ASSESSING THE PROCESS OF HUMAN POTENTIAL DEVELOPMENT IN HIGHER EDUCATION WITHIN THE CONTEXT OF ACHIEVING SUSTAINABILITY

Alina SUSLENCO
"Alecu Russo"State University,
Bălți, Republic of Moldova,
alina.suslenco@mail.ru

Marilena DONCEAN
Romanian Academy, Iasi branch,
"Gh. Zane" Institute of Economic and Social Research, Romania
Iasi, Romania
doncean.marilena@acadiasi.ro

Abstract: *This research paper reports on a theoretical and practical research into the process of assessing human potential in higher education institutions. The paper aims to assess the potential of higher education institutions in the Republic of Moldova, i.e."Alecu Russo" State University of Bălți(USARB), the Academy of Economic Studies of Moldova (ASEM), the State University of Moldova(USM), the Technical University of Moldova (UTM) and also "Alexandru Ioan Cuza" University, Romania (UAIC). In order to develop this research, we employed the following methods: induction, deduction, abduction, analysis, synthesis, quantitative research, scientific abstraction. Within this context, a quantitative research was performed using investigation, the research tool being the survey. In conclusion we can say that one of the important factors that contribute to the emergence of sustainable innovation-driven university development is the innovation culture and the establishment of innovative cultural values within universities.*
Keywords: *human potential, human potential assessment, higher education, university, sustainability, innovation, innovation potential.*

Introduction

As society develops and competitive pressures rise, there is an increasing need for companies and institutions address multiple pressures such as strategic changes, innovation changes, dynamic economic conditions, which creates major challenges for both the private sector and for higher education institutions. In the context of change, companies, on the one hand, but also higher education institutions, on the other, are required to identify competitive advantages that would help them cope with challenges and pave the way towards sustainability. Higher education institutions are agents of change, as institutions wherean academic climate predominates along with a system of values helping to create and establishcompetencies and abilities aimed atensuring graduates' competitiveness. Thus, in order to draw students and to increase the level of competitiveness, higher education institutions are required to identify those assets that would differentiate them and increase their sustainability. A basic pillar of creating competitive advantage in higher education institutions is the latter's human potential, which encompasses the drive for

knowledge, the capacity to analyse situations and to make decisions in critical situations. One basic component of human potentialis intellectual capital, which, in higher education institutions, is the main component of human potential that helps such institutions to be more competitive and to securely build their path towards sustainability.

On the other hand, intellectual capital is an element of vital importance for the sustainability of any society. Intellectual capital may be defined as the energy source of an organisation, which, through conscious and rational use, can be transformed into a valuable asset, providing a relative advantage that can deliver benefits in the future, in an innovation-driven economy (Davidova, Barkalov, 2019). There are various classifications of intellectual assets, one of which divides intellectual capital into three general categories: relational, human and structural capital. Human capital denotes the knowledge, competencies and skills that workers "take home with them in the evening." Examples include the capacity to innovate, creativity, skills, professional experience, teamwork capacity, flexibility, tolerance, motivation, satisfaction, ability to learn, structural training and education (Suslenco, 2015).

Relational capital designates the resources derived from the external relations of abusiness with its customers, suppliers and research and development partners. It covers part of the human and structural capital involved in the company's relations with external partners. One could list as examples the company image, customer loyalty and satisfaction, connections with suppliers, market weight and the ability to negotiate with financial institutions.

Research methodology

In order to develop this research, we employedthe following methods: induction, deduction, abduction, analysis, synthesis, quantitative research, scientific abstraction. Within this context, a quantitative research was performed using investigation, the research tool being the survey. Thus, within this framework, we identified the research purpose, objectives and hypotheses in addition to the most important results that were achieved. Respondents within the research included students and members of academia from the Republic of Moldova and Romania, providinga cross-border approach. The sampling unit consisted of 5 universities: the State University of Moldova, the Technical University of Moldova, "Alecu Russo" State University of Bălți, the Academy of Economic Studies of Moldova, and "Alexandru Ioan Cuza" University of Iasi. The unit of analysis consisted of students and faculty members of the higher education bodies named above. The sampling method used was the quota sampling method. We applied the quota sampling method since we aimed for 15% of all university students and faculty members to be surveyed. We used this method as it was the most optimal in this particular case and allowed the generalisation of the results obtained for each respondent in the respective higher education body.

The extent of the research into the subject matter

In order to identify the influence of human potential on university sustainability, a quantitative research was conducted within the Research Project for young researchers "Development of the Model of sustainable innovation-drivendevelopment of universities based on research of the innovative culture of young specialists", organised in 2016-2017,

at the Laboratory of scientific-methodical research in economics, within the Department of Economics, Faculty of Hard Science, Economic and Environmental Sciences, "Alecu Russo" State University in Bălți. The research method used was the survey-based investigation. The research in the project focused on the influence of human potential on sustainability in higher education institutions by capitalising on the innovative culture of young specialists. We must emphasise that we conducted anexploratory research, as we examined the views of research subjects on sustainable innovation-based university development. The purpose of the research was to study innovation activity within the educational institutions proposed for the analysis, highlighting the possibilities for development, modelling and improvement of such activity. In order to obtain valid results from the research, in addition to the purpose of the research, it is necessary todefinecertain specific objectives, which will emphasise the attributes necessary for the research.

The general objective of the research was to study the factors influencing innovation activity and innovation culture within higher education institutions. In addition to the general objective, the specific objectives that would help to achieve the planned results must also be elucidated.

The specific objectives of the research, which would contribute to achieving the research purpose, were:
- researching the development level of the innovation activity of universities;
- identifying the factors that influence the innovation activity of a higher education institution;
- identifying the problems faced by the university in innovation-driven development;
- researching the factors that can contribute to the sustainable innovation-driven development of universities;
- identifying the values of innovation culture that will contribute to the sustainable innovation-driven development of universities;
- identifying the need to plan the innovation activity withina higher education institution;
- examining the role of young specialists' creativity in ensuring innovation-driven university development.

