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ENTREPRENEURIAL UNIVERSITY: TOPICALITY OF CREATION, INTERNATIONAL EXPERIENCE, SITUATION IN LATVIA*

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Abstract. The university, understood in a simplified way as an institution representing the system of higher education, is distinguished by longevity. However, it also underwent evolution at the turn of the century under the influence of various conditions. As a result, various models of the university are emerging with the most promising one known now as the entrepreneurial university. This model implies greater openness of the university to the socio-economic environment, flexible adaptation to the needs of customers, stakeholders and the market, market competitiveness based on marketing and the ability to diversify sources of income. Particular attention is paid to creating and increasing the entrepreneurial potential of students. *The aim of the article* is to consider issues related to the prerequisites and ways of developing University 3.0 in Latvia. *The objectives* of the article are as follows: to find out the main external and inter-university prerequisites and barriers to creating entrepreneurial universities, to study international experience in the formation of prerequisites for the creation of entrepreneurial universities, to assess the major prerequisites for the establishment of entrepreneurial universities in Latvia. Causal analysis and comparative analysis were used as the major research method. An empirical assessment of the prerequisites for the development of University 3.0 in Latvia is given on the basis of our comparative analysis of the parameters of the Global Competitiveness Index. It is proposed to discuss the need for a state programme of at least a pilot project for the creation of two or three entrepreneurial universities so far, which will allow us to have our own experience in removing economic, social and cultural barriers to the modernisation of our higher education, the emergence of our own strong entrepreneurial leaders in higher education.

Keywords: entrepreneurial university; students; Latvia; prerequisites

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1. Introduction

The transformation of a traditional research university into an entrepreneurial university is being accelerated by the decrease of the state funding of universities and the constant emergence of a competitive market for research and education. A new approach has emerged to promote the dissemination of knowledge through university entrepreneurship. Creating an entrepreneurial culture is a difficult task that requires the efforts of many dedicated people. Universities as centres of knowledge creation and dissemination can and must be used to ensure future economic growth (Bukhari et al., 2021; Radko et al., 2022). For small countries in transition, it is important that universities act in accordance with policies that encourage entrepreneurship and innovation. Entrepreneurial education for young people is a very valuable training for the constant changes in the labour market. Entrepreneurial education is critical to helping young people develop entrepreneurial skills, qualities and behaviour and to pursue entrepreneurship as a career option (Arnaut, 2020; Girdzijauskaitė et al., 2021; Ead et al., 2021; Pugh et al., 2022).

We believe that identifying entrepreneurship as a separate discipline in higher education institutions would contribute to the development of many areas of the economy, the creation and implementation of start-ups, since the current study directions do not always meet the tasks of forming an entrepreneur.

Historically, the role of the university has changed depending on economic and social conditions, they have new functions, which is reflected in the characteristics of the models:

University 1.0 - educational institutions that train specialists for professional activities in certain sectors of the economy and the social sphere. The main mission is education;

University 2.0 - educational institutions in which research plays an important role. The main mission - education, is joined by a new function - conducting scientific research for various areas of the economic and socio-cultural life of society.

The complication of the whole range of problems of international competition and the transition of economic life to a new technological order requires universities to make a more active contribution to the development of the knowledge-based economy through the commercialization of the results of research activities and the creation of new knowledge-intensive enterprises. These tasks are fully met by the model of an entrepreneurial university or University 3.0 (Balashov, 2019; Burawski, 2013; Etzkowitz, 2008; Lupianez, 2005; Piotrowska-Piatek, 2015; Wójcicka, 2006; Badri & Hachicka, 2019; Kayed et al., 2022).

The concept of “University 3.0” was developed in 1998 by Burton R. Clark (Clark, 1998) and he also introduced the term “Entrepreneurial Universities” into scientific circulation (the term “University 3.0” is also used in the scientific literature). However, an unambiguous definition of this concept has not been developed yet. Most researchers are of the opinion that University 3.0 is an institution of higher education that is able to attract additional financial resources to ensure its activities, a university that uses innovative teaching methods, a university that establishes close interaction with the business community, where the developments of university researchers are being introduced, including from among the students. To date, researchers distinguish two models of an entrepreneurial university: entrepreneurial by results - teachers, students and graduates create innovative companies; entrepreneurial by the type of action of the managerial team (entrepreneurial university). The first model provides for the formation of favourable conditions for students, teachers and graduates to create high-tech

start-ups and spin-off companies. The second model provides for the creation of a powerful scientific centre that produces and launches new scientific and technical products to the market, thereby attracting financial resources and increasing its independence from the state resources. (Lawskiego & Pilichiewicz, 2018), (National., 2021)

2. Entrepreneurial University: the international aspects of research

Entrepreneurial university has responsibility to grow entrepreneurial intentions and potential of students (Turnea et al., 2020; Liu, & van der Sijde, 2021; Karim et al., 2022; Valencia-Arias et al., 2022).

In March 2021, the researchers V. Menshikov, O. Ruza, I. Kokina at Daugavpils University (Latvia) and G. Bedianashivi at Tbilisi State University (Georgia), a year after the onset of the Covid 19 pandemic, began to study the issues of increasing the entrepreneurial potential of students in the context of a protracted crisis.

The number of respondents comprised 122 people at Daugavpils University (hereinafter referred to as Latvia) and 145 people at Ivane Javakhishvili Tbilisi State University and European University (Georgia). The data of sociological surveys in Latvia and Georgia indicate the presence of a big socio-economic problem - a significant number of our students wishing to start entrepreneurship and a relatively modest percentage of those who are already active entrepreneurs (Menshikov & Ruza, 2021). At the time of the sociological survey, 8.2% of respondents in Latvia and 16.6% in Georgia had their own business, which is largely due to the specific profile of their educational programmes. Those who wish to engage in entrepreneurship among the respondents in Latvia amounted to 58.2% and 74.6% in Georgia. 59.8% of respondents in Latvia and 72.9% in Georgia have an idea that they would like to commercialize (start their own business and make a profit).

Table 1. Comparison of data from a sociological survey of students in Latvia and Georgia on the degree of their participation in entrepreneurship, (%)

Answer options	Latvia	Georgia
Have an idea that they would like to commercialize (build their business and make a profit)	59.8	72.9
Wish to start business	58.2	74.6
Consider themselves entrepreneurial people	19.7	28.9
Already have their own business	8.2	16.6

Source: elaborated by the authors (Menshikov, 2021)

59.8% of respondents in Latvia and 72.9% in Georgia have an idea that they would like to commercialize (start their own business and make a profit). As can be seen from the data in Table 1, there is a rather large gap between our students having an idea that they could commercialize and having their own business (especially for Latvian students studying in programmes that are not directly related to business, management, economics).

In 2021, a study was conducted by the Latvian Register of Enterprises “Lursoft”, which analysed the age of people who decided to register their first company last year, as well as how the average age of entrepreneurs who founded their first company has changed compared to ten years ago.

