productivity at the European Union level in 2015 was 8.3 EUR per kilogram of oil equivalent. The most favourable dynamics were registered by Ireland, +5.9 EUR, Malta, +4.3 EUR, Denmark, +3.5 EUR, Luxembourg, +3.2 EUR, UK, +2.7 EUR and Sweden, +1.8 EUR. At the same time, least favourable evolution was registered by Estonia, -0.2 EUR, Greece, -0.1 EUR and Hungary, Latvia, Croatia and Bulgaria, +0.5 EUR.

**Figure 8. Energy productivity, Euro per kilogram of oil equivalent**

Source: Eurostat, indicator's code [sdg\_07\_30]

It has been calculated the correlation coefficients between entrepreneurial (1)/ public (1\*) innovation, represented by business and respectively governmental per capita R&D expenditure of the European Union and the indicators reflecting economic competitiveness from various perspectives including: 2) share of full-time equivalent high tech business R&D personnel in the total number of persons with tertiary education and employed in science and technology; 3) gross fixed capital formation (investments) at current prices % of GDP; 4) the intra-European per capita exports, million EUR; 5) the extra-European per capita exports, million EUR; 6) resource productivity and domestic material consumption, Euro per kilogram, chain linked volumes (2010); 7) energy productivity, Euro per kilogram of oil equivalent. The results of the calculated correlation coefficients are presented in the table 1 and in the table 2. As it can be remarked in the first table, entrepreneurial innovation has a relatively strong interdependence with the indicator 2 with an average of 0.47. At the level of European Union the correlation coefficient equals 0.81. The countries registering high interconnection of more than 0.50 are marked with green colour. The correlation coefficient between entrepreneurial innovation and indicator 3 is weaker, being -0.26. Only 3 countries out of 28 register strong interdependences. The correlation coefficient recorded with the indicator 4 is much stronger, being on average 0.55, 19 out 28 registering coefficients larger than 0.50. At the European Union's level the correlation makes for 0.88. The same observations can be made for the correlation of entrepreneurial innovation and indicator 5, which on average it was 0.60, 20 countries out 28 recording strong interconnection with the general coefficient at the European Union of 0.94. In case of inter-relation of business innovation with indicator number 6, it can be noted that it is weaker of only 0.39, 15 out of 28 nations registering strong correlation and the coefficient at the level of the European Union being 0.93. Strong interdependency can be assessed between entrepreneurial innovation and indicator number 7, which on average was 0.52, 17 nations out of 28 recording strong coefficients. It is necessary to

underline that at the level of the European Union it can be noticed almost perfect correlation of 0.97.

**Table 1. Summary of Correlations between Entrepreneurial Innovation and indicators of economic competitiveness**

	1& 2	1& 3	1& 4	1& 5	1& 6	1& 7		1& 2	1& 3	1& 4	1& 5	1& 6	1& 7
A T	- 0,6 2	0,1 5	0,7 7	0,9 3	0,8 6	0,8 5	IE	0,8 6	- 0,2 3	0,2 4	0,8 7	0,9 6	0,8 7
B E	0,5 6	0,1 9	0,7 5	0,9	0,9 6	0,9 2	IT	0,9 1	- 0,9 2	0,4	0,8 7	0,9 3	0,9
B G	0,8 7	- 0,7 7	0,9 3	0,7 4	0,2 1	0,6 1	LT	0,8 3	- 0,4 2	0,8 6	0,8 5	0,5 3	0,9 2
C Y	0,1 9	- 0,1 4	0,6 5	0,6 5	0,4 4	0,1 3	LU	0,9 1	- 0,0 1	0,8 4	- 0,7 5	-0,8	- 0,7 9
C Z	0,9 8	- 0,8 2	0,9 7	0,9 8	0,9 5	0,8 5	LV	0,6 2	0,2	0,0 4	- 0,0 4	-0,4	0,2 1
D E	0,7 9	0,2 2	0,7 7	0,9 6	0,8 7	0,9 6	MT	0,7 6	0,1 2	0,5 6	0,4	- 0,5 3	0,6 9
D K	0,3 1	- 0,7 1	- 0,1 1	0,6 8	0,8	0,6 1	NL	0,9 6	- 0,6 9	0,9	0,9 2	0,8 6	0,8 3
E E	0,4 3	- 0,3 3	0,6 8	0,9 1	- 0,2 2	- 0,4 5	PL	0,9 3	- 0,7 5	0,9 5	0,8 7	0,8 8	0,9 4
E L	-0,8	- 0,5 8	0,5 2	0,2 8	0,4 1	- 0,0 3	PT	0,7 7	0	- 0,1 7	0	- 0,0 4	0,3 1
E S	0,9 2	0,5 9	- 0,4 8	- 0,6 4	- 0,6 5	- 0,4 4	RO	- 0,1 8	- 0,2 3	0,6 3	0,3 5	0,0 6	0,3 6
E U	0,8 1	- 0,7 3	0,8 8	0,9 4	0,9 3	0,9 7	SE	- 0,3 2	0,4 7	0,7 4	0,5 8	- 0,5 8	0,4 3
FI	0,3 5	0,5 7	- 0,0 4	0,4	- 0,2 9	0	SI	0,9 8	-0,9	0,7 4	0,7 9	0,9 5	0,4 8
F R	- 0,8 6	- 0,6 2	0,2	0,9 3	0,9 5	0,9 2	SK	0,7 2	- 0,7 5	0,9 4	0,9 4	0,9 8	0,8 8
H R	-0,3	- 0,3 7	0,6 2	0,6 4	0,3 7	0,7 6	UK	0,4 2	0,5 4	0,3 6	0,6 1	0,4 1	0,6 3
H U	0,9 5	- 0,5 4	0,8 7	0,7 4	0,5 6	0,8 6	Ave r.	0,4 7	- 0,2 6	0,5 5	0,6	0,3 9	0,5 2

Source: Own calculations of the authors.

Analysing the correlations coefficients calculated between public innovation and indicators of economic competitiveness, it can be expressively noted that these coefficients are considerably lower. Thus, on average the correlation between governmental supported innovation (1\*) and indicators 2, 3, 4, 5, 6, 7, is ranging between -0.04 (no interdependence) to 0.24 (weak positive interdependence). Accordingly, in the table 2 out of 174 calculated correlations, only 70 are strong compared to 95 identified in the table 2. It is necessary to underline that at the level of the European Union, it is reported strong correlations for all of the indicators except the 3<sup>rd</sup>, the fact demonstrating that in both cases i.e. entrepreneurial or public supported innovation, they are weakly interconnected with gross capital formation in the economy.

