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## INFLUENCE OF UNIVERSITY GRADUATES' SKILLS AND ATTITUDES ON THE CURRENT STATUS AND FUTURE DEVELOPMENT OF ORGANISATIONS WITH INNOVATION ACTIVITIES IN RUSE REGION (BULGARIA)

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**Abstract:** *The goal of the paper is to present the methodological approach and results from an empirical study, aimed to identify specific needs of employees towards the quality of education of university graduates in order to facilitate the future development of organisations from different type and to improve their innovation performance. The study is done in 2019 among relevant stakeholders from business and socio-economic sectors in Ruse region (Bulgaria), under the Project "Innovative Student-Centred Learning (SCL) Practices fueled with ITC-tools and university – industry cooperation towards reinforcement of Business & Engineering Entrepreneurships education – InoLearn4BEEs", funded under Erasmus+ programme. The results from the study are important input for improvement of the educational approaches within the university level studies in order to respond to the need for improving and adapting the learning processes in higher education in line with the digital transformation, which goes together with intensified international and intercultural cooperation. Specifically, the changes are focused on elaboration of an innovative architecture to step up changes in educating Business, Engineering and Entrepreneurship (BEE) students. The interested stakeholders that might benefit from the research are academics, researchers and practitioners from business, non-profit organisations, local and state institutions.*

**Keywords:** *student-centred learning, digital skills, innovations, quality of education.*

### INTRODUCTION

This paper is one of a set of publications that aim to present an empirical study among stakeholders of the Erasmus+ Project InoLearn4BEEs - Innovative Student-Centred Learning (SCL) Practices fueled with ITC-tools and university – industry cooperation towards reinforcement of Business&Engineering Entrepreneurships education. It is a joint international educational initiative, supported within the Erasmus+ Programme, Key Action2 (KA2): Cooperation for innovation and the exchange of good practices, sub action KA203: Strategic Partnership for higher education.

Motivation for undertaking the project is the need for improving and adapting the learning processes in higher education in line with the digital transformation, that goes together with intensified international and intercultural cooperation (Antonova, et al, 2018; Stoycheva,

Antonova, 2016; Mihajlovic, Ljubenović, Milosavljević, 2015; Todorova, et al, 2011). Thus, the scope of the project covers three main areas: improving digital and critical thinking skills of students in Business and Engineering Entrepreneurship (Fleaca&Fleaca, 2015; SEEDEL, 2014); transforming the existing teacher-centered culture into student-centred learning approach (Iliev, et al, 2018; Kostadinova, Antonova, 2018; Kunev, Petkov, 2016); stimulating and enhancing the digital skills and critical thinking in interdisciplinary and intercultural approach (Bacigalupo, et al, 2016). The implementation of the project activities is based on an exhaustive cooperation among universities and different industries from the Central-East European countries Romania, Bulgaria, Slovakia and Poland. More information about the partners and detailed explanation of the project's actions could be found on its website - <https://www.inolearn4bees.org/>.

The empirical study done within the project activities had as a main research objective to identify and define important elements for design the content of structure of thematic map built on the entrepreneurial process, support for develop Intercultural Knowledge Resource with intercultural views deeply embedded in entrepreneurial learning concept, customized on each of the fields Business Education and Engineering and Entrepreneurship Education. The respondents are asked to express their view for real-life problems of their Business/industry sector; to evaluate relevant achievements in the sector; to identify challenges and opportunities for future development. For the Bulgarian sample of 38 respondents from the Ruse region the individual units were business companies from various sectors (82%), civil society organizations (10%), public administrations and/or governmental entities (5%) and professional associations (3%). The respondents were asked to fill-in an online-based questionnaire, specifically designed for the survey by the project leading partner organization – University Politehnica Bucharest (Romania) and adapted locally by the team of University of Ruse “Angel kanchev”.

## EXPOSITION

### Methodological framework

With the general methodological approach of the study we have defined the following research questions, that could be used to build a model for evaluating the influence of university graduates' skills and attitudes on the current status and future development of innovative organizations:

**First: how to define the innovative organizations?** This is done with the help of questions Q11.B1 “What is your investment activity in your organization in the last two years” and Q12.B2 “Has your organization introduced any of the following innovations through the last two years”.