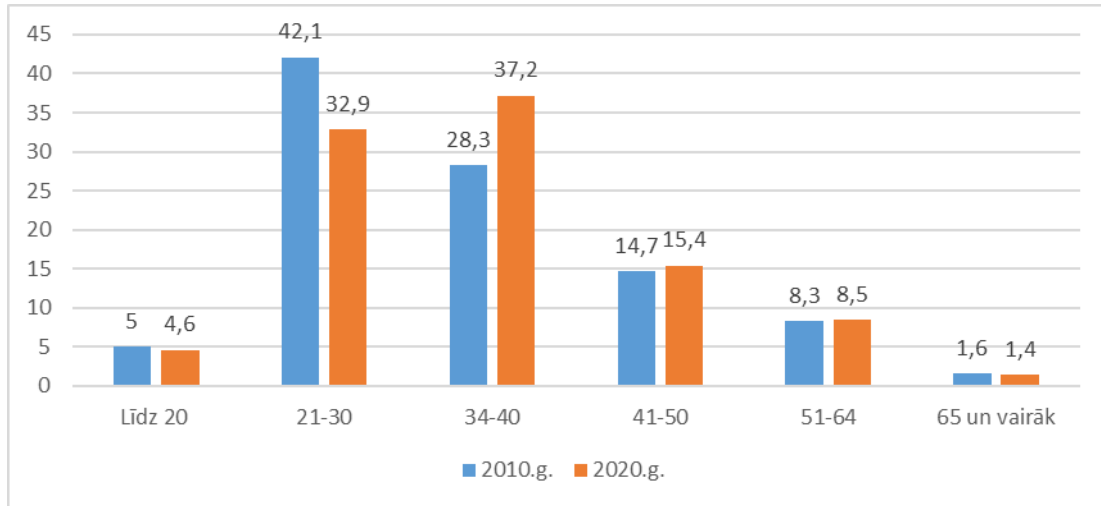


Fig. 1. Share of entrepreneurs who registered their first business, by age group, %

Source: elaborated by the authors based on (Delfi, 2021).

The analysis of the data of the Latvian Register of Enterprises “Lursoft” on all owners of enterprises registered in Latvia shows that their average age has increased over the past 10 years. In 2010, it comprised 46.1 years, and at the end of 2020 it reached 49.2 years. Figure 1 illustrates that over the past 10 years, the proportion of young people under the age of 30 (which includes the vast majority of students) among those who founded their own enterprise has significantly decreased - from 47.1% to 37.5%. However, “Lursoft” researchers do not analyse the reasons that hinder the disclosure of the entrepreneurial potential of young people.

The main reason, according to the authors, is the lack of a system of training students in universities for entrepreneurial competences, which in fact requires from a modern university a significant and profound change in its mission. In fact, the problem is solved only when an entrepreneurial component is added to the implemented educational and research tasks. In the scientific literature, this expansion of the university mission has been called the transition to “University 3.0”.

The interest of researchers in general in the problems of University 3.0 has increased significantly in recent years (Carayannis & Campbell, 2009, 2010, 2011). Let us analyse, for example, the reflection of the issues of University 3.0 in the authoritative Scopus database.

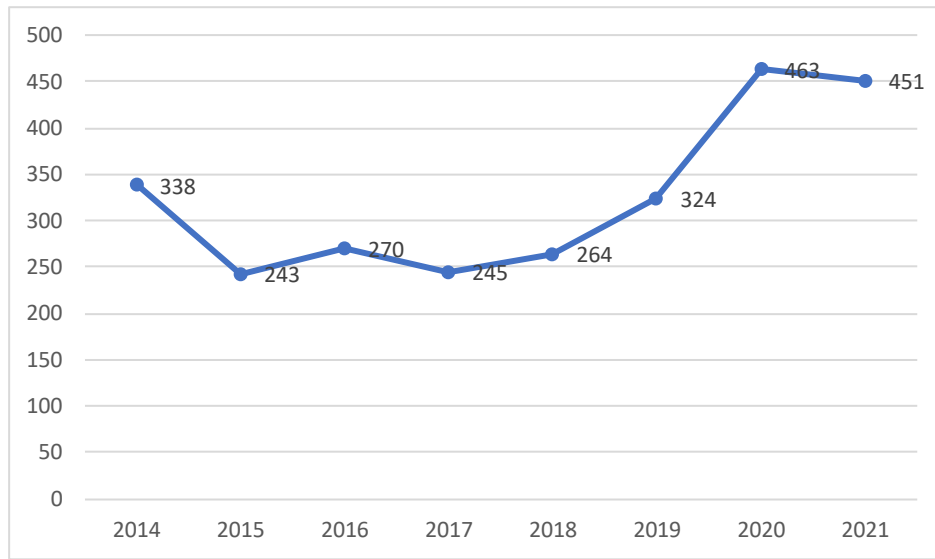


Fig. 2. Number of Scopus database papers containing the words “University 3.0” in the title, abstract or keywords by year, from 2014 to 2021

Source: elaborated by the authors based on SCOPUS database

The results displayed in Figure 2 confirm the high interest of scientists from various fields of science in the topic “University 3.0”. Publications were indexed particularly rapidly in the Scopus database in 2020 and 2021, when the number of such publications increased compared to 2015 and reached 463. The majority of the publications are related to the natural sciences and technical disciplines, however, 7.9% of the total number of publications are elaborated in the field of social sciences.

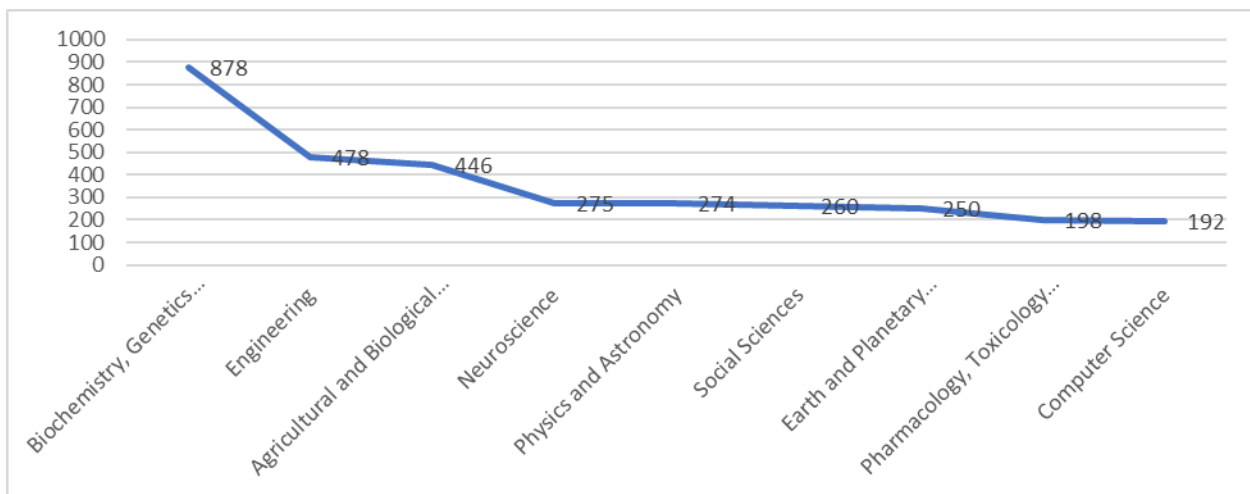


Fig 3. Number of Scopus database papers containing the words “University 3.0” in the title, abstract or keywords .by field of science, from 2015 to 2021

