Digitalization in Entrepreneurship Education:  
In Search of a New Approach

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Abstract: - The paper aims to search for new approaches to entrepreneurship education in the digital age-related to the use of digital tools to achieve study results, such as expanding knowledge and increasing students' entrepreneurial intention. This study examines various sources of scientific literature on digitization trends and challenges for entrepreneurship education and provides a statistical analysis of primary data. Identification of innovative learning tools, such as digital automatic software, and empirical research on the effectiveness of using the digital tool KABADA in the study process was carried out. The study reveals that university culture, lecturers' and students' competencies, and industry expectations are essential factors for the introduction of digitization in entrepreneurship education. The authors identified a new approach to entrepreneurship education using the digital automated software KABADA to create structured business plans that promote entrepreneurial intentions, but its use must be combined with classical studies.

Key-Words: - digitalization, entrepreneurship education, entrepreneurial intention, teaching approaches, digital software KABADA.


1 Introduction  
In the digital era, when the use of new solutions plays a decisive role in the competitiveness of organizations, universities, together with other institutions, have to update their strategy to meet the new demands and expectations of students and other stakeholders. Entrepreneurship education plays an important role in ensuring sustainability in the face of increasing uncertainty and turbulence.  

During the pandemic, digital solutions have only gained momentum. New modern technologies and approaches, including the use of artificial intelligence, are also being sought in entrepreneurship education.
The European Commission has repeatedly pointed out the role of entrepreneurship education in creating productive results in ensuring high economic activity and reducing unemployment in the EU.

Digital transformation of universities and digital solutions in education allow the use of innovative educational approaches based on the application of different learning methods and tools, special attention is paid to digital learning tools and artificial intelligence (AI) solutions.

Insufficient attention has been paid to entrepreneurial models as a career choice, as students choosing a career in entrepreneurship face a great deal of uncertainty about what makes entrepreneurship successful, [1].

The new teaching methods based on digitalization are particularly relevant in business education, as they also affect students’ career choices.

The introduction of new educational approaches and the use of digital tools is considered a very important opportunity for increasing the entrepreneurial intentions and competencies of today's student generation.

The purpose of this paper is to explore a range of scientific literature sources on digitization trends and challenges in education, focusing on entrepreneurship education, to discover and analyze important determinants of the implementation of digitalization in entrepreneurship education process to acquire new knowledge and to increase students' entrepreneurial intentions.

In the empirical part, the results of the experiment were analyzed, which investigated the impact of using the digital software KABADA on students' entrepreneurial intentions. Based on theoretical research, business statistics, and artificial intelligence insights, KABADA stands for Business Idea Assessment Knowledge Alliance of Business Idea Assessment: Digital Approach and is a structured, web-based tool that supports students in creating a business plan step by step, [2].

The current study is devoted to a widely discussed question about the possibilities of increasing students' desire to do business in the training process, but in contrast to previous studies, taking into account the life of a younger generation in the era of digital technologies, the authors attempt to assess whether teaching workshops with the use of digital tools are more effective than traditional workshops in acquiring new knowledge and increasing the intention to engage in business.

The authors also propose a new digitization-based approach to entrepreneurship education that would allow students to develop their business ideas with the help of an automated digital guide.

2 Theoretical Background
Entrepreneurship education has been promoted by higher education institutions and is a popular direction today. Authors point to the tremendous growth of entrepreneurship education programs in the decades since the middle of the 20th century, [3], [4], [5].

Entrepreneurship education programs are generally considered effective in fostering entrepreneurial intentions among students. However, it is usually focused only on developing knowledge and skills to properly work out a self-written business plan, but often fails to stimulate creative thinking, [6].

The purpose of entrepreneurship education is to increase an individual’s desire to become an entrepreneur. This purpose is closely related to the categories of the Theory of Planned Behavior and determines which regularities are important to analyze and evaluate entrepreneurial perceptions in empirical studies, [7].

Researchers developed a framework for entrepreneurship perceptions and emotions, and their importance in entrepreneurship education, [8], [9].