**Second: how to evaluate the influence of university graduates' skills and attitudes?** This is done by the connection with three questions from the survey – 16.C4 “In your opinion, how important are the following ATTITUDES TO WORK among higher education graduates?”, 17.C5 “Considering your experience as an employer, what is your SATISFACTION on the ATTITUDES for working of graduates?”, and 18.C6 “Considering your experience as an employer, what is your SATISFACTION on HIGHER EDUCATION graduates' ABILITY TO WORK?”

**Third: how to define the future development of the organizations?** This is done by connecting with question 15.C3 “What will be the guidelines for the development of your organization in the next period?”.

In the Fig.1 below the elements of the suggested methodological approach are displayed.

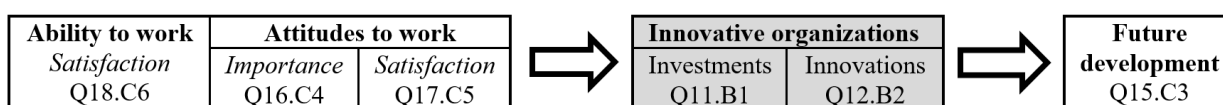


Fig. 1. Logical interactions among research questions within the proposed evaluation model

### Empyrial results

First, we start with describing the innovative organizations. One of the criteria for a legal entity with the sample to be included in the group of innovators is if it has implemented investments in a specific set of activities in the last two years. This information is extracted from the answers of question 11.B1 from the online-based questionnaire (see Fig.2).

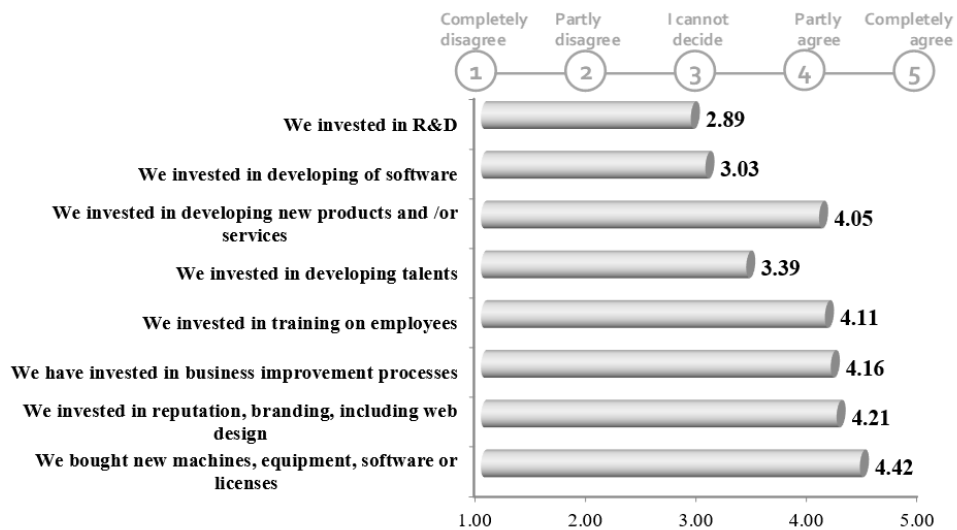


Fig. 2. Investment activity of respondents in the last two years

The average scores of the different investment decisions clearly show that the preferences for investing in technological solutions (4,42), branding and web design (4,21), as well as in improving the business process (4,16) and training of employees (4,11) prevail. Also, it seems that the most difficult to invest activity is the R&D, maybe because usually it needs a lot of resources and the results are achieved in a long-term period.

The other very important criteria for defining the innovative organizations is the application of different innovative solutions within their business activity. This question directly corresponds to the main types of innovations, described in theory, and the results from this study are shown on Fig.3.