Source: elaborated by the authors based on SCOPUS database

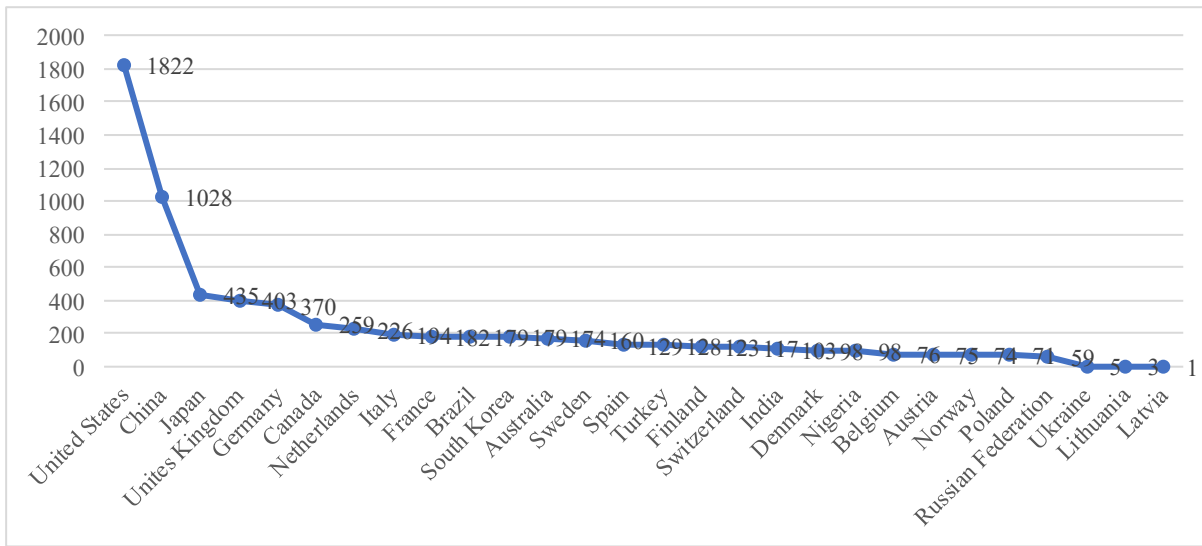


Fig. 4. Number of Scopus database papers containing the words “University 3.0” in the title, abstract or keywords by country, from 2015 to 2021

Source: elaborated by the authors based on SCOPUS database

The most cited article is The Chinese University 3.0 from The University of Hong Kong (China) Li, J., published in 2016. (Li, 2016). The authors of this article build the concept of Chinese University 3.0, explore its key values and features, as well as its possible contribution to the global era. Three different stages in the history of Chinese universities are differentiated and their institutional development and characteristics are considered. The paper then focuses on China University 3.0 moving towards world-class status and mass higher education, reflecting core values and traits such as self-mastery and intellectual freedom, humanist (Zhi-Xing) mission and institutional diversity (He'er Butong), to demonstrate how they are culturally distinct from the dominant Anglo-Saxon and American models, but share some commonalities with the Continental European and Japanese university models (Li, 2016)

In the systems of higher education of economically developed countries, dramatic changes are being observed, due to the decisive importance of universities for innovative development and economic growth. New areas of activity of the University include the development and transfer of technologies, the commercialization of academy products and their promotion to the market, the creation of new enterprises, the management of intellectual property for profit. This is the basis of University 3.0 model with three key social objectives: education, research activities, economic and social development (including the commercialization of knowledge). The development of modern higher education takes place in the context of conflicting social trends that emerged in the late 1970s. On the one hand, there is a stronger management of the public sector, and on the other hand, it is being eroded and democratized. The strategic systems of conceptualization of social development – “New State Management”, “Networks of Management”, “Neo-Weberian State” - demonstrate the key transformations that the modern university is going through. The University 3.0 model originates from these systems and expands its social mission as the corporate unit of the knowledge economy and the main driver of economic growth. The Network University is a model of interdepartmental cooperation that provides excellence in strategic research and education, as well as efficient ways of producing knowledge. The Creative University is a model of an anthroposocial system that creates a person of the future both in socio-economic and existential terms. The innovation-entrepreneurial university can be described as a model of the Knowledge Corporation, which ensures

the rapid technological and economic growth of society. The most important function of this university is the penetration of students' competences into the socio-economic sphere and their direct participation in economic activities. The social role of University 3.0 is to create the basic structures of the knowledge society. University 3.0 is becoming the basis for the global competitiveness of national economies and geopolitical alliances, while its entrepreneurial ecosystem gives rise to new, fast-growing industries, advanced technology markets, and administrative-territorial spaces with a highly developed economy (Karpov, 2017).

There are two trends observed in the university community: on the one hand, the advanced part of the university community is actively promoting new formats of education, including online courses, is creating an innovative infrastructure to stimulate student entrepreneurial education and inspire their professors and teachers to create high-tech start-ups, is getting involved in the process of exporting educational services and international collaborations. On the other hand, the accumulated "luggage" is pulling back: a very elderly teaching staff who oppose any innovations just because "it did not use to be like this before"; outdated physical infrastructure, including laboratory equipment and technology park; low quality of applicants who do not want and often simply are not able to study at a university (with an average mark slightly above the "three"); slum-like hostels; and finally, the lack of modern university management skills combined with the opportunistic behaviour of part of the administration. A modern university should train not specialists for non-existing larger state enterprises, but specialists who, along with skills in the profession, also have the ability to manage projects, take risks, i.e. demonstrate entrepreneurial skills. Accordingly, a modern university should pay much attention to improving the content of education working together with regional employers, creating joint platforms for student project activities and stimulating entrepreneurs and venture capitalists to come to the university in the role business coaches and mentors of university start-ups. The university should be able to act proactively - i.e. analyse trends in science and higher education and form those elements of their own internal structure that will become triggers for changes.