In line with the objectives set forth, we also developed the hypotheses regarding the research into the role of the innovation culture in ensuring the sustainable innovation-driven development of universities.

The general hypothesis underlying the research is:

H0: The innovation culture of young specialists exerts a positive influence on the sustainable innovation-driven development of higher education institutions.

The specific hypotheses of the research are:

H1: The level of innovation development of the university is positive and the ratings recorded exceed 70%;

H2: The most important factor influencing the innovation activity of a higher education institution, showing a positive and upward dynamics, is "The system for motivating and fostering creativity and innovation potential in the university";

H3: One of the most important problems facing the university in its innovation-driven development is "Low (moral and material) motivation for innovation activity of students and faculty members";

H4: The most important factor that contributes to the sustainable innovation-driven development of universities is "Development of the Strategy for sustainable innovation-driven development of the university";

H5: One of the most important values in innovation culture is "Supporting innovation activities among faculty members and students";

H6: Over 90% of the research subjects consider that it is necessary to plan the innovation activity of their respective higher education institution;

H7: The creativity of young specialists exerts a positive influence on training and on ensuring innovation-driven development of the university.

Using these hypotheses, the research variables will be tested and through their validation the links between the aspects proposed for the research will be confirmed or refuted. Subsequently, to demonstrate and ensure the logic of the research, we aim to demonstrate the link between the objectives of the research, the questions in the survey and the research hypotheses. Hence, each research objective will be examined using questions from the survey. It is worth noting too that each objective corresponds to a hypothesis that will eventually be validated or not. Together with the research team, we decided to conduct a quantitative research, which would help collect the necessary data to confirm the research hypotheses, in order to achieve the purpose and the objectives of the research. We opted for the investigation as the method of research. The method would help us to collect and analyse the data needed for the research. It is worth high lighting the following advantages of this type of research (Doncean, Doncean 2012):

- it allows on-the-spot collection of research data;
- it offers the possibility to guarantee the confidentiality of research subjects' data;
- it ensures the possibility of abstraction in order to analyse only the necessary phenomena;
-it gives respondents the possibility to receive explanations in case of misunderstandings;
- it offers the possibility to model the discussion so as to obtain the necessary information;
- it ensures the possibility to monitor the data collection process;
- it provides the possibility to measure the phenomena proposed for research. In Table 1 we show the links between the purpose, objectives and hypotheses of the research.

Table 1. Analysis of the connections between objectives, questions, hypotheses

Objectives	Questions	Hypotheses
To research level of development of innovation activity of universities.	Questions 2-4	The level of innovation development of the university is positive and the ratings recorded exceed 70%.
To identify the factors that influence the innovation activity of a higher education institution.	Question 5	The most important factor influencing the innovation activity of a higher education institution, showing a positive and upward dynamics, is "The system for motivating and fostering creativity and innovation potential in the university".
To identify the problems faced by the university in innovation-driven development.	Question 6	One of the most important problems facing the university in its innovation-driven development is "Low (moral and material) motivation for innovation activity of students and faculty members".
To research the factors that can contribute to the sustainable innovation-driven development of universities.	Question 7	The most important factor that contributes to the sustainable innovation-driven development of universities is "Development of the Strategy for

		sustainable innovation-driven development of the university".
To identify the values of innovation culture that will contribute to the sustainable innovation-driven development of universities.	Question 8	One of the most important values in innovation culture is "Supporting innovation activities among faculty members and students".
To identify the need to plan the innovation activity within a higher education institution.	Question 9	Over 90% of the research subjects consider that it is necessary to plan the innovation activity of their respective higher education institution.
To examine the role of young specialists' creativity in ensuring the innovation-driven university development.	Question 10	The creativity of young specialists exerts a positive influence on training and on ensuring innovation-driven development of the university.

Source: Developed by the authors

Based on this method, the research data would be collected and the phenomena would be examined. The survey was to be used as research tool. Surveys are particularly used as a tool used in quantitative analysis. The survey would therefore allow us to obtain quantifiable and accurate results on the phenomena proposed for research. The results proposed for research were, to a large extent, objective and precise. The focusof the research was on 4 higher education institutions in the country and abroad, as follows:
- "Alecu Russo" State University of Bălți;
- State University of Moldova;
- Academy of Economic Studies of Moldova;
- "Alexandru Ioan Cuza" University of Iași.

The research was publicised, surveys were distributed and the necessary data were collected within the above higher education institutions. Thesehigher education institutions were selected owing to the fact that they represent important university centres, with a special history and demonstrated reciprocity in order tothe research. The higher education institution in Romania, "Alexandru Ioan Cuza" University of Iași, was selected thanks to the partnerships of the Laboratory of scientific-methodical research in economics within the "Alecu Russo" State University of Bălți with members of this university. The university responded positively and showed reciprocity in order to promote the research within its ranks. The research subjects included students and faculty members of the higher education institutions selected for analysis, who were surveyedso as to verify the hypotheses and achieve research objectives. Thus, during the research, 15% of the students from economics departments and 15% of the faculty members of the universities were surveyed in order to verify the research hypotheses. The surveys were personally handed out by the researchers in the project to each student or staff of the researched university and the key points of the questions in the surveys were explained. This approach would be respected in order to ensure research ethics and for each respondent to understand the questions proposed for research. Specifically, each survey respondent had to answer 10 questions in the research survey. Thus, in order to conduct an in-depth research on the innovation culture of young specialists and its influence on the sustainable innovation-driven development of university, we used a survey containing 10questionsordered from simple to complex. Only questions that contributed to the achievement of the research objectives or to the validation of a research hypothesis were used in the survey. The questions in the surveywere

formulated concisely, clearly and objectively so as to obtain the information necessary for the research. The data obtained from the respondents wouldremain confidential and may not influence the respondent.