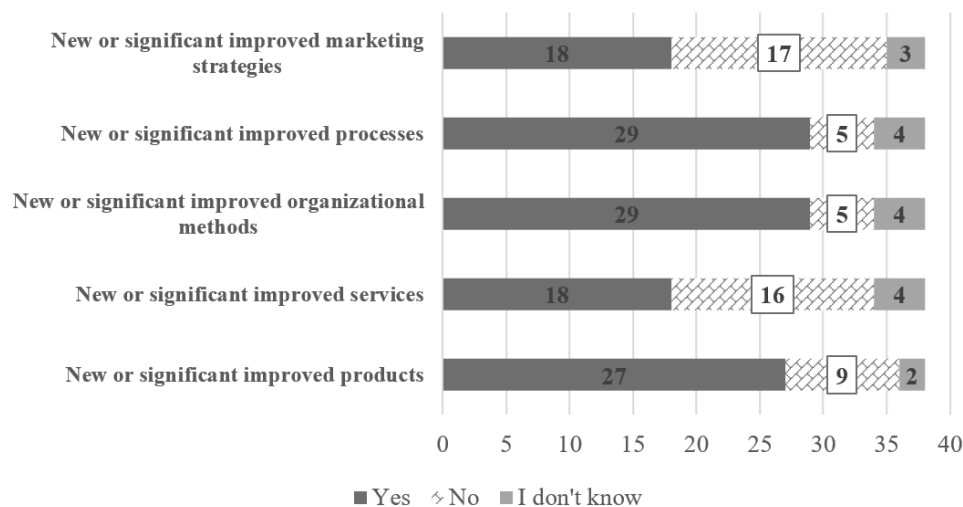


Fig. 3. Introducing the different types of innovations through the last two years (number of answers)

The results show that most of the companies prefer to focus on process and organizational

innovative solutions (29 “Yes” answers for each) and then to invest in product innovations (27 “Yes” answers).

On the next stage of the emyrical analysis we try to evaluate the influence of university graduates’ skills and attittudes on the current status of innovative organizations. This is done by firstly filtering all the interviewed entities to those with positive answers to the previous two questions (see Fig.2 and Fig.3 above) and then analysing their responses, not the answers of all respondents. This could give a general picture of the factor influence, but due to the small number of respondents in this survey, the results could lead to some incorrect analysis. More clear and comprehensive analysis could be done if we compare the average evaluations of the different factors’ influence within the innovative behaviour of the respondents – if they have implemented product, process, technological, organizational or marketing innovations. This is extracted by the YES answers from question 12.B2. The table bellow represents the calculations.

Table 1. Evaluation of graduates’ attitudes to work by innovative profile of the respondents

<b>C4. In your opinion, how important are the following ATTITUDES TO WORK among higher education graduates?</b>	Product innovators	Service innovators	Organizational innovators	Process innovators	Marketing innovators	Average
Positive attitude to work tasks	4.22	4.39	4.34	4.34	4.28	<b>4.31</b>
Persistence in work	4.48	4.61	4.48	4.52	4.39	<b>4.50</b>
Initiative	4.44	4.83	4.66	4.52	4.50	<b>4.59</b>
Dealing with uncertainty and stress	4.41	4.56	4.34	4.41	4.33	<b>4.41</b>
Striving for achievements	4.44	4.56	4.48	4.45	4.78	<b>4.54</b>
Endurance	4.22	4.17	4.17	4.28	4.33	<b>4.23</b>
Stability	4.56	4.61	4.59	4.66	4.56	<b>4.60</b>
Average:	<b>4.40</b>	<b>4.53</b>	<b>4.44</b>	<b>4.45</b>	<b>4.45</b>	<b>4.45</b>

The average scores in the table show that among the most important attitudes to work are the Stability (highest score, 4.60), the Capability to be initiative (second place, 4.59) and striving for acheivements (third place, 4.54). But, if we compare the opinion of the different types of innovative companies, we might notice that have the highest perception towards the graduates’ attitudes have the service innovators – cumulative average of 4.53, and four of the surveyed attitudes have the maximum grades in this companies (highlighted in grey). Next are the marketing innovators, where two of the attitudes (striving for achievements and endurance) have their maximum score, and after them are process innovators who find the graduates’ stability as most important.

If we have a look on the satisfaction of the respondents with those same attitudes the results are not so positive as those for the importance (see Table.2).