It is necessary to pay attention to those types and forms of education that are still on the periphery of their attention – supplementary education for adults, and also learn how to offer part of the educational content to their students as an elective, on a fee-paying basis, because neither format of education - a 2-year Master's programme, a 3 or 4-year undergraduate programme, can include everything that can be useful to students on their career path. In addition, universities should abandon the concept of eternity and immutability of directions of study, if only because current graduates will have to live in a society where the life cycle of professions is significantly reduced, and modern information technologies (in particular, blockchain) will make redundant until recently quite respectable professions of a notary or corporate lawyer in the very near future. Hence the need for a gradual transition to the "educational supermarket" model, in which the "client" chooses those products that he himself considers necessary, and not (only) those that the state has imputed to him in the form of an "educational subsistence minimum". Further, universities will have to abandon the axiom that the core of the educational course is classroom lectures, and that the fundamentals of students' self-study is reading and taking notes from textbooks. Even now, the most motivated students can, instead of courses (or in addition to courses) of their professors, get access to the world stars of the academy on various platforms of open interactive education; the textbook is dying out right beneath our eyes, and is being successfully replaced by Wikipedia and similar Internet resources. Accordingly, in order to keep students, universities will need to do a lot - in particular, significantly change the format of the educational process, revise the existing structure of the academic staff, and conduct mass retraining of some lecturers in order to teach them how to use new methods and technologies in education. Finally, they will have to see students as important participants in the educational process - in order to rely on the energy of young people, their high mobility, and the accumulated entrepreneurial potential so far. How to do all this, being within the very strict resource constraints? There is only one way - by rebuilding the management model of the university on the basis of entrepreneurship, i.e. search for resources (human, financial), which are never enough, in the external market, offering the participants of this market cooperation, including

intrapreneurship, i.e. rewarding their own employees for showing initiative in the implementation of new educational, research, social and other projects that strengthen the reputation and increase the negotiating power of the university in communication with regional leaders and business structures.

In his articles A.O. Karpov (2017) considers the issues related to the prerequisites and ways of development of University 3.0 in the socio-cultural context. Universities are compared in terms of fulfilling the tasks of teaching, research and socio-economic development. To analyse the third mission, comparisons are made with foreign universities in terms of innovation and entrepreneurial activity. To study the potential of the country for the development of University 3.0, an index of prerequisites for its development (University Development Index or UDI) has been developed. The complex and elementary components of the Global Competitiveness Index (GCI) are used as UDI parameters that characterise the possibilities for the effective implementation of the three missions of the University. Based on the calculated UDI values, it is possible to identify the potential of countries to create a University 3.0 compared to a sample of culturally differentiated countries (Karpov, 2017)

Using the most sensitive GCI data 2017–2018, an index of prerequisites for the development of University 3.0 has been built - a UDI (University Development Index), which for some countries characterises the possibility of its creation, while for others - a resource for improvement (it is in these senses that the term “development” is used here). UDI is a predictive construct linking social, economic, cultural and institutional factors. The structure is presented in Table 2. The table shows the sub-indices that have the greatest impact on the stages of the country’s development focused on efficiency and innovation.

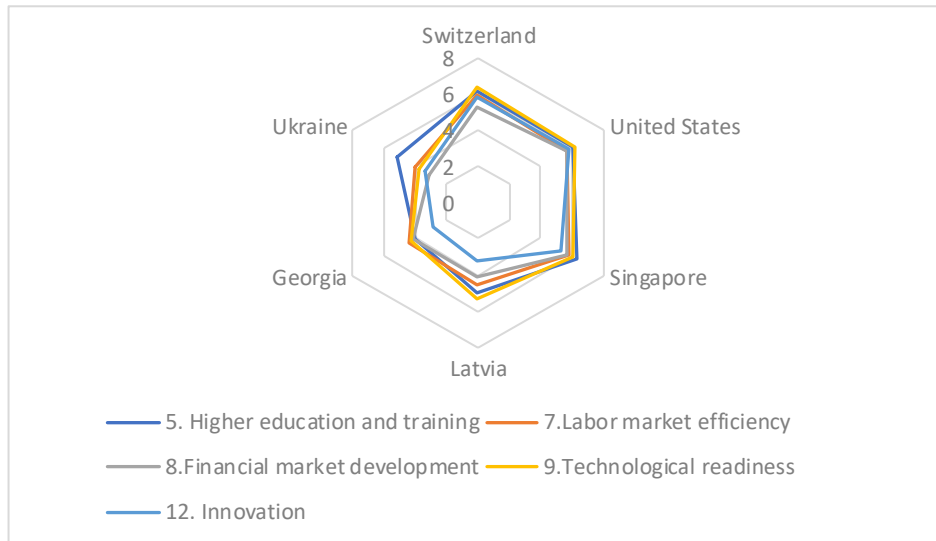
Table 2. The structure of the complex (UDI/c) and parametric (UDI/p) indices of prerequisites for the development of University 3.0

Efficiency enhancers sub-index. Key for efficiency-driven economies	Components of indicators of GCI sub-indices
5. Higher education and training	5.03. Quality of the education system 5.04. Quality of math and science education
7. Labour market efficiency	7.08. Country capacity to retain talent 7.09. Country capacity to attract talent
8. Financial market development	8.01. Availability of financial services 8.02. Affordability of financial services 8.03. Financing through local equity market 8.04. Ease of access to loans 8.5. Venture capital availability
9. Technological readiness	9.1. Availability of latest technologies 9.02. Firm-level technology absorption 9.03. FDI and technology transfer
12. Innovation	12.01. Capacity for innovation 12.03. Company spending on R&D 12.04. University-industry collaboration in R&D

Source: elaborated by the authors based on (The Global...,2017)

The situation of weaknesses in the prerequisites for the development of University 3.0 in Latvia, Georgia and Ukraine is shown in the charts in Figure 5. For comparison, the countries with the best positions in GCI in the first four regional groups have been taken - Switzerland, Singapore, and the United States. In the complex index (UDI/c), Latvia, Georgia and Ukraine lag behind these countries in five out of five indicators – in higher education and vocational training, labour market efficiency, technological readiness, financial market development, innovation and R&D (Fig. 6). In Georgia, the indicators are lower than in Latvia - in higher

education and vocational training, financial market development, innovation and R&D. In Ukraine, the indicators are even lower than those of Latvia and Georgia, except for higher education, vocational training and innovation.



	5. Higher education and training	7. Labour market efficiency	8. Financial market development	9. Technological readiness	12. Innovation
Switzerland	6.1	5.9	5.3	6.4	5.8
United States	6.1	5.6	5.7	6.2	5.8
Singapore	6.3	5.8	5.7	6.1	5.3
Latvia	5	4.5	4.1	5.3	3.2
Georgia	4	4.4	4.1	4.3	2.8
Ukraine	5.1	4	3.1	3.8	3.4

Fig. 5. Charts of indicators of key GCI sub-indices 2017-2018 included in UDI/p for the countries that are the first regional leaders in terms of competitiveness, as well as Latvia, Georgia and Ukraine

Source: elaborated by the authors

In the parametric index (UDI/p), Latvia, Georgia, Ukraine, in five out of ten indicators, are significantly inferior to all the leading countries in the regions (Fig. 6). Among them are sensitive ones such as opportunities to attract and retain talent; accessibility, absorption and technology transfer. Only in two indicators does Latvia surpass Georgia - in terms of Country capacity to attract talent, Ease of access to loans. In three indicators - FDI and technology transfer, Venture capital availability, Availability of financial services, Georgia's indicators are almost the same as Latvia's.