Digitalization and its role and use in education have been studied by many authors including, [10], [11], [12], [13], [14], and others. The research of the mentioned authors makes it possible to systematize and analyze important factors determining the introduction of digitization in entrepreneurship education.

3 Methodology
The study is based on the analysis of scientific literature on the models and methods of entrepreneurship education, and the role of digitization in the education of young people. The literature analysis allowed the authors to discover and systematize the factors that determine the implementation of digitization in business education, these factors can be divided into both external and internal. The literature analysis also included the identification of innovative learning methods, especially methods with the use of digital automation software mainly in distance learning, but not only, those which would serve as a guide for the development of business plans in entrepreneurship training.

The initial considerations of the authors are based on a quantitative study, which includes a survey and a statistical analysis of its results, and which was conducted in 2019 to find out the interest of students in innovative teaching methods using digital technology (tool). In the period from 2019 to 2022, the international research group developed the digital training tool KABADA. By deepening and
narrowing the research, at the end of 2022, the authors have conducted a quasi-experiment, conducting classical workshops and workshops with the use of this digital tool for students, which allows students to create a business plan for testing their business ideas. In this way, the authors evaluated the possibilities of using the self-developed digital tool KABADA for creating and strengthening the entrepreneurial intentions of students.

Based on the critical literature analysis, the following main hypothesis and two sub-hypotheses are developed:

H1: Workshops with automatic digital tools for business idea assessment in entrepreneurship education have a positive impact on student’s entrepreneurial intention.

H1a: Workshops with automatic digital tools for business idea assessment in entrepreneurship education have a positive impact on the knowledge of entrepreneurship.

H1b: Workshops with automatic digital tools for business idea assessment in entrepreneurship education have a positive impact on the feeling of being interested when imagining becoming an entrepreneur.

4 Results

After performing an in-depth and critical literature analysis, it is possible to systematize five important factors determining the digitalization in entrepreneurship education (Table 1).

<table>
<thead>
<tr>
<th>Factors</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture of education institutions</td>
<td>[15], [16], [17], [18].</td>
</tr>
<tr>
<td>Competences of teachers and students</td>
<td>[12], [19], [20], [21], [22].</td>
</tr>
<tr>
<td>Industry expectations</td>
<td>[11], [13], [14], [23], [24].</td>
</tr>
<tr>
<td>Competition in Universities</td>
<td>[10], [13], [25], [26], [27], [28].</td>
</tr>
<tr>
<td>Costs and other benefits of digitization</td>
<td>[11], [12], [14], [29], [30], [31], [32].</td>
</tr>
</tbody>
</table>

Source: compiled by the authors

As Table 1 indicates, several authors emphasize the role of organizational culture. Proactive senior management plays an important role in the implementation of digital technologies in the teaching process.

The competencies of teachers and students play an essential role in the process of digital transformation of universities. Despite the growing support for the development of teachers' and students' competencies in education, they are not sufficiently integrated into university curricula and student training, [33].

Taking into account the differences in the levels of digital competencies and practical skills of students in higher education, it is necessary to equalize and continuously increase their level of digital competencies, [34].

The SWOT analysis of higher education institutions, which identified increasing their market share as one of the development opportunities, is closely related to their readiness to follow ICT innovations, [13]. The digital transformation of higher education institutions is closely related to costs and their reduction, because taking into account the labor intensity of this industry, the costs per student are quite high with prospects to increase, [32].

Investments in modern digital technologies are growing because their use in the training of the new generation is also considered to improve educational results, [31]. Using modern technologies, distance learning or online education can lead to a reduction in costs without reducing the quality of education, [30].

Statistical data from the Global Entrepreneurship Monitor regarding entrepreneurial intention worldwide were studied, and the analysis of globally comparable statistical data showed that there is a low entrepreneurial spirit and high doubts and fears of starting entrepreneurial activities among European citizens, [35].