**Table 2. Summary of Correlations between Governmental Innovation and indicators of economic competitiveness**

	1*&2	1*&3	1*&4	1*&5	1*&6	1*&7		1*&2	1*&3	1*&4	1*&5	1*&6	1*&7
A T	- 0,64	- 0,02	0,60	0,77	0,89	0,73	IE	- 0,52	0,50	0,20	- 0,50	- 0,76	- 0,41
B E	0,63	0,18	0,60	0,71	0,97	0,87	IT	0,49	- 0,74	0,31	0,76	0,67	0,69
B G	0,36	0,56	- 0,32	- 0,52	- 0,25	0,20	LT	0,47	- 0,19	0,74	0,66	0,47	0,72
C Y	0,91	0,90	- 0,86	- 0,84	- 0,92	- 0,96	LU	- 0,90	- 0,21	- 0,75	0,65	0,85	0,82
C Z	0,87	- 0,60	0,82	0,82	0,75	0,94	LV	- 0,07	- 0,04	0,85	0,81	- 0,36	0,69
D E	0,80	0,04	0,56	0,92	0,73	0,90	MT	0,21	0,17	0,11	- 0,29	- 0,52	0,96
D K	- 0,43	0,52	0,66	0,25	- 0,29	0,33	NL	0,77	- 0,72	0,75	0,86	0,85	0,80
E E	- 0,07	- 0,47	0,85	0,77	0,32	- 0,31	PL	0,68	0,17	- 0,13	0,06	- 0,37	0,75
E L	- 0,49	- 0,17	0,50	0,03	0,14	0,09	PT	0,63	0,86	- 0,82	- 0,88	- 0,78	- 0,71
E S	0,61	0,25	- 0,67	- 0,68	- 0,51	- 0,18	RO	- 0,12	0,14	0,50	0,56	- 0,51	0,36
E U	0,64	- 0,86	0,64	0,87	0,92	0,94	SE	0,20	- 0,12	0,46	0,49	- 0,35	- 0,59
FI	0,19	0,20	- 0,42	0,12	- 0,22	- 0,54	SI	- 0,55	0,65	- 0,84	- 0,88	- 0,70	- 0,79
F R	0,77	0,37	- 0,52	- 0,81	- 0,56	- 0,56	SK	0,85	- 0,22	0,70	0,59	0,59	0,92
H R	0,60	0,65	- 0,41	- 0,49	- 0,69	- 0,16	UK	0,70	0,61	0,20	- 0,51	- 0,84	- 0,54
H U	- 0,73	0,83	- 0,49	- 0,63	- 0,75	- 0,26	Ave r.	0,24	0,11	0,13	0,13	- 0,04	0,20

Source: Own calculations of the authors.

## Conclusions

Entrepreneurial and innovation performance is unevenly distributed across the European Union. The Western and Northern member countries tend to report more favourable results in terms of economic competitiveness and technological readiness, while the Eastern and Southern parts register weaker performances. In order to keep up with the changing global environment and reduce the existing internal economic and social irregularities, the European Union developed a complex policy framework aimed to boost its competitiveness. It has been established a range of programmes and strategies intended to direct funding in the areas of strategic importance irrelevant i.e. innovation and re-definition of entrepreneurship. By analysing the indicators of economic competitiveness it was demonstrated that the initiatives promoted by the European Union in the area of innovation and entrepreneurship proved to have a beneficial effect upon overall European economic performance. Nevertheless, there are considerable development gaps between the “old” and “new” European member countries as well as between the Northern and Southern counterparts. Thus, it can be explicitly noted that the European Union is composed by two groups of countries and namely those forming the economic “core” i.e. Scandinavian nations, Benelux, Germany, France, Italy and the United Kingdom and the periphery, the rest of the nations. Consequently, it is necessary to underline that the “core” is much more advanced in terms of public and entrepreneurial innovation having higher levels of economic competitiveness while the periphery struggle with significantly less competitive environment. In its present form, the European Union lacks financial and institutional power to develop more comprehensive policies capable of reducing development gaps among the EU countries. Present policies promoted by the European Union based on the principles of “social market” demonstrated low effectiveness as they cannot be efficiently applied on the whole territory of the Union due to the existence of development gaps. Thus, in the lower developed “peripheral” nations which register lower competitive entrepreneurship and innovation readiness, it is not justifiable to apply policies requiring higher governmental participation in the economy since this fact will lead to further suppression of the business environment. In such conditions, the business, population, financial resources will migrate towards developed EU regions where opportunities are higher. The EU is trying to compensate these losses in terms of economic potential by provision of funding through different instruments, nevertheless, the beneficial effects are not sufficient to compensate the economic loss. In such conditions, it is accepted the H1 which mentions that entrepreneurial innovation could not be compensated with public driven innovation policies and funding. In these circumstances, the European Union should re-define its policy framework providing more favourable business opportunities and reducing bureaucratic pressure and over-regulation, enhancing business potential of the member countries. This fact is particularly valid for peripheral nations of the European Union the business environment of which should be offered more evident entrepreneurial opportunities. In the conditions of changing global environment, trying to export the model of “welfare state” on the whole territory of the EU, including regions with prominent business and those registering weaker entrepreneurship will reduce the overall

community's economic competitiveness since additional implication of the state in the economy requires financial resources. Accordingly, it is advised that the decision makers in the European Union should re-define policy framework putting the accents on more liberalistic principles, the fact which is necessary to be accompanied by stronger political and economic integration among nations.

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## Cognitive Approach in Document Indexing

Savo TOMOVIĆ<sup>1</sup>, Kosta PAVLOVIĆ<sup>2</sup>

### Abstract

*Even though the digital processing of documents is increasingly widespread in industry, printed documents are still largely in use. Datum Solutions Cognitive Capture implements the automatic processing of administrative documents that need to be treated in a close to real time manner. The software can handle complex documents, in which the contents of different regions and fields can be highly heterogeneous with respect to layout, printing quality and the utilization of fonts and typing standards.*

**Keywords:** cognitive capture, text classification, document indexing

### Introduction

With the growing use of information technology, web systems and recent advances in database management systems used for creating, retrieving, updating and managing data, as well as fast and secure access to data repositories through computer networks and grids, the amount of data available to numerous companies, agencies and scientific laboratories has increased exponentially (Bernus and Noran, 2017).