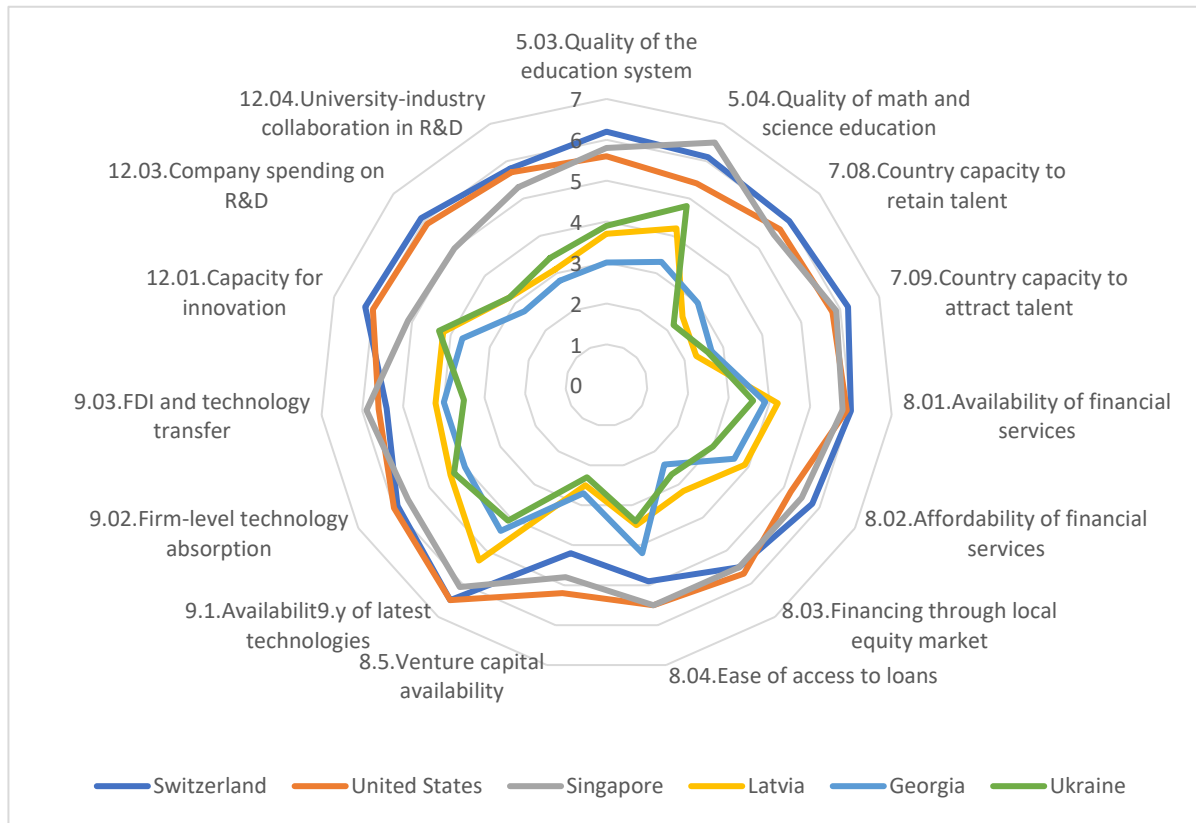


Fig. 6. Charts of the components of indicators of the key GCI 2017–2018 sub-indices included in UPI/p for the countries that are the first regional leaders in terms of competitiveness, Latvia, Georgia and Ukraine.

Source: elaborated by the authors

Table 3 shows the calculated index values of the prerequisites for the development of University 3.0 for 21 countries (the first three countries with the best GCI positions in each of the seven regional groups are taken). Latvia and Georgia are inferior in GCI to all countries from the sample. Latvia is ahead of such countries as Slovak Republic, Hungary, Cyprus, Romania, Croatia, Albania, Montenegro, Serbia, Ukraine, Greece, Bosnia and Hercegovina. Latvia in the region of Europe and North America ranks 28th out of 39 countries in this region and makes up 4.4 GCI, 27 countries from the sample remain out of reach (Fig. 6). Switzerland, United States, Netherlands have the best GCI scores and are 5.86, 5.85, 5.66 respectively. This confirms the low level of the index of prerequisites for University 3.0 development in Latvia and calls into question the very possibility of a full-fledged University 3.0 appearing in our country today.

Table 3. Index of prerequisites for the development of University 3.0 for the sample of countries – regional leaders according to GCI 2017-2018

Region	Country	GCI 2017-2018	Rank of 138 countries
East Asia and Pacific	Singapore	5.71	2
	Hong Kong SAR	5.53	9
	Japan	5.49	8
Eurasia	Azerbaijan	4.69	35
	Russian Federation	4.64	38
	Kazakhstan	4.35	57
	Georgia	4.28	67
Europe and North America	Switzerland	5.86	1
	United States	5,85	3
	Netherlands	5.66	4
	Latvia	4.4	54
Latin America and the Caribbean	Chile	4.71	33
	Costa Rica	4.5	47
	Panama	4.44	50
Middle East and North Africa	Israel	5.31	16
	United Arab Emirates	5.3	17
	Qatar	5.11	18
South Asia	India	4.59	40
	Bhutan	4.1	82
	Sri Lanka	4.06	88
Sub-Saharan Africa	Mauritius	4.52	45
	Rwanda	4.35	58
	South Africa	4.32	61

Source: elaborated by the authors

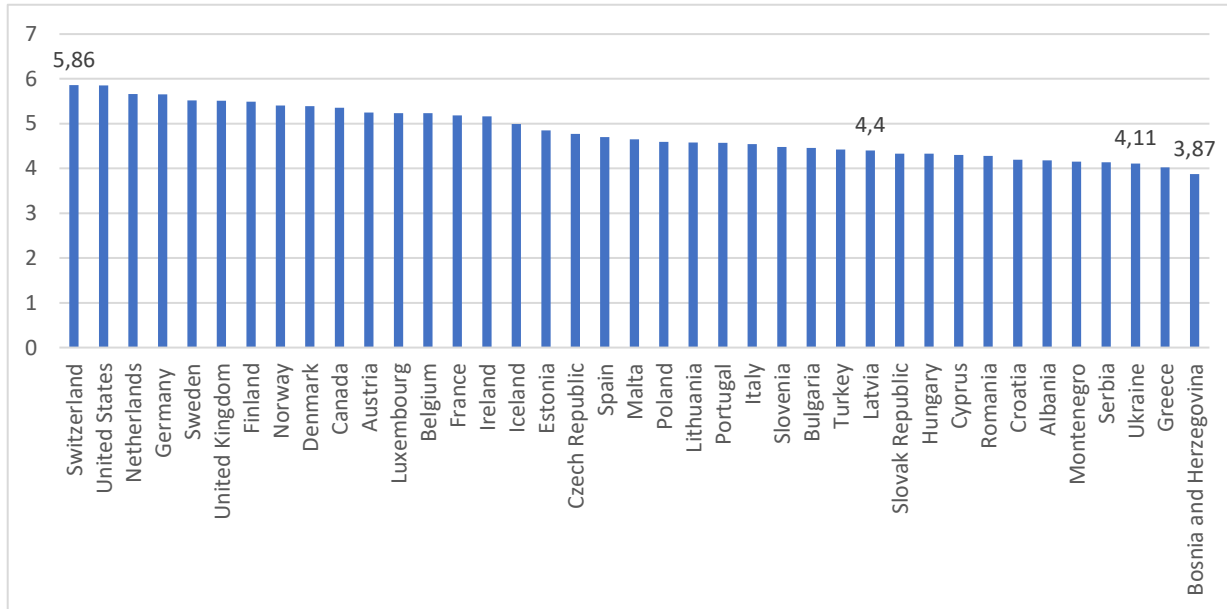


Fig. 6. Index of prerequisites for the development of University 3.0 for a sample of countries in Europe and North America region according to GCI 2017–2018

Source: elaborated by the authors

Ukraine in the region Europe and North America ranks 37th, leaving only Greece and Bosnia and Herzegovina behind. Georgia in its Eurasia region takes 4th place, behind Azerbaijan, Russia Federation, Kazakhstan and is 4.28 GCI. In the ranking of 138 countries, Latvia ranks 54th, Georgia 67th and Ukraine 81st.