The survey was designed in such a way that each question would contribute to the achievement of an objective or to the validation of a hypothesis subject to research. From the outset, the survey is designed to include simple questions, respondents being asked to provide personal data such as theirrole or staff category (either: faculty member, member of the management staff of the institution, or: student, masters student, doctoral student). The first question in the survey"Personal data" for staff of higher education institutions included the following: staff category, academic title and seniority. For students, the academic year, the course of study and the form of study were included. The data are needed to quantify the research subjects and to observe certain elements of the research. Next, starting with the second question, "Please rate the level of innovation activity of the university where you work / study (in%)", respondents had to assess the level of innovation activity of the higher education institution where they work or study. This would help us to perceive how students and their own staff assess the university's innovationactivity.

The third question,"Rate the level of your own innovation activity (in%)", was designed to assess the student's or faculty member's own innovative activity. This question would contribute to assessing the commitment of each member in the modelling and developing the innovation activity. The fourth question, "Rate the dynamics of the innovation activity of the university where you work / study", was formulated in order for the research subjects to rate the dynamics of the university innovation activity. Thus, this question would help us to validate the research hypothesis and draw suggestive conclusions. The fifth question "Describe the dynamics of the main factors that influence the innovation activity in the university where you work / study" , was formulated in order to highlight the main factors that influence the university innovation activity and their dynamics. These researched elements would help us to form the "The Sustainable Innovation-Driven University Development Model" which is planned within the project.

Questions five to eight were more complex and contributed to the discovery and development of the research variables. The sixth question "Highlight the main issues the university is facing in the field of innovation (several may be listed)", was included in the research to determine the most important problems facing a higher education institution being examined, aiming to generate possible solutions for higher education institutions. The seventh question "Indicate the factors which, in your opinion, can ensure the sustainable innovation-driven development of universities", was included in the surveyso as to analyse those factors that influence the sustainable innovation-driven development of the university. Based on the analysis and processing of the collected data, these factors would be used in building the model of sustainable innovation-driven development of the university. The eighth question, "Rank the importance of the innovation culture values of young specialists (from 1 to 6) that can lead to the sustainable innovation-driven development of universities", was included in the surveyto allow an analysis of the values that would validate the research hypothesis. The ninth question "Do you believe that the innovation activity within the university should be planned?", was formulated in order to identify whether it is necessary or not to plan the innovation activity of universities and, possibly, to apply the necessary measures in each case. The tenth question "Do you believe that the creativity of young specialists contributes to the innovation-driven development of

the university?", was formulated in order to determine whether the creativity of young specialists positively influences the innovation-driven development of the university, thus validating one of the research hypotheses. Thus, as one may see, the survey was organised in such a way as to contribute to the achievement of the research objectives and to allow us to verify the research hypotheses.

Within the research we dealt with both dependent and independent variables (Suslenco, 2020, p.499). The dependent variable is the sustainable innovative-driven development of the university. The independent variable is the innovative culture of the university. Similarly, the research includes qualitative and quantitative variables. Qualitative variables include: innovative culture, factors related to the innovative activity, the values of innovative culture, factors of innovative-driven development of the university, the links between the researched variables. The quantitative variables in the research are: seniority, academic title and dynamics, the level of innovation activity of the university and its members, the factors that influence the innovation activity of the university. All these variables were used to conduct the research and to achieve the research objectives.

As regards the promotion of the research within the universities selected for analysis, it was necessary to determine the appropriate sampling method. Thus 15% of the faculty members of the researched universities and 15% of the students of the economics specialties within the educational bodies participated in the research.

The sampling unit consisted of the State University of Moldova, the Technical University of Moldova, "Alecu Russo" State University of Bălți, the Academy of Economic Studies of Moldova, the University "Alexandru Ioan Cuza"of Iași, while the analysis unit was comprised of students and staff of these higher education institutions. The quota sampling method was employed. We applied the quota sampling method as we needed 15% of all university students and academic staff to be surveyed. We used this method, because it was the most optimal in this case and allows the generalisation of the results obtained for each respondent of a higher education institution.

The sampling formula is the following:
- Students of economics specialties*15% + faculty members*15%
- 380 respondents from the 5 higher education institutions in the country and abroadparticipated in the study. The planned research was undertakenfrom January to March 2017. The necessary data were collected on the university campuses of the institutions part of the research, by the research team which contacted the respondents directly and handed out the surveys to be filled in person. The research team also provided additional information or clarifications.

The time allocated for collecting the necessary data lasted from the start of the distribution of surveys among students and faculty members of the universities taking part in the research up to the recording of answers and the grouping of data resulting from the research. For these activities 3 months were reserved during which all the researchers were involved in research activities in various higher education institutions in the country and abroad.

The surveys prepared by the research team were handed out to the respondents in physical format and all the elements not understood by the respondents were explained further. To complete the survey, 15 minutes were reserved for each staff member or student. Every day, the research team distributed 10 surveys, depending on whether

respondents were present on the university campuses. The data collected during the research were subsequently analysed meticulously and in great detail to highlight the research variables, the modellingof variables by the respondents, to observe certain deviations and some common elements observed and listed by the respondents.

Finally, the research data were interpreted and entered in the database created for this research, and relevant conclusions and suggestions were drawn for the institutions participating in the research. The data collected during the research were analysed, personally processed, using the database created for this purpose in September-October 2016. In order to process the data, the excel softwarewas used, as it can record and analyse statistical data very easily and accurately. The key benefitoffered by this software is the provision of maximum flexibility in data recording, analysis and subsequent processing.