Naturally, all users want to utilize these huge repositories to improve their business activities. As a result, cognitive systems have become a very popular topic, technique and method for solving the “data rich and information poor” syndrome (Gliozzo, 2017).

Cognitive systems are about exploring the data - the process of semiautomatic, reliable and intelligent analysis of large sets of mainly unstructured data and discovery of useful knowledge, information, instructions, answers, correlations and new context in that data to provide innovative solutions (Bernus et al 2017).

Cognitive techniques are getting increasingly integrated in day-to-day business operations making them more efficient and cheaper. At the same time, cognitive computing is getting increasingly interesting for research workers and scientists from different areas.

Consequently, real-world problems and new cognitive topics are constantly growing.

There are two distinct eras of computing have occurred: the tabulating era and the programming era. We are entering the third and most transformational era in computing’s evolution, the cognitive computing era (Gliozzo, 2017).

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<sup>1</sup> Savo TOMOVIĆ is associate professor at the University of Montenegro, Montenegro, E-mail: savot@ac.me

<sup>2</sup> Kosta PAVLOVIĆ is teaching assistant at the University of Montenegro, Montenegro, E-mail: kosta@ac.me

**Figure 1. The three eras of computing (Gliozzo, 2017)**

Dr. John E. Kelly defines cognitive computing (Kelly J. E, 2015): “Cognitive computing refers to systems that learn at scale, reason with purpose and interact with humans naturally. Rather than being explicitly programmed, they learn and reason from their interactions with us and from their experiences with their environment.”

Cognitive computing systems has wider and more advanced characteristics from those generally attributed to artificial intelligence. Cognitive techniques do not understand just replacing and/or replicating the way that the human brain works. They are meant to extend the capabilities of the human brain (Bernus et al 2017).

People are good at fast reasoning, deep thinking, and solving complex problems. But the human ability to read, analyse, and process huge volumes of data, both structured and unstructured, is quite poor. That is the strength of the computer system (Bernus et al 2017).

Cognitive computing system is to combine strengths of human and machine into a collaborative situation. Cognitive computing uses machine strengths to “simulate” the human thought processes in a computerized model (Bernus et al 2017).

One more key element of cognitive systems is a more natural interaction between human and machine, combined with the capability to learn and adapt over time (Bernus et al 2017).

Cognitive systems use techniques, such as machine learning, data mining, natural language processing, and pattern matching to mimic how a human brain works.

### Cognitive Capture

Core Cognitive Capture functionalities cover automatic processing of administrative documents that need to be treated in a close to real time manner. By the automatic processing we consider *document classification* and *indexing*.

Many commercial products offering such services are based on the definition of fixed spatial templates that basically map the locations in which the OCR must read the fields to extract. Such basic strategies might perfectly work in simple scenarios but start to cause problems as soon as the number of documents to deal with become massive and if the document layout varies along time.

The Cognitive Capture can handle complex documents, in which the contents of different regions and fields can be highly heterogeneous with respect to layout, printing quality and the utilization of fonts and typing standards.

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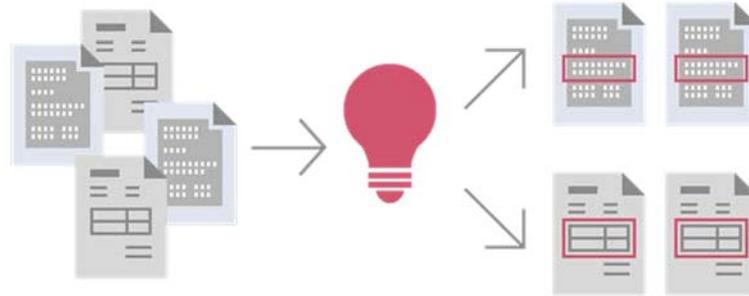
The Cognitive Capture employs a machine learning approach, whereby the system is first provided with a set of training documents in which the target fields are manually tagged. The system automatically learns how to classify future documents and extract desired fields in them.

Additionally, the Cognitive Capture can build a document model given a single training sample. In that sample user has marked fields that must be extracted. The model is representing structural relationships among target fields. The model is incrementally refined as the system processes more and more documents. To additionally improve model accuracy, Cognitive Capture builds different model for each document class.

Special attention has been given in our solution to ensure high usability of the resulting system. The semi-automatic construction of a model for a document has been designed to simplify and speed-up the required human intervention, and the matching between the model and new instances of the document is fully automated and based on computationally efficient techniques.

The Cognitive Capture contains several connected modules. The architecture is presented on the following picture.



**Figure 3. Document classification step**

Cognitive Classifier can achieve that documents in the same category are more similar in some sense (i.e. contextually) to each other than to those in other classes.

The library scikit-learn for Machine Learning in Python (Smola and Schölkopf, 2004) is used for implementation of the Cognitive Classifier.

Document classification is implemented as linear classifier with stochastic gradient descent (SGD) learning: the gradient of the loss is estimated each sample at a time and the model is updated along the way with a decreasing strength schedule (aka learning rate).

The system can start with just one training sample as well as very large set of documents for which classes they belong to are known in advance (supervised learning approach). Based on this training set the system creates initial classification model.

Classifier is built in two steps: training and testing. In the training step we apply SGD machine learning algorithm on the given set of documents and create model. It is common to build several models during this step. In testing phase, we want to estimate model performances. There are several measures. The most common one is model accuracy that is percentage of correctly classified instances. To achieve realistic estimation, it is highly recommended to have independent sets of samples for training and testing. At the end we usually choose model with the highest accuracy.

For document representation we use a bag-of-words approach – the text content is turned into numerical feature vectors. Text pre-processing, tokenizing and filtering of stop words are included in an elevated level scikit-learn component named CountVectorizer. It can build a dictionary of features and transform documents to feature vectors. The CountVectorizer assigns a fixed integer id to each word occurring in any document of the training set (for instance by building a dictionary from words to integer indices). After that, for each document  $#i$ , count the number of occurrences of each word  $w$  and store it in  $X[i, j]$  as the value of feature  $#j$  where  $j$  is the index of word  $w$  in the dictionary.

As we mentioned earlier, the best accuracy (above 90%) we achieved with linear support vector machine (SVM) algorithm, which is widely regarded as one of the best

text classification algorithms. Of course, we can change the learner by just plugging a different classifier object into our pipeline.

The Cognitive Classifier implements auto-learning feature for document classification. It means that the system can dynamically be extended with new classes.

For new class detection we used OneClassSVM classifier (Rusiñol, Benkhelfallah and dAndecy, 2013). It is an unsupervised algorithm that learns a decision function for novelty detection: classifying new data as similar or different to the current set.