Table 2. Satisfaction from graduates’ attitudes to work by innovative profile of respondents

<b>C5. Considering your experience as an employer, what is your SATISFACTION on the ATTITUDES for working of graduates?</b>	Product innovators	Service innovators	Organizational innovators	Process innovators	Marketing innovators	Average
Positive attitude to work tasks	3.30	3.17	3.48	3.34	3.28	<b>3.31</b>
Persistence in work	3.25	3.17	3.10	3.00	3.06	<b>3.12</b>
Initiative	3.05	3.28	3.14	3.10	3.22	<b>3.16</b>
Dealing with uncertainty and stress	3.10	3.06	3.21	3.14	3.39	<b>3.18</b>
Striving for achievements	3.15	3.17	3.21	3.10	3.17	<b>3.16</b>
Endurance	2.90	3.11	3.17	3.07	3.11	<b>3.07</b>
Stability	2.95	3.06	2.93	2.83	2.89	<b>2.93</b>
Average:	<b>3.10</b>	<b>3.15</b>	<b>3.18</b>	<b>3.08</b>	<b>3.16</b>	<b>3.13</b>

The overall satisfaction is 3.13, which means that the respondents are not so confident about

the level of performance of the graduates. The weakest results of 2.93 is for Stability, which at the same time the most important attitude if we look at the previous table. The highest satisfaction is for Positive attitude to work tasks (3.31), but that is not enough for a good performance at work. If we compare the average results across the different innovative profiles, we may notice that there are no significant differences, the highest complex satisfaction is at organizational innovators (3.18).

Next set of characteristics that the respondents are asked to assess is the graduates' abilities for work. They are evaluated from the viewpoint of the employers' satisfaction (see Table 3).

Table 3. Satisfaction from graduates' ability to work by innovative profile of respondents

<b>C6. Considering your experience as an employer, what is your SATISFACTION on HIGHER EDUCATION graduates' ABILITY TO WORK</b>	Product innovators	Service innovators	Organizational innovators	Process innovators	Marketing innovators	Average
Communicativeness	3.81	3.61	3.72	3.66	3.72	<b>3.70</b>
Teamwork	3.52	3.50	3.38	3.21	3.44	<b>3.41</b>
Leadership	3.15	3.00	3.10	3	3.17	<b>3.08</b>
Planning skills and organizing	3.19	3.00	2.97	2.83	3.06	<b>3.01</b>
Synthetic thinking	3.07	2.78	2.93	2.83	3.11	<b>2.94</b>
Analytical thinking and problem solving	3.26	3.22	3.10	3.03	3.11	<b>3.14</b>
Critical thinking	2.89	3.28	2.90	2.83	2.83	<b>2.95</b>
Innovativeness and entrepreneurial skills	3.07	2.89	2.90	2.9	3.11	<b>2.97</b>
Digital / Computer skills	4.07	4.06	3.93	3.93	4.00	<b>4.00</b>
Knowledge of foreign language	3.78	3.94	3.79	3.69	3.56	<b>3.75</b>
Accuracy and responsibility when performing work tasks	3.33	3.06	3.17	3.03	3.17	<b>3.15</b>
Specific to the profession knowledge and skills	3.26	3.33	3.10	2.93	3.06	<b>3.14</b>
Good knowledge of related areas	3.11	3.39	3.03	2.9	3.00	<b>3.09</b>
Verbal argumentation	3.37	3.00	3.14	3.07	3.28	<b>3.17</b>
Written argumentation	3.26	2.83	3.00	2.93	3.11	<b>3.03</b>
Adaptability to new situations	3.41	3.39	3.34	3.28	3.50	<b>3.38</b>
Ability to act in new situations	3.22	3.17	3.21	3.17	3.33	<b>3.22</b>
Knowledge of culture, society and the economy of the country	3.30	3.17	3.10	3.07	3.44	<b>3.22</b>
Skills for decision making	3.00	2.89	2.93	2.76	3.00	<b>2.92</b>
Average:	<b>3.32</b>	<b>3.24</b>	<b>3.20</b>	<b>3.11</b>	<b>3.26</b>	<b>3.22</b>