Results and discussions

In order to examine the innovative culture of students and faculty members in universities, the sociological survey was promoted and 380 respondents participated (of which: USM - 48, USARB - 280, ASEM - 52, UAIC - 124 respondents). The distribution of faculty members participating in the research by type of staff withina university, by their academic title and seniority is presented below:
- 193 faculty members participated in the research, i. e. 50.8% of the total number of respondents, of which 40 respondents (20.7% of the total number of respondents in the category of faculty members) were managers/administrators (deans, heads of chairs and departments, laboratory directors) and 153 teaching staff (79.3% of the total number of faculty respondents). The summary data are shown in Figure 1.

Figure 1. Distribution by position of responding faculty members
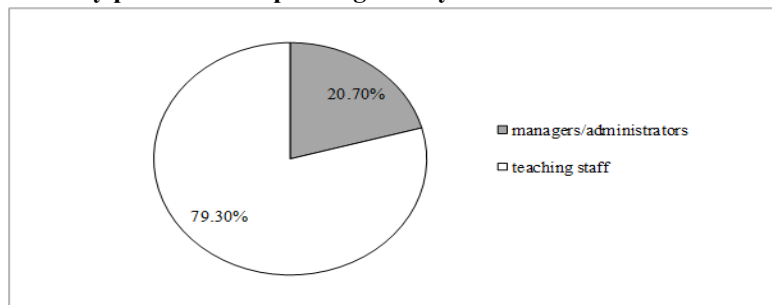
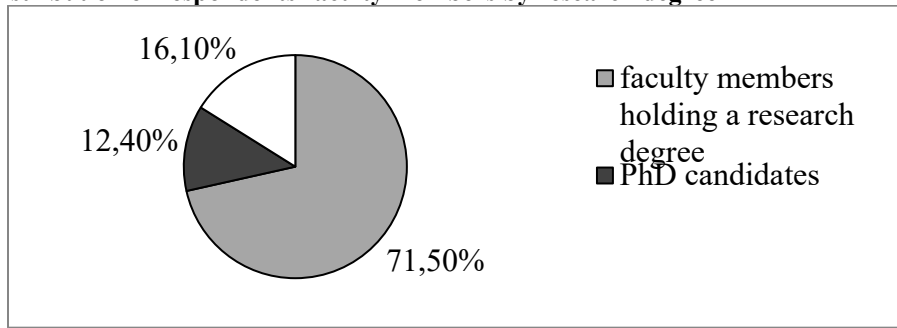*Source: Developed by the authors by processing the collected data*

Out of the total number of respondents, faculty members at participating universities included:
- 138 (71.5%) faculty members holding a research degree,
- 24 (12.4%) PhD candidates,
- 31 (16.1%) faculty members holding a research degree.
The distribution of respondents by research degree is shown in Figure 2.

Figure 2 Distribution of respondents-faculty members by research degree

Source: Developed by the authors by processing the collected data

Based on the data in Figure 2, presented below, we note that of the total number of faculty members, 29.5% are teaching staff with 10 to 15 years of seniority at work, 26.9% are teaching staff with 15-20 years of seniority, 21.8% are teaching staff with more than 20 years of seniority. The summary data are presented in Figure 3
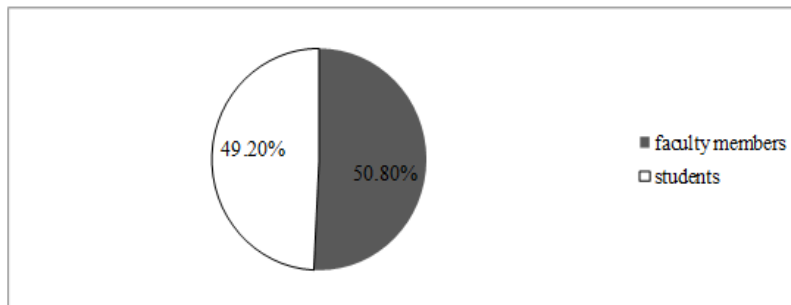
Figure 3 Distribution of respondents by seniority
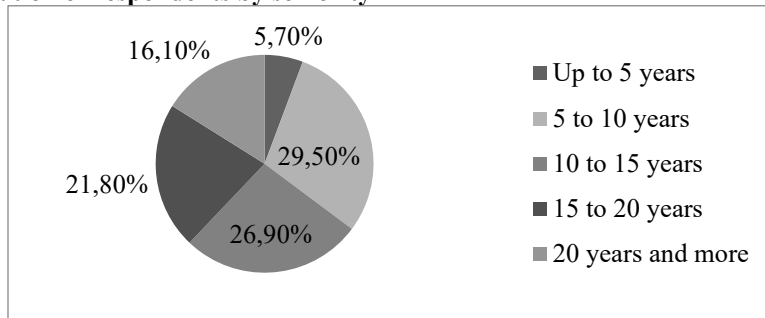
Source: Developed by the authors by processing the collected data

The sociological survey also included 187 undergraduate and masters students (49.2% of the total number of respondents) of which 165 (88.2% of the total number of undergraduate/master students) were students enrolled ina full-time course of study and 22 of students (11.8% of the total number of undergraduates / masters students) represent students in part-time studies. In figure 4, we showed the share of students and teachers in the total number of respondents.

Figure 4 Share of students and faculty members in the total number of respondents

Source: Developed by the authors by processing the collected data

In Figure 5, we present the distribution of undergraduates and master students according to their typology and year of study.

Figure 5 Distribution of undergraduate student and master students in Moldovan universities by category and year of study (%)
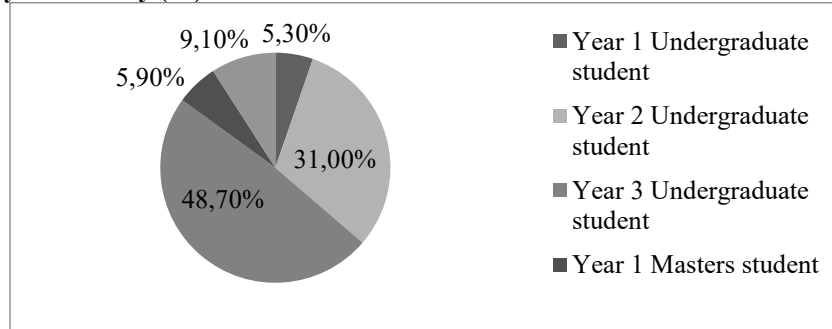
Source: Developed by the authors by processing the collected data

The sociological survey included fur ther more undergraduate/masters students and teaching staff from UAIC University of Iasi, for a total of 124 respondents, of which 18 (14.5%) were faculty members and 106 (85.5%) undergraduate/masters students, distributed as shown in Figure 6.