In 2019, a total of 947 students from universities were surveyed in Latvia, Lithuania, Portugal, the Czech Republic, and Belgium, and the analysis of the collected data shows that there is a relatively high intention for entrepreneurship in the student audience of European countries (Table 2).
Table 2. Factors of determining the introduction of digitization in entrepreneurship education

<table>
<thead>
<tr>
<th>Students’ career intentions</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not decided yet</td>
<td>225</td>
<td>23.8</td>
</tr>
<tr>
<td>Own business</td>
<td>271</td>
<td>28.6</td>
</tr>
<tr>
<td>Working as a specialist or manager</td>
<td>451</td>
<td>47.6</td>
</tr>
<tr>
<td>Total</td>
<td>947</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: The authors’ survey

The results of the preliminary survey showed a fairly high level of entrepreneurial intention among students, who in turn indicated in the survey their desire to participate in multidisciplinary workshops in entrepreneurship education, as well as the need for counseling, mentoring in testing the viability of their ideas using digital approaches, as well as additional financial support.

This survey also showed a lack of such practical tools as a digital tool for evaluating students’ business ideas; using automatic systems to check planned financial performance remotely, and integrating the use of digital tools in the study course program.

In 2022, the authors implemented a quasi-experiment, and in the survey conducted as part of the study, it was checked whether the use of a digital tool in the study process affects the business plan. Not only the impact of the workshop with the KABADA tool on entrepreneurial intention was tested, but also the strength of this impact was compared with the case where the traditional workshop method was used. In total, the survey sample consists of 808 respondents. The distribution of students by age and gender in workshops conducted with the digital tool KABADA or in traditional workshops (before and after) can be seen in Table 3.

Table 3. Distribution of respondents in the experimental group and control group by age and gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>experimental group</th>
<th>control group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 22</td>
<td>97</td>
<td>81</td>
</tr>
<tr>
<td>22 - 25</td>
<td>89</td>
<td>64</td>
</tr>
<tr>
<td>&gt; 25</td>
<td>62</td>
<td>48</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>123</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>125</td>
</tr>
</tbody>
</table>

Source: The authors’ survey

The analysis of Chi-square statistics indicates that differences in students’ distribution are not statistically significant. The author chose to study the self-assessment of entrepreneurial knowledge (K) and the intention to become an entrepreneur (I) as dependent variables.

To test the normality of the sample, the authors decided to use and summarize the Shapiro-Wilk (SW) statistic and the p-values of the normality test statistic (Table 4).

Table 4. Shapiro-Wilk statistics and p-values

<table>
<thead>
<tr>
<th>Variable</th>
<th>Before (B) and after (A) workshop with KABADA (K) and a traditional workshop (W)</th>
<th>N</th>
<th>Shapiro-Wilk</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>BK</td>
<td>248</td>
<td>0.936</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>AK</td>
<td>193</td>
<td>0.923</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>BW</td>
<td>193</td>
<td>0.923</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>AW</td>
<td>174</td>
<td>0.905</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>I</td>
<td>BW</td>
<td>193</td>
<td>0.912</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>AW</td>
<td>174</td>
<td>0.932</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>BK</td>
<td>248</td>
<td>0.928</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>AK</td>
<td>193</td>
<td>0.912</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Source: The authors’ calculations

The authors believe the literature analysis and empirical results obtained provide the basis for the validity of the final questionnaire. Cronbach’s alpha test was used to check the internal consistency of the survey, and its result was > 0.779, which indicates that the level of reliability is sufficient.

The Wilcoxon-Mann-Whitney test (WMW) was performed to test the hypotheses defined above because it is more suitable for the sample as the dependent variables are not normally distributed, [36] (Table 5).