The overall satisfaction from the set of competences within the graduates' abilities for work is a bit higher than the satisfaction from their attitudes – average score 3.22 for the abilities, compared to 3.13 for the attitudes. The top three satisfactions are for the Digital / Computer skills (4.00), Knowledge of foreign language (3.75) and Communicativeness (3.70). This result is caused probably by the type of activity of the respondents, because in most cases innovative entities, nevertheless of the innovative profile, operate not only in national, but also on international markets and with high level of digitization of their activities. If we compare the complex satisfaction of each innovative profile, the most satisfied are the product innovators (3.32), while the weakest satisfaction is among process innovators.

Finally, if we analyse the prospect for future development of the interviewed entities, we may notice that most of the respondents are orientated to innovative solutions that are based on adaptation and strong application of the characteristics of the human resources inside the company. This analysis is done with the help of question 15.C3 "What will be the guidelines for the

development of your organization in the next period?”. Here the suggested options are:

- Upgrade our research activity
- Improving our processes for: production, distribution, human resources, finance
- Improving our services
- Development and / or improving methods for work
- Developing new businesses models
- Upgrade marketing strategies (packaging, price, distribution, promotion)

On Figure 4 below only the positive “Yes” answers for all options from all respondents are shown, because when answering, the organizations are allowed to choose up to three answers from the list with suggested options.

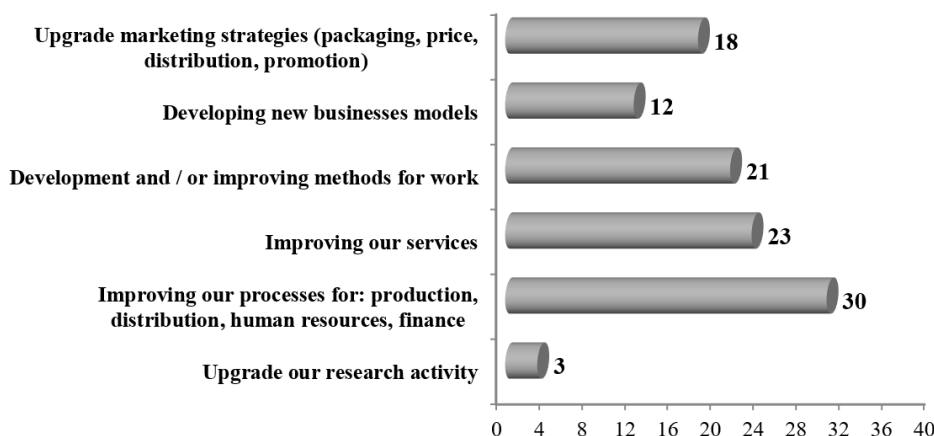


Fig.4. Preferences for innovative solutions for the development of respondents in the next period

Nevertheless, of their previous innovational experience, the respondents show readiness to implement in the near future mostly process innovations (30 positive “Yes” answers) which expected results are focused on supporting the production and distribution with the relevant improvent of the human and financial resources. Usually, this innovation strategy is not so demanding for significant investments and might be based on utilizing of existing internal strengths and advantages in order to adjust and fine-tune the processes for organization and management of the core production activities, mainly by defining new roles, procedures, standards and better usage of appropriate computerized approaches.

## CONCLUSION

The methodological approach, presented in this paper, is designed and approbated in 2019 within international cooperation in the framework of the Project InoLearn4BEEs, funded under Erasmus+ programme. The study is focused on defining the interconnection between the skills and competences of higher education graduates and the innovative performance of the relevant stakeholders from business and socio-economic sectors that employ the young professionals. It analyses the influence of university graduates’ attitudes to work and abilities to work on the innovative profile of the respondents: *product innovators*, *service innovators*, *organizational innovators*, *process innovators*, and *marketing innovators*. At the end, the added value from this empirical study, that could further be implemented in wider statistical populations, could be found in identification of specific needs of employees towards the quality of education of university graduates in order to facilitate the future development of organisations from different type and to improve their innovational performance.

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