Figure 6 Distribution of UAIC undergraduate and masters students by category and year of study (%)
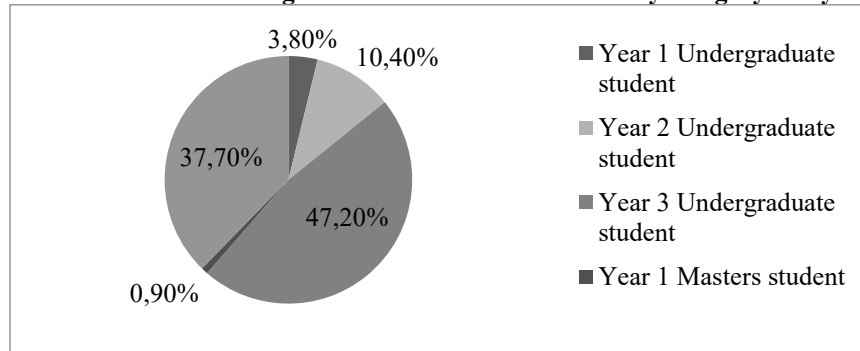
Source: Developed by the authors by processing the collected data

Following the research of the innovation activity of undergraduate and masters students and of teaching staff in the universities selected for analysis, the following interesting phenomena were detected. Most of the respondents from Moldovan universities (25.5% of the total number of respondents), both students and faculty members, rate at 80% on average the level of innovation activity in the universities where they study or work. However, USM students rated the level of innovation activity at 90%. The dynamics of the respondents' answers is different depending on the university and the rating level. The summary data are presented in Figure 7.

Figure 7 Dynamics of respondents' opinions on the level of innovation activity of Moldovan universities (in%)
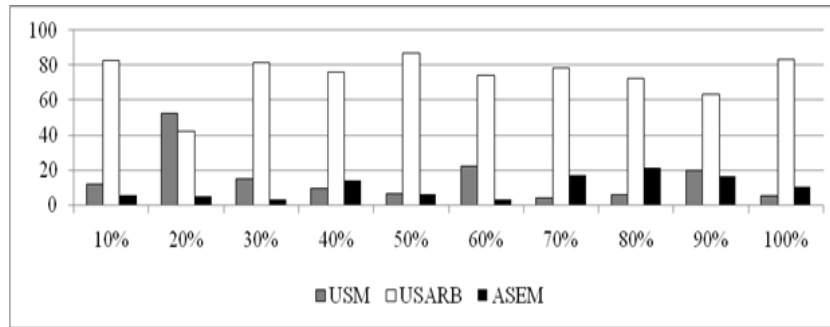
Source: Developed by the authors by processing the collected data

At the same time, the level of respondents' innovation activity differs substantially from the level of summative indicators and is varied. Thus, most of the respondents from Moldovan universities, i.e. 15.5% estimated their own level of innovation activity at 100%. However, when analysing the mean square deviation of the respondents, we obtained the following data.

Table 2. Level of innovation activity of universities

Level of innovation activity of universities, % (xi)	(number of respondents) fi	xifi	(dispersion) $(x_i - \bar{x})$	$\|x_i - \bar{x}\|$ fi	$(x_i - \bar{x})^2$	$\|x_i - \bar{x}\|$ 2fi
10	17	170	- 56.6	962.2	3203.56	54460.52
20	19	380	- 46.6	885.4	2171.56	41259.64
30	27	810	- 36.6	988.2	1339.56	36168.12
40	21	840	- 26.6	558.6	707.56	14858.76
50	30	1500	- 16.6	498.0	275.56	8266.8
60	27	1620	- 6.6	178.2	43.56	1176.12
70	46	3220	3.4	156.4	11.56	531.76
80	97	7760	13.4	1299.8	179.56	17417.32
90	60	5400	23.4	1404	547.56	32853.6
100	36	3600	33.4	1202.4	1115.56	40160.16
Total	380	25300	x	8133.2	x	247152.8

Source: Developed by the authors

$$\bar{x} = \frac{\sum_{i=1}^{10} x_i f_i}{\sum_{i=1}^{5} f_i} = \frac{25300}{380} = 66,6$$

Mean respondents' answers lead to: (%)

$$\bar{d}_p = \frac{\sum_{i=1}^{10} |x_i - \bar{x}| * f_i}{\sum_{i=1}^{5} f_i} = \frac{8133,2}{380} = 21,40$$

Mean linear deviation:

Consequently, the level of innovation activity in universities deviates on average by 21.4% compared to the mean. To determine the coefficient of variation, we determine the dispersion and the mean square deviation (Doncean, Doncean, 2012).

$$\sigma^2{}_p = \frac{\sum\limits_{i=1}^{10}(x_i - \bar{x})^2 * f_i}{\sum\limits_{i=1}^{5} f_i} = \frac{247152{,}8}{380} = 650{,}40$$

Dispersion:

$$\sigma_p = \sqrt{\frac{\sum\limits_{i=1}^{10}(x_i - \bar{x})^2 * f_i}{\sum\limits_{i=1}^{10} f_i}} = \sqrt{\sigma^2} = \sqrt{650{,}4} = 25{,}5\%$$

Mean square deviation:

$$\nu_\sigma = \frac{\sigma}{\bar{x}} * 100 = \frac{25{,}5}{66{,}6} * 100 = 38{,}3\%$$

Coefficients of variation: - the variation is relatively high, indicating a nonhomogeneous collective, while the mean is broadly representative.