Table 5. Wilcoxon-Man-Whitney test statistics, p-values, and hypothesis testing

<table>
<thead>
<tr>
<th>Variable</th>
<th>WMW-statistic</th>
<th>p-value</th>
<th>LCL</th>
<th>UCL</th>
<th>H test</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>17865</td>
<td>&lt;0.001</td>
<td>-1.000</td>
<td>-3.82e-05</td>
<td>H1a support.</td>
</tr>
<tr>
<td>EI</td>
<td>20870</td>
<td>0.019</td>
<td>-1.000</td>
<td>-3.82e-05</td>
<td>H1 support.</td>
</tr>
<tr>
<td>I</td>
<td>23518</td>
<td>0.750</td>
<td>-1.37e-05</td>
<td>3.77e-05</td>
<td>H1b not support.</td>
</tr>
</tbody>
</table>

Source: The authors’ calculations

The results of the Wilcoxon-Mann-Whitney test presented in Table 5 indicate statistically significant differences in the distribution of knowledge of entrepreneurship self-assessment after the workshop with KABADA (W = 17865, p < 0.001), and intention to become an entrepreneur after the same workshop (W = 20870, p = 0.019). Therefore, the
hypotheses H1 and H1a are supported. Regarding hypothesis H1b, the Wilcoxon-Mann-Whitney test shows no statistically important differences, so this hypothesis cannot be supported.

The literature review and analysis of the use of the digital tool KABADA in the educational process for testing business ideas and developing business plans allowed us to believe that an innovative educational approach when a digital tool is used in learning is of great importance in achieving learning outcomes, which could be an increase in knowledge and entrepreneurial intentions in entrepreneurship education.

In particular, the digital tool KABADA for new business evaluation and development of new business ideas is new and different from others and allows not only to evaluation of a business idea but with built-in artificial intelligence components to provide the first recommendations for business plan improvements and possible next steps, [37].

Recent studies show that entrepreneurship education is positively related to the intention to start a business, additionally demonstrating a positive moderating effect of social norms, [38], [39]. Students with higher levels of extraversion, openness, conscientiousness, and lower levels of risk aversion demonstrated essential changes in entrepreneurial intention during the study process, [40]. However, another stream of research exists with the view that self-perception plays a greater role than education in entrepreneurial intention, [41].

Therefore, it is important for the younger generations to use digital tools for the development of business plans in the process of business studies, and such innovative study approaches will increase the entrepreneurial intention of students, [10], [39], [42], [43].

5 Conclusions

Digitization not only allows the lecturer to present a global landscape from the classroom but also brings significant benefits, in particular by engaging students more closely and improving the teaching process as a whole.

Preliminary survey results show a high entrepreneurial intention among the majority of students in EU countries, new innovative multidisciplinary approaches with the use of digital tools in teaching entrepreneurship are expected. University culture affects the integration of digital technologies, proactive management plays an important role in the implementation of digital technologies in the study process.

Digital competencies of both lecturers and students are also of great importance. The study reveals that students’ digital competencies are not as highly satisfactory as one might initially imagine, and vary greatly.

Industry expectations are ambiguous. The authors believe that although the policy of higher educational institutions constantly points to the more intensive development of digital skills in the learning process, the demand of the industry is not always open and very focused on the attraction of digital skills and competencies.

The competitive advantage of universities is, among other things, closely related to the ability to keep up with developments in the field of ICT. Digitalization in education is strongly related to cost reduction which is an important aspect as inflation in education is excessive compared to the trends of general inflation in the economy.

Current research reveals that the use of digital tools in entrepreneurship study courses has a positive effect on the entrepreneurial intention of the young generation that has grown up in the era of digitalization, but no significant impact on knowledge has been found.

The authors conclude that it is necessary to adapt and include in the study process the use of practical tools such as the digital software KABADA for the development of students’ business plans and the evaluation of business ideas to increase their entrepreneurial intentions, but the use of digital tools should be combined with classical studies to supplement the student's knowledge in the field of entrepreneurship. For future research, it is also important to determine the role of artificial intelligence in improving students' knowledge and increasing entrepreneurial intentions.

References:


Contribution of Individual Authors to the Creation of a Scientific Article
- Inese Mavlutova wrote the original draft, reviewed and edited.
- Kristaps Lesinskis wrote the original draft.
- Aivars Spilbergs provided an empirical study.
- Liga Peiseniece participated in supervision of study project.

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