When the Cognitive Classifier made wrong prediction, procedure named Manual Assembly is activated. Manual Assembly is primarily web-based component.

Manual Assembly provides user interface for assigning the current document to one of the existing classes. Also, it is possible to create new class and assign the current document to it. To achieve the best accuracy, user can specify key words for each new class.

In the backend, there is a batch application that creates JSON messages for the Cognitive Classifier as consequence of the user actions through Manual Assembly interface. These messages are referred as learning messages.

The learning messages are core of auto-learning process for the Cognitive Classifier. All learning messages are prepared in JSON format and written in the appropriate queue from where the Cognitive Classifier can consume them. The messages contain information about correct class when classifier made wrong prediction as well as description of the new class if it must be added to the system.

After receiving learning messages, the Cognitive Classifier maintains extending and tuning procedures of the existing model to achieve correct classification for subsequent documents.

The Cognitive Classifier has option for learning from data that doesn't fit into main memory - out-of-core approach.

Output of the Cognitive Classifier is a JSON message that is written to the appropriate queue. The message contains classification result: group label, class label and layout label. This means that this module processes hierarchical classification because document can belong to one of many layouts into one of many classes into one of many groups.

The Cognitive Classifier can be used as standalone module. But, in the Cognitive Capture document classification is used as the first step in extracting/indexing target fields from a given document. The Cognitive Capture builds different indexing model for each document layout and in that way improve indexing accuracy.

## **Document Indexing**

By document indexing we consider extracting desired fields from a given document.

Document can be in any format, but the most efforts are directed on scanned document images. Potentially, documents could be from any context, but we were concentrated to administrative documents, more precisely on invoices.

**Figure 4. Document indexing step****Cognitive Capture**

... Important information can be identified and extracted for use in downstream applications



Our solution is tested on experimental set of documents – scanned invoices downloaded from the web. We can achieve accuracy greater than 90% for the following target fields: invoice number, invoice date, vendor, address and total amount.

We employ a machine learning approach, whereby the system is first provided with a set of training documents in which the target fields are manually tagged, and automatically learns how to extract these fields in future documents. We implemented two approaches.

The first one is hybrid solution based on implementing rules and/or classifier for each desired field. We have separate rules/classifier for each target field.

Rules are not static and rigid and are not based on absolute position of the target field in the document. We implemented dynamically adaptable rules. Our rules allocate some points to each field in the document. At the end, the desired field should be the winner – the field to which our algorithm gave the most points.

Rules allocate points based on field content and format, surrounding fields' content and format, relative position in the document, etc. We can modify, add and delete rules and their points allocation algorithms dynamically, with respect to new documents being processed (auto-learning procedure).

Alternative to rules is classification model that we build for desired field. Model should be trained and tested on realistic set of documents. As fields' attributes we consider relative positions, size, font size and use NLP techniques to extract contextual information. The best accuracy we achieved with Decision trees. Of course, we can change between rules and classifiers by just plugging a different object into our pipeline.

The second approach builds a document model representing structural relationships among target fields given a single training sample in which the user has marked which fields must be extracted from a document group, class and layout. The main idea is to make the model learn document layout.

Layout is document geometry. The model stores positions of each field with respect to other in polar coordinates. Target field is found by managing voting process where each field give or does not give vote to the target. The voting is based on geometry relations between voter and target encoded in polar coordinates. The model is

incrementally refined as the system processes more and more documents from the same class.

The Cognitive Indexer is batch application. It accepts messages from the Cognitive Classifier message queue. It uses classification labels assigned to the document being processed to extract target fields.

Document indexing maintains separate models for each target field and for each document group, class and layout. If the field from the current document is recognized with high confidence the corresponding model is tuned to achieve better model accuracy for subsequent documents from the same group, class and layout.

All fields that are extracted with sufficiently high confidence are packed in JSON message that is written to the appropriate queue. This is the end of cognitive flow. The separate module with appropriate web interface listens the cognitive result queue and highlights extracted fields in the user window.

When the Cognitive Indexer is not able to extract target fields with sufficiently high confidence or when wrong content is extracted the process terminates with failure. The current document is sent to Manual Indexing module to initiate auto-learning procedure of the system (incremental learning and models tuning).

Manual Indexing is primarily web-based component. It provides user interface for definition of target fields. User can specify field type, format, labels and other attributes to achieve the best accuracy.

In the backend, there is a batch application that creates JSON messages for the Cognitive Indexer as consequence of the user actions through Manual Indexing interface.

The messages are core of auto-learning process. All messages are prepared in JSON format and written in the appropriate queue from where the Cognitive Indexer can consume them. The messages contain information about correct content that should be extracted when indexer made wrong decisions.

After receiving learning messages, the Cognitive Indexer recognizes which models caused wrong extraction and should be updated. It maintains extending and tuning procedures of the models to achieve better results for subsequent documents.

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## Social entrepreneurship - a way to involve youth in developing process

Aurelia BRAGUTA<sup>1</sup>, Angela SOLCAN<sup>2</sup>, Ludmila STIHI<sup>3</sup>

### Abstract

*The article refers to the concept of social entrepreneurship and social enterprises, their role of stability of economy, in creating new jobs, including disadvantaged people. Also are mention four elements that underpin the development of social entrepreneurship and namely: entrepreneurs, ideas, opportunities and organizations. The situation about how in R. of Moldova was developed this concept and where we are at this momen, may be a good opportunity to explore and try to fiind local reasurses. The young people are one of the best resurse and need to be involved. During the research the main goal was to identify youth perception of entrepreneurship and how they can be intereste to be part in the development process.*

**Keywords:** *social entrepreneurship, opportunities, organizations, social business, youth*

In the 21st Century, there is a growing awareness concerning the impact of the business on the environment in which it operates, here it can be mentioned both the affected environment and the effects on the local community where the business operates. But it needs to be taken into account that modern technologies have their impact on the expected effects. On the one hand, new technologies reduce the negative effects on the environment, on the other hand they also contribute to changing the philosophy of doing business and influencing people's thinking.

Thus, in the 70's of the 20th century, discussions have been initiated on social entrepreneurship. It is very popular and well developed in the USA and in Western Europe countries. The novelty of the concept consists in the blurring of the border between the business and the social sector. In addition to non-profit organizations, the social entrepreneurship includes activities aimed at obtaining profits, such as banks for community development and organizations combining business and non-profit sector specific elements (e.g., social shelters which carries out for a fee, activities for professional re-qualification and offers jobs). Social entrepreneurs create social value through a continuous process of innovation and capitalization of new opportunities putting the benefit of society first to the detriment of own benefit. There is no unique definition that would characterize entrepreneurship and would be unanimously accepted.