Hence, we can argue that the level of variation of answers is high, which makes it difficult to assess the development of the studied phenomenon. At the same time, 14.5% of respondents rated the level of their own innovative activity at 70%, 13.9% rated it at 60%, 13.7% - at 50%, as shown schematically in Table 3.
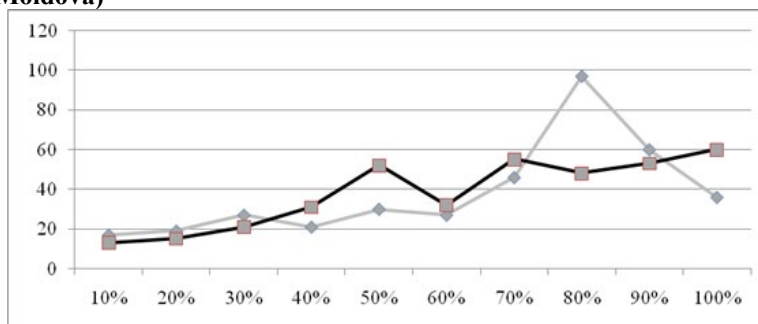
Table no.3 Level of innovation activity of teaching staff and undergraduate / mastersstudents at Moldovan universities

Level of individual innovative activity in%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Number of respondents	13	15	21	31	52	32	55	48	53	60
Ratio of answers %	3.4	3.9	5.5	8.2	13.7	8.4	14.5	12.6	13.9	15.8

Source: Developed by the authors

When analysing the level of overall innovation activity of Moldovan universities and undergraduate / masters students, one can notice that these indicators differ substantially. The summary data are shown in Figure 8.

Figure 8 Correlation between the level of innovation activity of undergraduate / masters students and academic staff (Moldova)
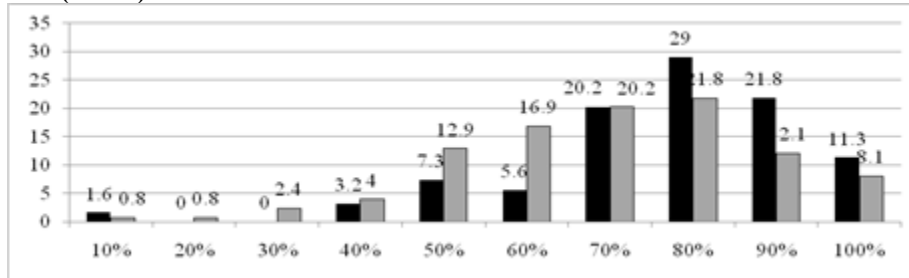

Source: Developed by the authors by processing the collected data

However, it must be highlightedthat when rating the dynamics of innovation activity, the majority of respondents (49.7%) reported an increase in the level of innovation activity in universities and an oscillating trend in terms of changes in this indicator (34.2%). In spite of this, 7.4% of research respondents noted a decrease in innovation activity in universities, while 8.7% of respondents noted a stable situation with no changes in this

area. As regards answers received from the respondents at "Alexandru Ioan Cuza" University of Iași, we noted that most of them rated the level of individual innovation activity at 80%, yet there was a large deviation of students'and faculty members' assessment of their own innovative activity. The data are summarised in Figure 9.

Figure 9. Correlation between the level of innovation activity of undergraduate/masters students and academic staff (UAIC)
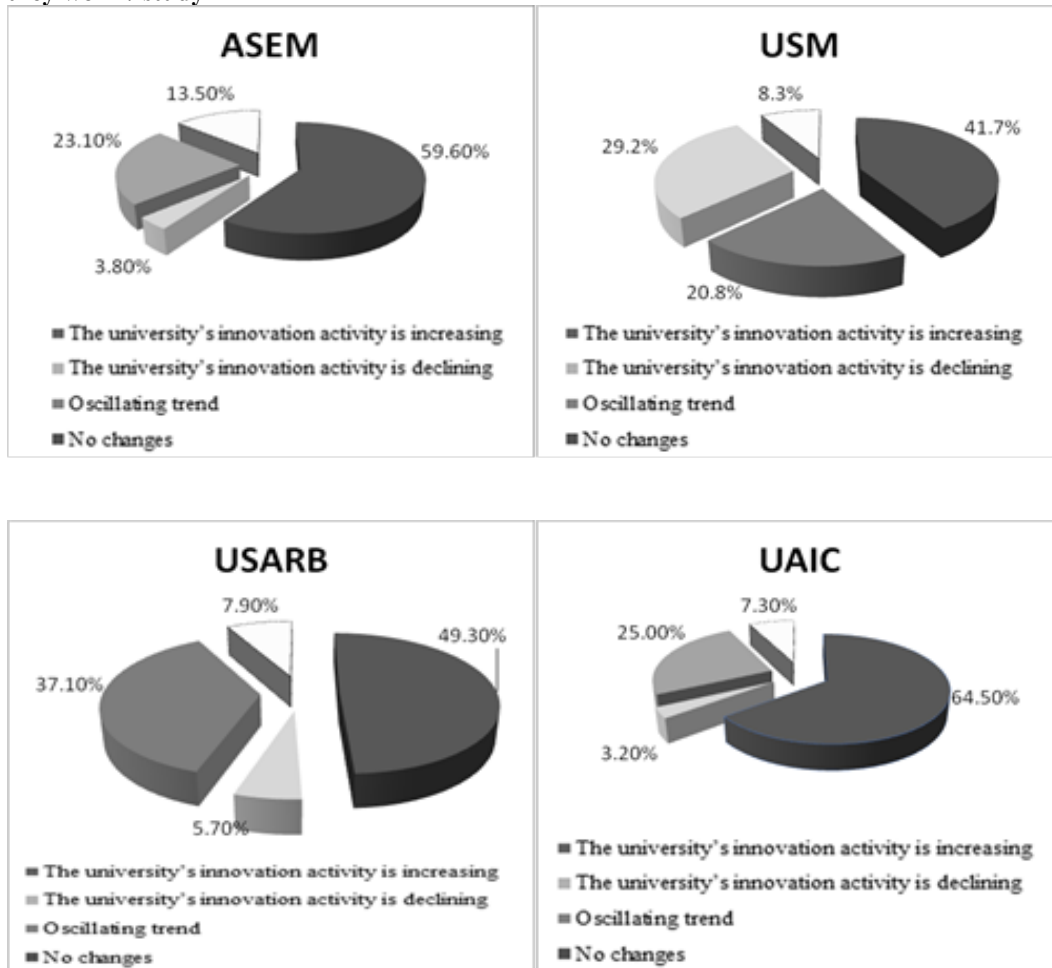