3. International experience in forming the prerequisites for creating an entrepreneurial university

Despite the popularity of the concept of the third mission of universities in many countries and the unanimity of researchers and representatives of the scientific and innovative sector at different levels that universities need to develop as centres of innovative entrepreneurship, at this stage there is a lack of scientific and methodological developments on the effective transition of higher education institutions to model 3.0. Therefore, when starting to develop a serious and viable programme for creating entrepreneurial universities in our country, it is necessary to carefully study foreign experience and the work of researchers in this area.

The idea of “University 3.0” is understood by scientists from Kazakhstan Shukhrat, A., Nizamov A. (2020), as an institution of higher education that has: 1. *Certain clear goals of innovation and entrepreneurship, the availability of an appropriate material and technical base.* Defining a clear grounded plan based on innovation and entrepreneurship by developing strategies and programmes. Managers must not only have clear goals for innovation and entrepreneurship, but also understand clear strategies and programmes to achieve them; creation of an appropriate material and technical base, a scientific laboratory, a small innovative enterprise, technology parks. 2. *Improved organisational structure of higher education, development of infrastructure for innovative entrepreneurship in accordance with the goals.* Formation of an appropriate structure for the successful implementation of the goals. In the process of transformation, it is important to create units that ensure the implementation of strategies and programmes for the development of innovation and entrepreneurship and the development of infrastructure; determine their tactics in accordance with the strategy of developing mechanisms for their implementation, determine the rights and responsibilities of each department and introduce management

procedures and coordination of transformations, determining their place and role in the development of innovative entrepreneurship in higher education; improvement of the system of promotion and development of managerial personnel. Development of a culture that increases innovation and entrepreneurial motivation, supports types of activities. Formation of a culture that supports the development of an innovative and entrepreneurial environment, the development of a sense of collective responsibility, the development of teamwork; confidence in the need for innovation and entrepreneurship in the field of higher education, support for the innovative initiative of the management, the introduction of an effective system of motivation for the scientific and creative activities of employees; to develop confidence in one's own success, promote the activities of managers in the field of innovation and entrepreneurship, strengthen confidence in the ability of each employee to influence the transformation process. 3. *Development of innovative entrepreneurial knowledge and skills of university staff*, broad participation of students in this activity. Creating conditions for the professional development of employees, increasing opportunities for the use of creative potential, reducing the workload, implementing measures to strengthen labour discipline; development of mechanisms for the exchange of experience in innovative and entrepreneurial activities, cooperation with foreign universities in this area, improvement of systems for searching and exchanging information; promotion of scientific schools, encouragement of young workers, scientific personnel who support innovative and entrepreneurial activities in society, the introduction of mechanisms to support their innovative and entrepreneurial activities even after receiving a degree and title; organisation of trainings to improve the knowledge and skills of the teaching staff in the field of scientific entrepreneurship, the broad involvement of students in scientific and entrepreneurial activities, improving the mechanism for ensuring the succession of scientific and entrepreneurial activities. 4. *Autonomy of higher educational institutions*, which implies timely adaptation of internal environment factors to changes in external environment factors. The lack of independence in the introduction of new types of activities in higher education, in particular innovative and entrepreneurial ones, strict state control over educational, scientific and entrepreneurial activities, financial dependence, create certain difficulties. Granting independence in the joint implementation of educational, research, innovation and entrepreneurial activities, the development of regulatory documents of the educational process; optimization of the organisational structure in accordance with the areas of activity, the creation of new departments, the formation of staff, the choice of study directions and, delegation of powers to universities based on their capabilities; awarding academic degrees and academic titles, development of cooperation with business, expansion of independence in the provision of additional services; introduction of a contractual procedure between the state and higher education institutions, regulating financial relations in terms of the provision of educational and scientific services; cooperation with manufacturers, regional issues (Shukhrat & Nizamov, 2020).

Burton Clark provides a more exhaustive and structured description of the entrepreneurial university. His work is based on the analysis of the transformation of 5 universities, though it does not give a clear understanding of how the structures that accompany the entrepreneurial university should be implemented and work. J. Ropke (2019) and J. Wissema (2016) (the author of the "third generation university" concept) write about the characteristic features and functions of an entrepreneurial university.

Henry Etzkowitz (Etzkowitz 2008) in his work "The Triple Helix Model" presents the university as the most important and leading part of the implementation of this model. The reason for bringing the role of the university to the fore in this theory is the new knowledge economy, which sets new trends in the work of all three components of the model developed by Etzkowitz. According to the author, "acting as an equal institutional partner together with business and the state, universities are one of the elements in the triple helix model and occupy a leading position in a knowledge-based society." This is due not only to one of the most important activities of the university - education and research, but also to the fact that universities make a huge contribution to the development of the economy through the creation of new companies in university incubators. Thus, according to H. Etzkowitz, the entrepreneurial university is a centre that creates new technologies, which carries

out work in research and innovation, actively uses the academic and practical skills of students and creates conditions for the implementation of new ideas. In this case, government and business provide the university with additional resources for production, and also allow the creation of a new innovative space (due to the intersection of ideas and interests of all three components of this model). In particular, the state sets a certain set of norms and rules for the activities of society, business, provides educational services along with the university. Accordingly, all three structures - the state, universities and business, interacting with each other and partially adopting each other's functions create an optimal environment for generating innovations. It should be noted that H. Etzkowitz, like J. Ropke, (Ropke, 2021) emphasizes the regional aspect in the development of an entrepreneurial university. Thus, the researcher points out that entrepreneurial universities are those “potential engines of regional economic development”. Moreover, Etzkowitz offers his own vision of transforming a traditional university into an entrepreneurial one (Fig. 7).