We can mention that social entrepreneurship depends on the economic characteristics and conditions of each individual country, but also on the legal, political,

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<sup>1</sup> Aurelia BRAGUTA it is associate professor at Academy of Economic Studies of Moldova, E-mail: [aureliabraguta@gmail.com](mailto:aureliabraguta@gmail.com)

<sup>2</sup> Angela SOLCAN it is associate professor at Academy of Economic Studies of Moldova, E-mail: [ansolcan@gmail.com](mailto:ansolcan@gmail.com)

<sup>3</sup> Ludmila STIHI it is associate professor at Academy of Economic Studies of Moldova, E-mail: [lstihi@gmail.com](mailto:lstihi@gmail.com)

socio-cultural, technological and ecological infrastructure. Regarding the degree of social impact, there are substantial differences across the globe, especially between developed and developing countries.

In order to clarify the definition of social entrepreneurship, we will refer to some authors dedicated to the researches in the given field and we will bring the definition of some tangential terms, in order to eliminate the confusion in the given terminology. Thus, social entrepreneurship is a process that seeks or looks for innovative solutions to social issues. (The New Horos, What is Social Entrepreneurship, Oregon Public Broadcasting, 2005). More specifically, social entrepreneurs approve a mission to create and support social values. They rely on dual thought in both business and non-profit field and operate in a variety of organizations: large and small, new and trained, religious and secular, profit-free, profitable and hybrid. (J. Gregory Dees, 2001, The meaning of social entrepreneurship). There are many disagreements about the definition and perception of the terms and definitions mentioned above, but we can conclude that social entrepreneurship seeks to identify opportunities for innovation and change, but social enterprises are pursuing profits to reinvest and grow them.

Richard Steckel and Jack Boy define social entrepreneurship as the area where the private sector and volunteering meet. The founders of these enterprises combine social consciousness with commercial abilities. For them, social responsibility is not an "extra", it is the essence.

Haugh H. believes that social entrepreneurship simultaneously pursues economic, social and environmental goals, primarily representing a practical response to unsatisfied individual and social needs.

When talking about social entrepreneurship in general, we can mention four elements that underpin the development of this phenomenon and namely: entrepreneurs, ideas, opportunities and organizations. These elements not only help quickly to develop a business, but also set up strategies that can help entrepreneurs to develop and launch better ideas.

**Entrepreneurs** - must be creative both in setting goals and in solving problems. The power that directs the entrepreneurs is that such a person has a deep commitment to make changes throughout the society or environment. A very important quality for a social entrepreneur is personal ethics.

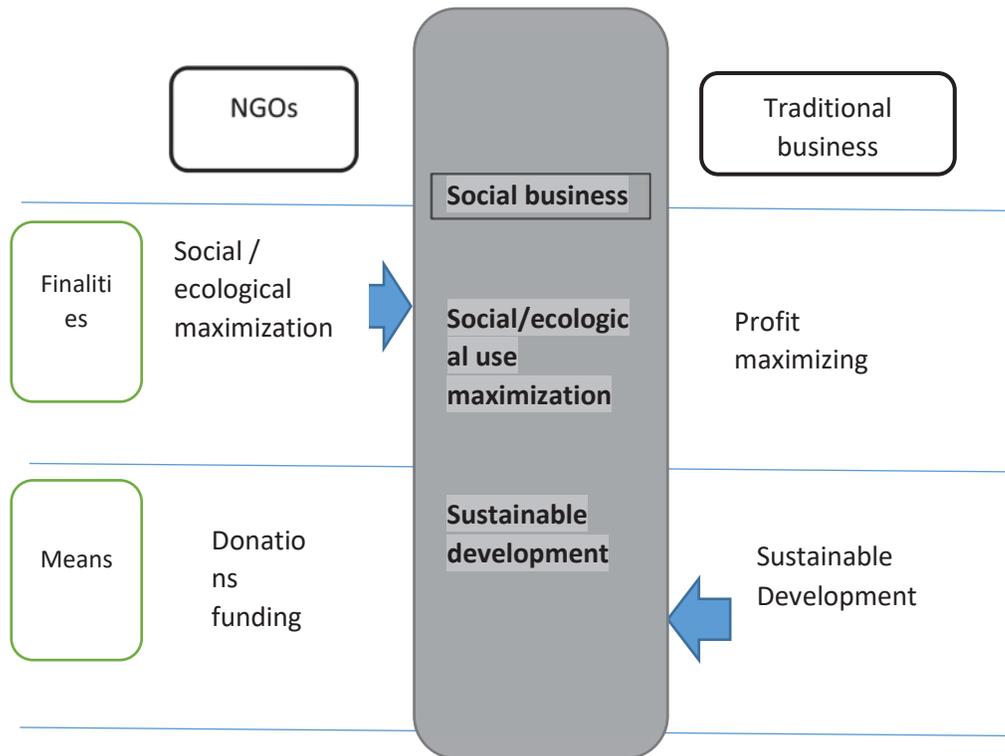
**Ideas** - in the context of social entrepreneurship, the ideas seek not to obtain a profit, but rather to solve a social problem, but that is demanded by the market, that is, by the final consumers. Values for social entrepreneurs target vulnerable groups with a limited access to financial and political resources to achieve the transformable benefits in their own.

**Opportunities** - must be identified and explored. Entrepreneurs have the capacity to identify opportunities, where some see a problem, the social entrepreneur sees an opportunity.

**Organizations** - the biggest challenge for the organization is - how much can organizations do having very limited resources. There are still debates about the goals set by the organization and what its purpose is, but socially oriented ones of course have

a more complicated task because they have to operate with a diversity of resources, but which have to be managed with a high degree of efficiency.

**Figure 1. Differences between NGO activities, traditional business and social affairs**



*Source:* The Grameen Creative Lab, a think tank of the Grameen social business group, puts it this way: “Unlike traditional business, social business operates for the benefit of addressing social needs that enable societies to function more efficiently.” See “The Social Business Concept” at <http://www.grameencreativelab.com/a-concept-to-eradicate-poverty/the-concept.html>. accessed date: 01/11/2011

In order to synthesize the mission of social entrepreneurship and why it becomes vital for the development of society and economic progress, there are specific a series of benefits that it generates to the community in which it operates:

- **Increasing the number of people employed.** Social entrepreneurship activities create jobs and opportunities. At the same time, employment or training opportunities are created for disadvantaged categories or become the link between the labor market and the unemployed.