Source: Developed by the authors by processing the collected data

It is worth noting the particular impact of individual innovation dynamics over the previous 3-5 years on the assessment of individual innovation. The increasing level of innovation activity of universities and faculty members contributes to sustainable innovation-driven development, which encompasses theemergence of innovation culture, a favourable environment, fostering the creativity of students and teaching staff, and finally, the emergence of innovation and technology transfer (Alshuwaikhat, Abubakar, 2008). When rating the dynamics of innovation activity, the vast majority of respondents at Moldovan universities (49.7%) reported an increase in innovation activity in their universities and an oscillating trend in terms of changes in this indicator (34.2%). However, 7.4% of respondents noted a decrease in innovation activity in universities, while 8.7% reported an unchanged situation in this area. UAIC university respondents reported an increase in the university's innovation activity (64.5%), an oscillating trend (25.0%), with no changes (7.3%), while a decrease was observed by 3.2% of research respondents.

If we analyse the survey results by university individually, we must point out that most of the respondents, both from universities in Moldova and Romania, reported a similar trend in the changein the innovation activity of universities. The data are presented in Figure 10.

Figure 10 Respondents' assessment of the dynamics of the innovation activity of the universities where they work / study
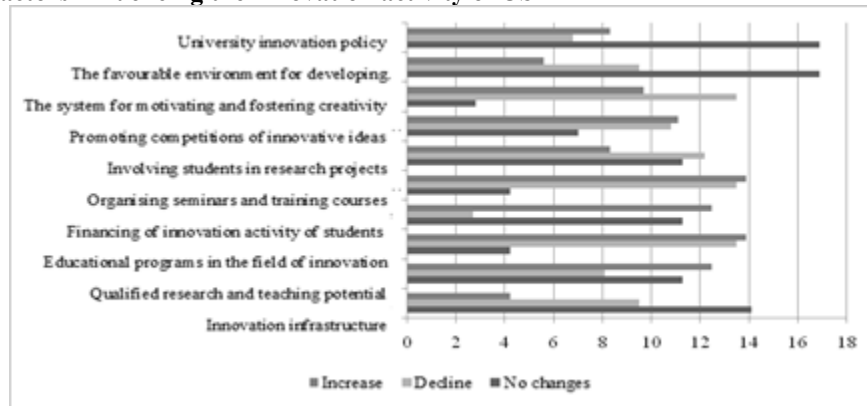

Source: Developed by the authors by processing the collected data

As regards the factors that influence the dynamics of the innovation activity of universities, we must note that the basic factors contributing to the increase of innovation activity, in the opinion of the respondents from universities in Moldova, are:

1. University innovation policy –as mentioned by 210 respondents or 55.3%;
2. Qualified research and teaching potential (academic staff holding research and teaching degrees) - 203 respondents or 53.4% respondents;
3. The favourable environment for the development of creativity and innovation potential within the university (educational, scientific, professional) - 187 respondents or 49.2%;
4. Innovation infrastructure (research laboratories, creative centres, innovation incubators) - 182 respondents or 47.9%.

In terms of the influence of these factors within each university, it should be noted that both within Moldovan universities and UAIC University, the following factors have a positive contribution: innovation infrastructure, innovation potential, innovation policy. The findings are summarised in Figures 11, 12, 13 and 14.

Figure 11 Factors influencing the innovation activity of USM

Source: Developed by the authors by processing the collected data

Figure 12 Factors influencing the innovation activity of USARB

Source: Developed by the authors by processing the collected data

Figure 13 Factors influencing the innovation activity of ASEM

Source: Developed by the authors by processing the collected data

Figure 14 Factors influencing the innovation activity of UAIC

Source: Developed by the authors by processing the collected data

Analysing the problems faced by universities in the process of innovation activity, we must note that while respondents from Moldovan universities reportedthe issue of insufficient funding of innovation of faculty members or students, UAIC respondents mentioned that one challengelies in the low number of centresaimed at developing students' creativity and innovation potential. The data are centralised in Table 4.