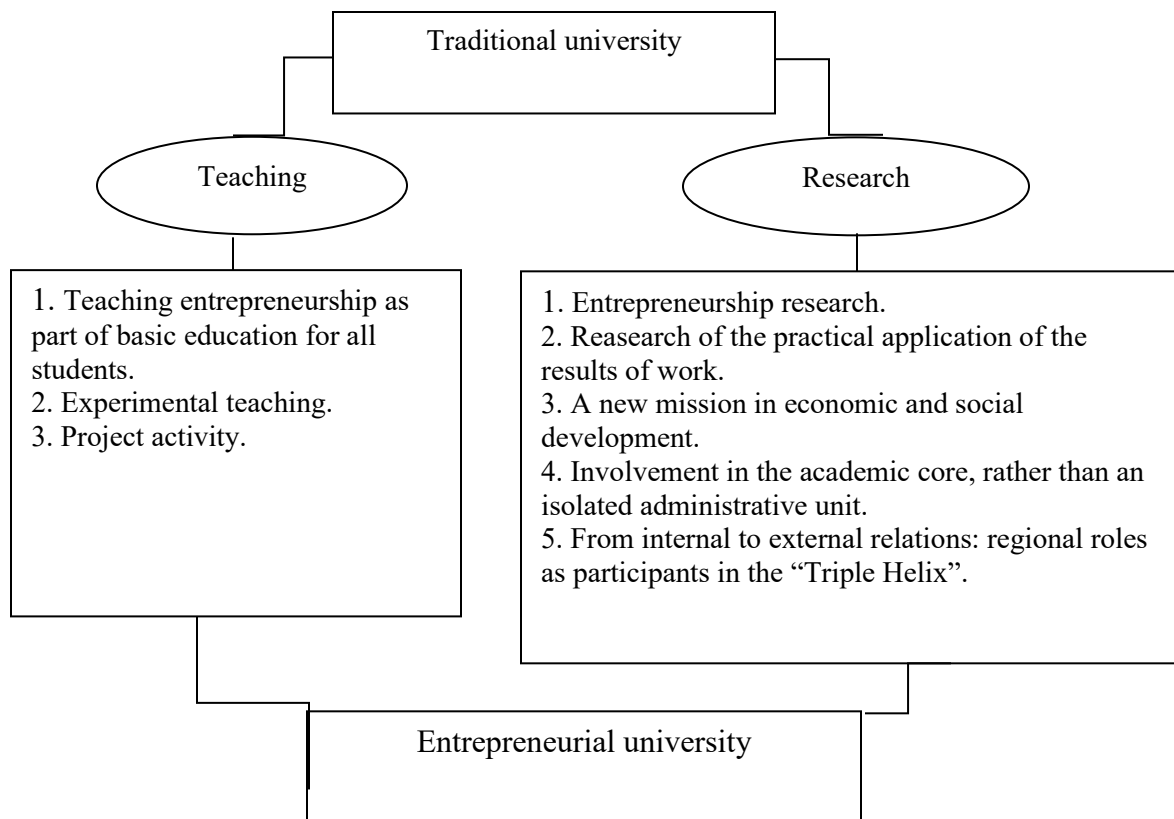


Fig. 7. Transformation of a traditional university into an entrepreneurial one

Source: elaborated by the authors

Thus, the researcher highlights the specific characteristics of an entrepreneurial university that it should have in the field of teaching and research. Burton Clark (1998), studying the issue of the reaction of universities to changes in the economy, approaches the definition of the concept of “entrepreneurial university” in the most comprehensive way. In his opinion, the entrepreneurial university actively strives for innovation in its operation. Moreover, the entrepreneurial university organises its activities in such a way as to constantly change in order to always remain in a favourable position. Clark identifies five common features that were characteristic of the structure of all five universities studied by the author, which allowed them to become entrepreneurial universities. These features include: 1. a strengthened guiding core - for a quick and flexible response to the ever-changing

demands of science, government and society, a structure is needed that would include the work of not only the central management group of the university, but also its departments; 2. integrated entrepreneurial culture - the idea of change; 3. extended periphery of development - active interaction of the university with the external environment, which requires the infrastructure of the university that meets the needs of society; 4. stimulation of the academic structure - the formation of faculties as independent business units; 5. diversified funding base - search for non-state sources of funding. The main features of an entrepreneurial university, according to the work of B. Clark, include, first of all, the reorientation of the university to innovative activities, through the reorganisation of all its structural divisions, increasing the level of economic attractiveness in the market, and, accordingly, increasing its income. Burton Clark writes about the features of an entrepreneurial university, but in no case does he indicate how to implement the structures that are indicated in his work and how they should work properly. Wissema considers the transformation of the university not from the point of view of external challenges (like Burton Clark), but from the point of view of internal challenges. The researcher emphasizes that in the near future the work of a uniform model of the university will end, i.e. universities will become very different in terms of the set of implemented programmes. Wissema (2016) calls such universities “the third generation universities”. Thus, “the third generation university perceives the commercialization of its know-how as its third goal in addition to the goals of the development of scientific research and education”.

H. Thorp and B. Goldstein (2013) consider it necessary to emphasize that an entrepreneurial university is not a business school as such, it does not adopt the methods and values of the world of commerce, it does not serve as a direct path to the creation of new companies and an absolute expert in economic development (Thorp, Goldstein, 2013). University 3.0. has the significance of the social sciences and humanities for innovations that are aimed at finding solutions to the problems the humanity faces; the focus is on solving major problems; direction to innovative activity and implementation of innovations in practice; culture takes precedence over structure - more attention is paid to the academic culture aimed at innovation. (Thorp & Goldstein, 2013).

The model of Paul Hannon in assessing the internal environment is determined by: 1. how organisational leadership is manifested, ensuring the development of entrepreneurship throughout the university. The key to the success of the University of Hertfordshire, for example, was the rector’s strategic vision, thanks to which the university grew from the smallest polytechnic institute into a major university of international importance. Leadership is provided by the rector, who is committed to creating an entrepreneurial university, and the vice-rector for entrepreneurship, who is dedicated to student employment and commercial revenue generation. The university bills itself as a commercial enterprise and is a founder of a wide variety of companies, the income of which is reinvested in the university, providing students with additional opportunities. A highly specialized biochemical laboratory has been created within the walls of the university; the university has invested over £10m in the biopark, one of the UK’s largest technology parks dedicated to incubating businesses working in the field of biology. 2. how the entrepreneurial vision is reflected in the university’s strategy, 3. what infrastructure is created and how it supports interdisciplinary research and entrepreneurial activity of students, postgraduates and staff, and finally 4. how it supports and stimulates entrepreneurship at all organisational levels. The internal environment shapes the entrepreneurial thinking and behaviour of students, influences their perception of entrepreneurship as a future life choice, student involvement (Hannon, 2018; Hannon, 2013).