- **Innovation and creation of new goods and services for social needs not addressed by the society.** As with entrepreneurship, social enterprises apply and develop innovations to develop new goods and services. Social problems most often addressed by social enterprises at this time are: people with mental or physical disabilities, illiteracy, drug abuse, etc.

- **Creates social capital to meet sustainable - social and economic development.**

**- Promotes social equity by addressing the needs of disadvantaged people.**

Social enterprises address social issues and strive to achieve continuous and sustainable impact through their social mission rather than maximizing profits.

**- Demonstrates a strong sense of responsibility for the people they serve and for the consequences of the actions taken.**

European Commission data indicate that one in four enterprises in the European Union (EU) is a social enterprise. The figure rises to one in three in Belgium, Finland and France, 10% of all European enterprises, or 2 million enterprises are social enterprises.<sup>4</sup> The 2009 Social Entrepreneurship Survey, conducted by Global Entrepreneurship Monitor's (GEM), has assessed the share of people involved in social entrepreneurship in the total number of the active population, thus in Belgium - 3.02%, 5.13% in Finland, 2, 63% in France, 2.48% in Italy, 4.41% in Croatia and 4.23% in the United Kingdom.<sup>5</sup> Social enterprises are present in almost every sector of the economy, such as: banking, insurance, agriculture, various commercial services, and health and social services etc. These enterprises are often more productive and competitive, due to the strong personal commitment of founders and better working conditions for employees.

In the Republic of Moldova the development of social enterprises has become a national priority with the adoption by the Parliament of the Republic of Moldova of the Strategy for Civil Society Development for 2012-2015 and of the Action Plan. Although it is widely spread and valued in the Western Europe countries, social entrepreneurship remains a relatively new idea in the Republic of Moldova. The current legislation does not create different conditions for the launch and development of social enterprises. However, several initiatives aimed at the development of social entrepreneurship have been initiated and, in some cases, successfully developed in the Republic of Moldova.

Although there are some successful experiences, they have been largely initiated and developed exclusively through the contribution of external donors. In most cases the companies concerned were created by public associations. In the Republic of Moldova, these entities are taxed according to general rules, regardless of the purpose they pursue. Therefore, a major difficulty is formed by the legal and regulatory conditions.

Another obstacle lies in the modest level of understanding of the concept of social entrepreneurship, manifested by the representatives of central and local public administrations, representatives of vulnerable categories, as well as representatives of non-governmental organizations. Also, among the barriers that hinder the development of social enterprises in a more pronounced way, have been identified: limited access to funding, the level of competencies held by NGO representatives, relations with the local public authorities, relations with control bodies and, not least, the various motivations of the parties involved.

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<sup>4</sup> European Parliament resolution of November 20, 2012 on the Social Entrepreneurship Initiative - Building an ecosystem to promote social enterprises in the context of the economy and social innovation (2012/2004 (INI)) <http://www.europarl.europa.eu>

<sup>5</sup> GEM 2009 Report on Social Entrepreneurship, p. 14 <http://www.gemconsortium.org/docs/download/2519>

Over the past few years, with the support of external donors, a number of projects have been initiated and implemented, targeted, among others, towards the development of social entrepreneurship, and here we refer to UNDP, East European Foundation, Contact Center through DEL program, USAID FHI 360 Project, the Swedish Government and ADA Austria.

Of course, it is very important that social entrepreneurship be promoted among young people, who are actually those who will substantially contribute to the socio-economic development of the country.

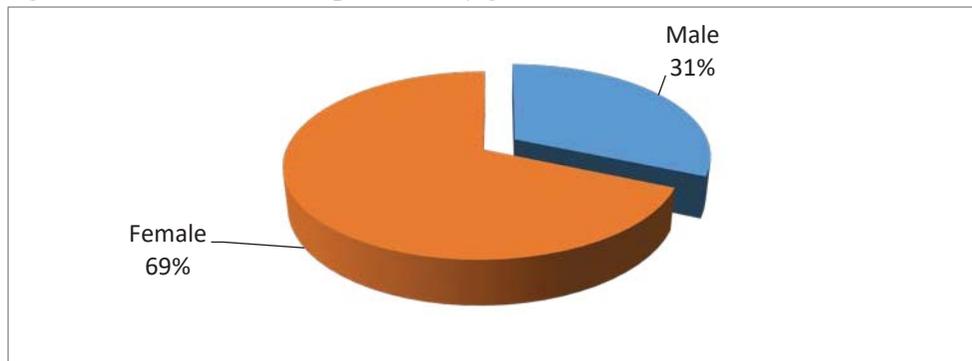
According to the Youth Index 2015 study, and the statistical data identified in the entrepreneurial research process show that young people in Moldova are more likely to start a business (44.40%), compared with adults (24.99%).<sup>6</sup> However, in the realization of this activity young people face a larger spectrum of difficulties, compared to an experienced entrepreneur, which is a powerful demotivating factor for young people to launch in business. The main issues for young entrepreneurs remain: the access to cheap and easily accessible financial resources; insufficient mentoring assistance necessary for young people, especially at the start of the business; poor cooperation with LPA, etc.

Taking into consideration the mentioned about the role and place of social entrepreneurship and young people with initiative, we intend to analyze the young people's perception of this term and how willing they are to be involved in the development of social affairs in the Republic of Moldova.

Thus, between March 15 and 30, 2018, has been conducted a survey among young people, where participated 490 respondents from different areas of Moldova. As a result of the data analysis, we can mention the following:

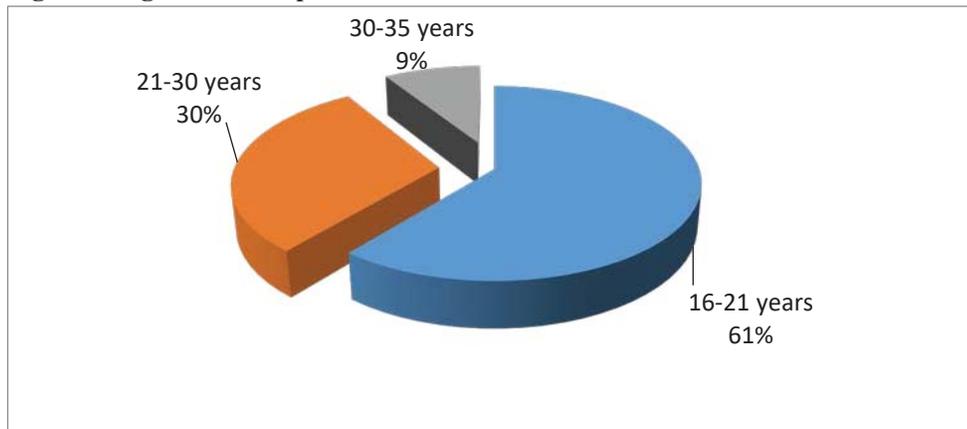
More women were surveyed - 69% than men 31%.