Table no. 4.Problems faced by universities when engaging in innovation activity (%)

Problems	USM	USARB	ASEM	UAIC
The lack of strategic vision of the innovation-driven development of the university	21.1 (2)	14.1	14.3(3)	4.9
Unfavourable environment for the development of creativity and innovation potential within the university	14.7	8.5	14.3(3)	9.8
Low number of creative centres (clubs) for students	2.1	15.0	5.7	32.3(1)
Reduced motivation (moral and material) of innovation activity of students and teaching staff	24.2 (1)	16.8 (2)	20.0(2)	13.0
Low quality of the technological equipment used	17.9 (3)	15.2 (3)	2.9	18.9(2)
The reduced state financing of innovation activity	6.3	23.3 (1)	31.4(1)	13.7(3)
The lack of innovation culture within the university	13.7	7.1	11.4	7.4

Source: Developed by the authors by processing the collected data

Considering the data presented in Table 4, we must point out that 23.3% of USARB respondents and 31.4% of ASEM respondents reported as a basic problemthe insufficient financing of innovation activity of universities by the state. This issue was also raised by UAIC respondents (13.7%), yet it ranked third. Conversely, USM respondents consider this issue insignificant, as only 6.3% of USM respondents mentioned the issue. This would indicate that USM University has sufficient funding from the state or that the university receives additional funding from other sources. Furthermore, respondents from Moldovan universities highlighted the key issue of insufficient motivation of the innovative activity of teaching staff and students. This problem ranks first at USM, as reported by 24.2% of the research respondents and second at both ASEM and USARB, as noted by 20.0% and 16.8% of the respondents, respectively. However, the respondents both of Moldovan universities, except for ASEM, and of UAIC University, point out the issue of insufficient use of technologies, which ranks third among the challenges mentioned by respondents. Additionally, ASEM respondents emphasised the lack of strategic vision of the university

in the area of innovation and innovation activity (14.3%) and the lack of the required environment to foster creativity and the innovation potential of students (14.3%). Concerning the UAIC respondents, they estimatedthat a basic issuewas the lack of centres for the development of students' creativity, which was noticed by 32.3% of the respondents. Also, a small proportion of respondents appreciated as a basic problem the lack of a strategic university roadmapfor innovation activity.

Theresult of the research lists the factors that may contribute to the sustainable innovation-driven development of universities. The summary of thedata is presented in Table 5.

Table 5. Importance of factors that can contribute to the sustainable innovation-driven development of universities (%)

Factors	USM	USARB	ASEM	UAIC
Devising the strategy for innovation-driven development of the university	23.0 (1)	17.1 (2)	26.1(1)	13.2
Adapting innovation culture and establishing university-wide innovation values	16.0 (3)	8.0	8.7	15.2 (2)
Designing curricula oriented towards fostering creativity and developing students' innovation potential	10.0	16.6	20.3(2)	12.7
Incorporating research and innovation practice in educational curricula	8.0	13.2	1.4	13.5
Setting up student innovation clubs	20.0 (2)	16.8 (3)	20.3(2)	22.0 (1)
Providing research labs with the required scientific and technical equipment	13.0	19.7 (1)	8.7	14.6 (3)
Including in research activity plans several indicators that would assess the university's innovation activity	10.0	8.6	14.5 (3)	8.8

Source: Developed by the authors by processing the collected data

As we can see from Table 5, although there are problems, respondents from Moldovan universities consider that the most important element and a basic factor is "devising the strategy for innovation-driven development of the university" (Strategia Cercetare-Dezvoltare a Republicii Moldova, 2020). This factor ranks first among responses at USM (23.0%) and ASEM (26.1%), while it is in second place at USARB (17.1%). Respondents of both the universities of Moldova and the UAIC University argue that in order to ensure the sustainable innovation-driven development of universities, the development of innovation centres for students must be ensured. However, this factor, within the UAIC University, ranks first, while it lies in the 2ndand 3rd place within the universities of Moldova. In 2ndplace, the respondents of ASEM University ranked the need to develop curricula oriented towardsfostering creativity and the development of students' innovative potential (20.3%). Within ASEMuniversity, respondents consider it important to incorporate in the curricula indicators that may be used to assess the level of innovation-driven development of the university (14.5%).One of the important factors contributing to the emergence of sustainable innovation-driven university development is the innovation culture and establishment of innovative cultural values within universities. Respondents fromUAIC (15.2%) and USM (16.0%) in particular pointed out this factor. The importance of the values was rated by the respondents as shown in Table 6.

Table 6. Importance of innovative culture values (%)

	USM	USARB	ASEM	UAIC
The university's innovation mission and its image as a creativity centre	16.7 (2)	13.3	6.4	12.7
The prevalence of the educational-innovative climate within the university	11.8	12.9	15.4 (2)	9.1
The importance of the research-development-innovation process within the university	12.7	13.5 (3)	12.8 (3)	14.2 (3)
Support for innovation activities of academic staff and students	19.6 (1)	17.7 (1)	12.8 (3)	21.8 (1)
Young specialists being treated as a considerable innovation potential for the sustainable development of the university	13.7 (3)	16.3 (2)	20.5 (1)	16.8 (2)
Promoting innovative ideas in order to file patents and register innovative products with AGEPI (State agency on intellectual property)	9.8	9.2	15.4 (2)	10.6
The management style in innovation activity is participative, involving researchers, teaching staff and students in decision-making	6.9	6.3	9.0	6.8
Supporting self-development and team spirit	8.8	10.8	7.7	8.0

Source: Developed by the authors by processing the collected data

As we can observe from Table 6, values of the innovation culture rank as follows according to respondents in universities:

1. Support for innovation activities of academic staff and students(1stplace - USM, USARB, UAIC, 3rdplace - ASEM);
2. Young specialists being treated as a considerable innovation potential for the sustainable development of the university (1st place - ASEM, 2ndplace - USARB, UAIC, 3rdplace - USM);
3. The importance of the research-development-innovation process within the university(USARB, ASEM, UAIC).

Conclusions

The research highlighted that the innovation activity of universities must be planned and be reflected in universities' strategies, a fact noted by 314 respondents or 82.6%, of all respondents of universities in Moldova and 106 respondents or 76.8% of all respondents at the UAIC. Also, a large proportion of respondents, i.e. 76.8% of the respondents of Moldovan universities and 80.6% of the UAIC University, confirmed that the creativity of students ensures the sustainable and innovative-driven development of the university.

One of the important factors that contribute to the emergence of sustainable innovation-driven university development is the innovation culture and the establishment of innovative cultural values within universities. UAIC (15.2%) and USM (16.0%) respondents emphasised this factor. We would like to point out that the purpose and objectives of the research have been successfully achieved.

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