Encouragement of entrepreneurial activity of employees. An entrepreneurial university is ultimately defined by how the university contributes to achieving regional and national entrepreneurial goals, how the university disseminates its entrepreneurial practices and exerts political influence. For example, Imperial College London, where entrepreneurship became one of the main directions of its development strategy only in 2010. Within one year, the college managed to earn 30 million pounds from research funded by private enterprises. The business school has an entrepreneurial centre that allows students, researchers and business people to meet, share new ideas and help each other to bring new technological ideas to the market. Coventry University ranked first in the

number of consulting services provided to small and medium-sized businesses, and entered the top five in the number of consulting contracts concluded with large commercial organisations (Williams, 2012; McFarlane, 2012)

4. Entrepreneurial University in Latvia – the first experience in the formation of prerequisites

The low level of prerequisites for the development of University 3.0 in Latvia, as can be seen from our analysis of the parameters of the Global Competitiveness Index, does not inspire optimism for its imminent appearance in our country. As the study "Latvia's Progress in the Development of Entrepreneurship Education after Accession to the European Union" shows, there are great opportunities to improve entrepreneurship education at all 3 levels from basic to higher education. The Ministry of Education and Science has taken the following measures to implement the introduction of entrepreneurship education in higher education: on 29 May 2007, the Cabinet of Ministers of the Republic of Latvia amended the Regulations on the first and second level professional higher education state standards. They stipulate that when acquiring professional study programmes, the content of study courses should include a module for the development of professional entrepreneurship competences (organisation and establishment of enterprises, management methods, fundamentals of project development and management, record keeping and financial accounting system, knowledge about the formation of social dialogue in society and laws and regulations on labour relations). The module in the amount of at least six credit points must be included in all study programmes (bachelor in HEIs, if not previously acquired).

Having evaluated the guidelines for the implementation of entrepreneurship education at all levels of education included in the Latvian state policy planning documents, it must be concluded that development progress in this area is minimal, except for the improvements made in recent years in the content of social and economic education subjects.

- At all levels of the education system, the development of entrepreneurial competence is based mainly on the formation of knowledge and understanding what contribution learning the economics may give.
- The educational programmes developed and offered at the national level do not provide for the involvement of young people in a specific practical activity simultaneously with the acquisition of knowledge, following the principle of “learning by doing”. It is a one-sided approach to the development of entrepreneurial competence.
- There is also no developed methodology for integrating the elements of entrepreneurship competence into other subjects and developing the personal qualities required for entrepreneurship in relation to the development of other key competences. In order to promote the progress of entrepreneurship education, it would be useful to use not only the materials developed by the European Commission’s expert group, but also the knowledge and experience of national experts involved in European Commission projects. When planning policies, this would enable governments to learn more quickly from the best practices of other countries and achieve significant results in a much shorter period of time. (Bilkse, 2009).

At the same time, a favourable environment for the development of entrepreneurship among young people, including students, is currently preserved in Latvia. For example, during the World Entrepreneurship Week from 16 to 20 November 2020, the Entrepreneur Experience Days were held in Latvia for the third time. This initiative contributed to the sharing of experience among entrepreneurs and organisations for a more successful development of entrepreneurial activity in Latvia. Swedbank, together with business partners of the Latvian Chamber of Commerce and Industry and ALTUM, provided participants with an exchange of experience by visiting each other virtually and using digital tool platforms. In addition, during this week, a series of discussions were organised online with experts and entrepreneurs on how to better adapt to new circumstances, how to cooperate and talk remotely, how, despite the situation in the world, to grow and develop, conquering international markets. Most recently, the Latvian Chamber of Commerce and Industry (LCCI) created and launched the “Entrepreneurs of Tomorrow” project for university students, in which LCCI members -

entrepreneurs and professionals from various industries began to deliver lectures to students of Latvian universities, providing practical knowledge about entrepreneurship, thereby promoting young people's interest in entrepreneurship and preparing them to doing business in both the Latvian and international markets (LV 2021).

Latvia also implements entrepreneurship support programmes. The most popular support programmes mentioned by students in our sociological survey were the programmes of Investment and Development Agency of Latvia, primarily business incubators and investment motivation programmes, as well as assistance programmes for start-up entrepreneurs implemented by the financial institution Altum. Some students also mentioned local (municipal) support programmes. Among the types of support that can be received within the programmes, students noted the following: assistance in starting a business (both tangible and intangible), possible financing - in part or in full, risk assessment and management, office or production premises, and equipment required for business, meetings with existing experienced entrepreneurs - assistance in the export of competitive products or services, preparation of required documents, filling in declarations and assistance of accountants. (Altum, 2021; Vidzemes EC, 2021; NaudaBiznesam, 2021; BA School, 2021; Connect., 2021; Turiba.,2021; Entrepreneurship, 2019; Ideju., 2021; ALTUM, 2020; Rigas., 2021; LR., 2021; University., 2021; LIAA, 2021; RTU., 2021; Swedbank, 2020; The role., 2019; The effect., 2018; Voronov et al., 2020). At the same time, we need a state programme of at least a pilot project to create two or three entrepreneurial universities so far, which will allow us to have our own experience in removing economic, social and cultural barriers to the modernisation of our higher education, and the emergence of our own strong entrepreneurial leaders here.

Conclusions, proposals, and discussion points

Over the past 10 years, the proportion of young people under the age of 30 (which includes the vast majority of students) among those who started their own business has significantly decreased - from 47.1% to 37.5%. Although, according to the data of the sociological survey, 52% in Latvia and 74% in Georgia of the students surveyed want to engage in entrepreneurship. The main reason, according to the authors, is the lack of a system of training students for entrepreneurial competencies in universities, which requires a significant and profound change in the mission of a modern university.

The analysis carried out reveals the key factors, and prerequisites that have the most significant impact on the development of an entrepreneurial university in Latvia. First of all, this is a strategic vision and strong leadership, certain clear goals for innovation and entrepreneurship, the availability of an appropriate material and technical base, an improved organisational structure of higher education, the development of an infrastructure for innovative entrepreneurship in accordance with the goals, the development of innovative entrepreneurial knowledge and skills of the university staff.

The development of University 3.0 depends on a diverse system of interaction between social, economic, and cultural factors. The entrepreneurial impact of universities is not limited to patent commercialization rates, it is considered much more broadly and includes the development of student employment skills, the impact on the economic development of the region, and the improvement of the quality of the population.

The key to success lies in the active interaction of universities with bodies of authority at the regional and national levels, as well as with representatives of the private and non-profit sectors. In the article, the considered index of prerequisites makes it possible to determine the factors hindering the creation of an entrepreneurial university, for which special sociocultural solutions can be developed.

In the complex index (UDI/c), Latvia, Georgia, and Ukraine lag behind in five out of five indicators - in higher education and vocational training, labour market efficiency, technological readiness, financial market

development, innovation and R&D. The results of the research presented in the article point at the need to modernise the Latvian higher education, at the same time showing the possibility of building University 3.0 in Latvia. This task, due to its extreme complexity, must be solved by scientific methods through the creation of social structures that make up its fundamental basis and ensure its functioning.

The Covid 19 pandemic, with all its grave consequences, has become a catalyst for innovative solutions in the field of online education, telecommunication solutions, IT solutions, it forces us to look differently at the problems that arise in the event of loss of a job or other opportunities. It is necessary to work hard to form a single ecosystem of student technological and social entrepreneurship.

The novelty of the research findings is to substantiate the conclusion about the need for entrepreneurial universities in Latvia, as well as to identify the main components of the transformation “University 3.0” in higher education of Latvia.

The materials, findings and conclusions of the research can be used by research organisations, government bodies, institutions of higher education, student organisations. Our research may make scientists - entrepreneurs and strategists realise how important it is to modernise Latvian higher education, thereby making a huge contribution to the development of the economy.

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