**Figure 2. Distribution of respondents by gender, %**

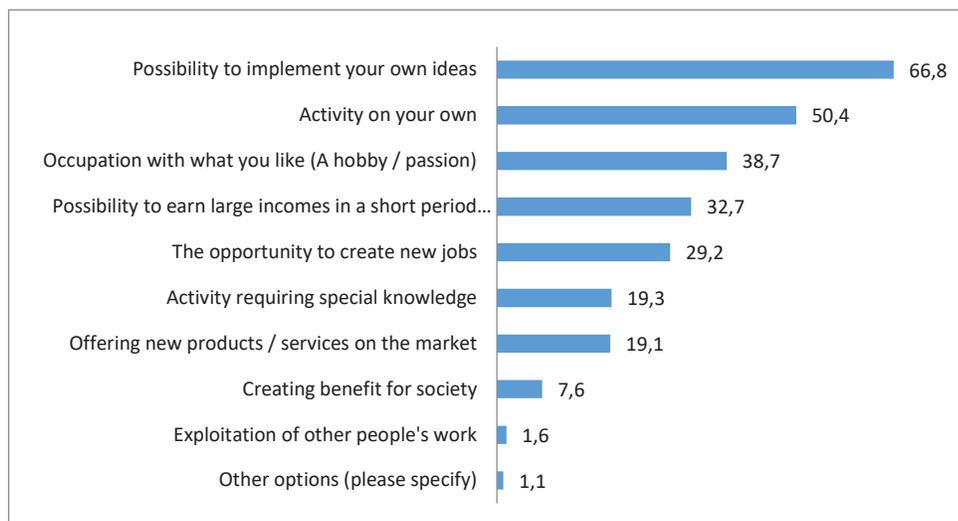


Most of them are young people aged between 16 and 21 years old. So they are the ones who set their priorities for future career and occupation.

<sup>6</sup> Youth Index 2015. <http://moldova.unfpa.org/ro/publications/indexul-de-tineret-2015>

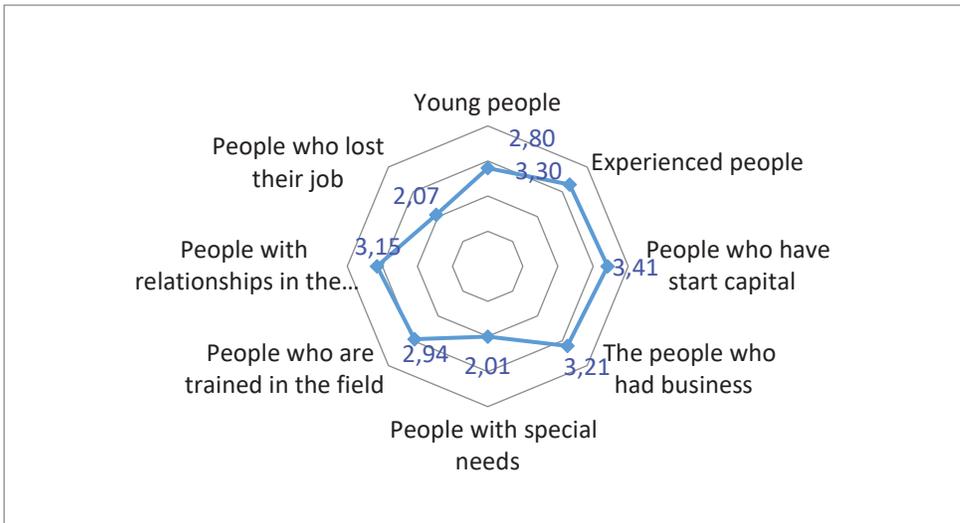
**Figure 3. Age of the sample**

When asked about what is associated with entrepreneurial activity, 66.8% of the young participants surveyed said that with the possibility of implementing their own ideas, 50.4% - with activity on their own and 38.7 - the occupation which they like. Mostly, for young survey participants, the entrepreneurial activity is associated with the benefits people can obtain from the start of a business rather than with the benefits to society. Thus, only 29.2% of the respondents associate entrepreneurship with the creation of new jobs, and the number of those who linked the entrepreneurial activity with the creation of the benefit for the society is 7.6% of the total number of respondents.

**Figure 4. In your vision entrepreneurial activity is associated with .....**

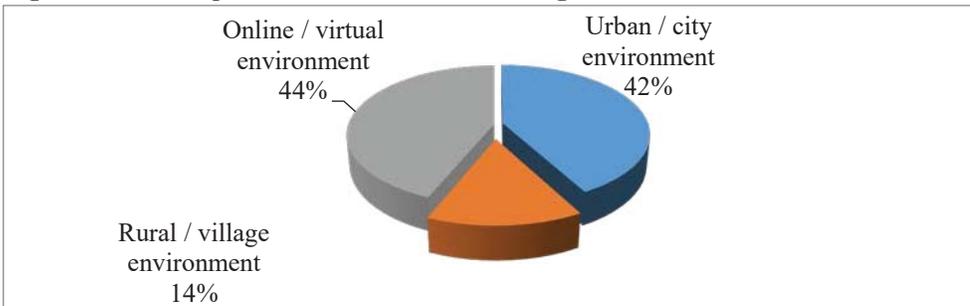
Although young people have initiatives and are most often focused on solving social needs, they still believe that the capital and experience constitute a major factor in initiating an activity on their own.

**Figure 5. Who most often initiates a business**



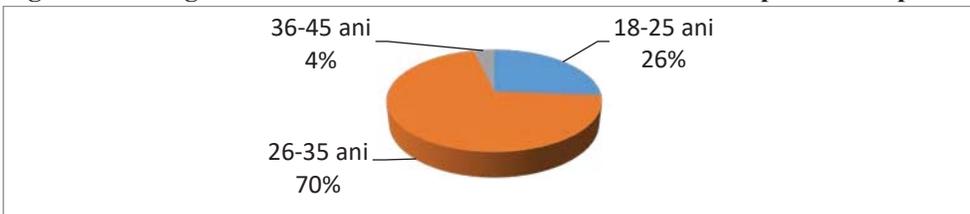
One very important and beneficial thing is that many young people have realized that online businesses are much easier to initiate. Using computers and the Internet (using social networks, movies, games, etc.) helps them develop their digital skills, so being asked where it is easier to start the business, 44% mentioned that in the virtual environment. And there are many examples.

**Figure 6. The simplest environment for starting a business**



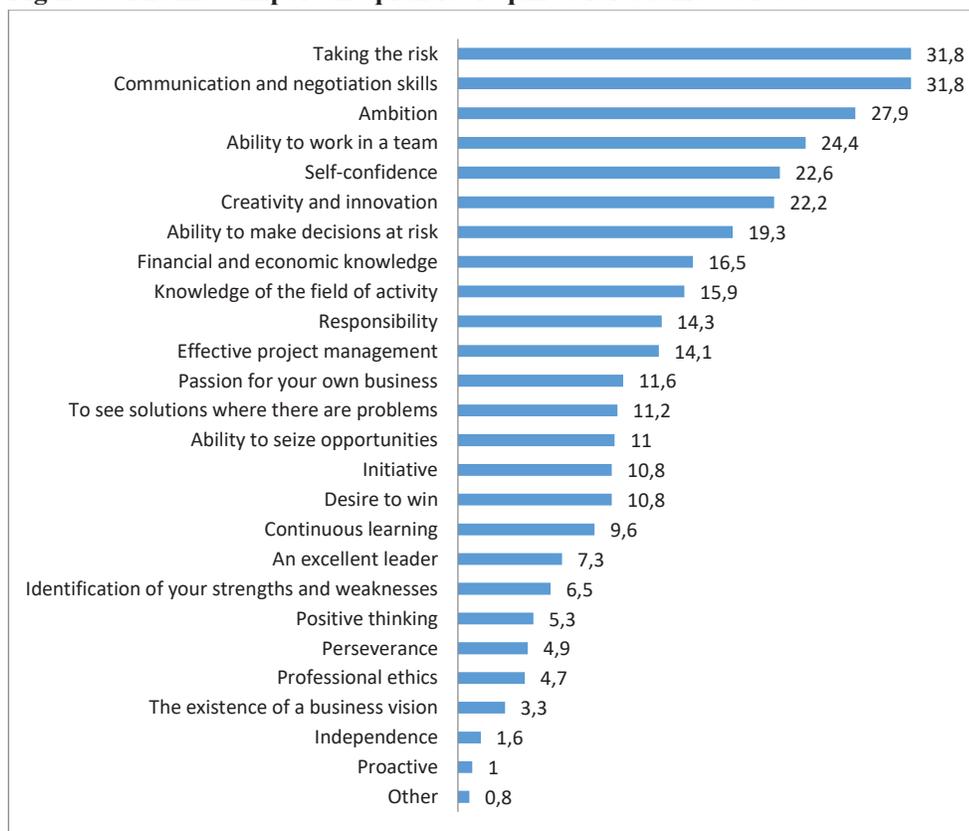
At what age it is better to start your own business, 70% said that between 26-35 years it is optimal to start the business. While 26% think the age when you can start the business is 18-25 years.

**Figure 7. The age at which it is best to start a business in the respondents' opinion**



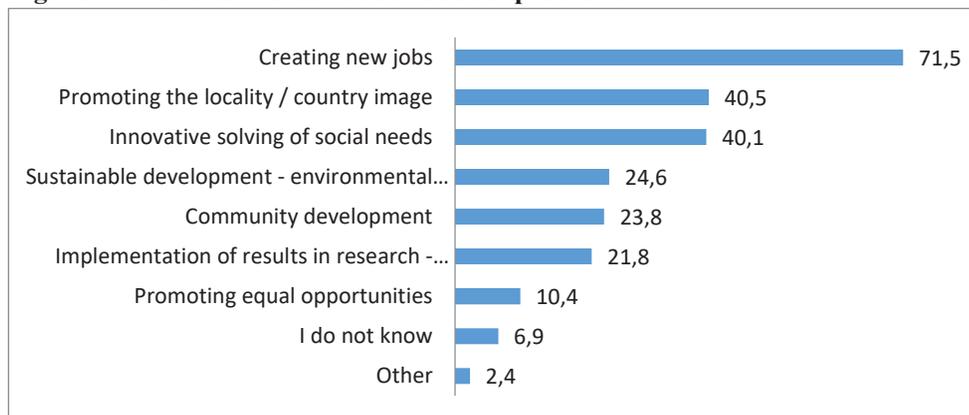
If we consider what qualities are needed to develop a job, then the priority was given by respondents to the following: risk assignment, communication, ambition, teamwork.

**Figure 8. The most important qualities required for business success**



Young people being asked if they are going to start a business, what they are thinking contributing to a business they will develop, and a large part of them have specified job creation, promoting the image of the locality, solving social needs, etc.

**Figure 9. Priorities in order to solve social problems**



Here we mention that young people are willing to get involved in social projects, only that certain messages, successful stories that would promote activities in this field are needed.

Examples that are relevant in EU countries would be an impetus and proof that social entrepreneurship can contribute to the development of a society with the interest of the generation that has potential and development ideas. At the same time, we think young entrepreneurs are more creative and innovative, more open to implementing innovations or introducing business methods and models that can contribute to their rapid growth and internationalization.

### Conclusions

In conclusion, we can mention that, although changes have been made to the legislation of the Republic of Moldova,<sup>7</sup> the terms of social entrepreneurship and social enterprise are poorly known, being more associated with the activity of a non-commercial charitable organization, than with the entrepreneurial activity.

In large part, young people are willing to get involved in social projects (creating new jobs, solving a social need, sustainable development, etc.), but some financial and tax incentives are needed to support their social approach.

Also, messages, successful histories that would promote activities in this field are needed. Thus, it is important to promote the concept of social entrepreneurship and viable social business models, especially those developed in the Republic of Moldova, both among young people and representatives of public administration and business environment.

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<sup>7</sup> Law on Entrepreneurship and Enterprises, Chapter VI1 SOCIAL ENTREPRENEURSHIP AND SOCIAL ENTERPRISE, no. 845-XII of 03.01.92, introduced by CL223 of 02.11.17, MO411-420 / 24.11.17 art.689; in force 24.06.18

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