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Higher Education in the Eyes of Economic Operators

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Abstract: This research is a reflection on new challenges in the economy called Industry 4.0, which has brought about revolutionary changes in many areas of life, including education. To fully use the potential of smart products, services and business opportunities that are expected to be widely used in all sectors in the near future, education systems need to be revised to produce the skilled labour force required by this dynamic process. The ability of companies and institutions with a strong IT and technology infrastructure to reflect advanced digital technologies in innovation and production processes requires specific skills, described as 21st-century skills. Education 4.0 should be a response to these challenges with changed learning and teaching paradigms. In this context, we have organised an extensive survey on the relationship between the economy and higher education in Bosnia and Herzegovina. We have created a web questionnaire that contains desirable characteristics of new employees and a set of questions, the analysis of which was used to determine an actual connection between the economy and higher education. After the factor analysis of the questionnaire, we obtained four desirable characteristics of new employees and the assessment of employers on their representation in each individual. We also concluded that the current impact of the economy on the processes of adopting new curricula is very low. We got the impression that higher education and economic development run in parallel, often without any points of contact.

Keywords: higher education; economy; software; Education 4.0; factor analysis

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1. Introduction

1.1. Background

One of the key reasons for managing the educational process is the demands of an increasingly selective labour market. The most important goal of each country's education system is to enable each individual to develop, through the education system, a set of knowledge, skills and competencies for learning, personal development, fulfilment and continuous progress through life. From the socio-economic perspective, the most important task of the education system is the need to help the individual become adequately included in the labour market, easier employment and prevention of social exclusion. Meeting these objectives concerns not only those directly involved in the education system, but it is especially important for employers as users of educational outcomes. Higher education institutions have a pivotal role in contributing to sustainability transformations through their research, education, operations and outreach activities [1].

Viewed from the perspective of the employer as the most significant issue of education, we can define the mismatch of the education system with the needs of the labour market and the inadequacy of the system to respond to challenges that will undoubtedly arise in the future. At present, there is an obvious gap between employers' expectations and the abilities students tend to acquire during higher education [2]. The mismatch between labour supply and demand is mainly reflected in the fact that there is a demand for labour of a particular profile in the labour market, but the education system does not produce enough such profiles, largely due to students' lack of interest in education (e.g., technical professions). On the other hand, there is often a supply of particular occupations in the

labour market, but there is not enough demand for the labour force of these profiles. In other words, young people are educated for professions that are oversupplied in the labour market and there are almost no people interested in those demanded in the labour market the most.

Of course, one should be careful in assessments when defining education needs and enrolment policies just because there are no unemployed people in particular professions. Given that the world of labour is changing daily, the needs for particular professions are subject to change, so the current data of a country on the unemployment rate in particular professions should be objectively considered and assessed. For example, law graduates and graduate economists are the most numerous in the unemployment register, but they also get hired the fastest. The future labour market prefers mobile labour, or flexibility in choosing a job and focusing on areas that need particular professions and occupations. However, we cannot disregard the need for a better connection between the labour market and the education system, which will become imperative in the time ahead. Therefore, it is justified to try to prepare societies for lifelong learning and the daily acquisition of new knowledge and skills in the chosen profession.

In this regard, a study was launched to determine desirable competencies of employees with higher education to improve and harmonise the curriculum at universities possibly.

1.2. Economy, Knowledge, Competencies

Developing countries, but also post-conflict countries such as Bosnia and Herzegovina, are trying to join economically developed countries while dealing with issues of reconstruction, development and improvement of the education system, which is an extremely complex and difficult process. We believed it was important that research exists that can, with better promotion, encourage responsible parties at universities to deal with questions regarding the impact of the environment on functioning and creating different policies. Here, firstly, we consider the openness of universities to various influences. Universities, but also the economy in countries that have a tendency to make a qualitative leap and join those of more developed countries need to achieve higher networking on a local level beforehand. Policies and strategies base economic growth on the knowledge economy, often without sufficient understanding and critical and theoretical thinking. In this paper, we have tried to use the term knowledge economies in the way presented in the further analysis so that the research results can be interpreted in a general context. Of course, the most developed countries in the world have gone a step further in integrating the Industry 4.0 and Education 4.0 paradigms. The COVID-19 pandemic seems to have accelerated some processes in Education 4.0.

A knowledge-based economy is defined as one in which knowledge (codified and tacit) is created, acquired, transmitted and more efficiently used by enterprises, organisations, individuals and communities for greater economic and social development [3].

The knowledge economy primarily serves private property. The knowledge society also includes public property. Our schools need to prepare young people for both roles [4].

Hargreaves also points out that the term 'knowledge society' is a misnomer and argues that a more appropriate term is a 'learning society' [4]. As far as schools are concerned, the curriculum in knowledge societies includes content and processes that involve schools and teachers in professional creativity and knowledge creation [5].

Given the international agreement that improved education and adequate funding for research and development in basic and applied sciences are key factors for a successful transition to the knowledge economy [6], it is clear that education must be a key part of solving economic difficulties that the country is now facing.

Mokyr [7] suggests that education should be integrated by both inoculation and emancipation to serve individual intellectual development as well as social advancement. Shapiro [8] emphasises the need for higher education institutions to serve a public purpose that transcends narrow individual interests and to make social changes to reflect the nature of society that its members want. More recently, in a philosophical sense, Barnett [9]

has called for a broader conceptual landscape in higher education where "the task of an adequate philosophy of higher education is not only to understand the university or even defend it, but to change it".

Higher education and research are the engines of development in the new global economy. Higher education is a form of investment in human capital development and has a real contribution to the economic growth of countries. Currently, higher education contributes to the transformation of countries into knowledge economies. It contributes to the creation of educated workers and those capable of dealing with the knowledge economy. Higher education contributes to the socialisation of individuals, helps in the modernisation and transformation of societies and, perhaps more importantly, through teaching and scientific research, creates, absorbs and spreads knowledge [10]. Vilkė et al. [11] have shown that investing in knowledge creation plays an important role in achieving long-term economic growth.

1.3. What Characteristics Does the Economy Require from Employees with a University Degree?

To succeed in the job market, individuals need a combination of knowledge and skills. The success of the economy as a whole requires that the skills of individual workers contribute to good overall skills. These skills can be classified in different ways, but the basic definition of this paper will be the one provided by the OECD Skills Strategy, i.e., skills are "a set of knowledge, attributes and capacities that enable individuals to successfully and consistently perform an activity or task, which can be upgraded and expanded through learning" [12]. The report focuses on three broad sets of skills that are important for good labour market performance, including:

- Good technical, professional knowledge and skills specific to particular disciplines reflect a solid theoretical and practical understanding of the subject. At the level of higher education, this subject is typically codified by academic disciplines. Skills are not developed just to meet the needs of the labour market and some disciplines develop technical skills that do not have an obvious match in the labour market. However, many technical and professional qualifications send signals to employers that an individual may have the skills, interests and inclinations needed to engage in very specific types of work and provide a level of a specific set of technical and professional skills that are essential requirements for many jobs [13]. Employers often use these qualifications as the first predictor of assessing individuals for jobs [14]. At the level of the entire labour market, an adequate supply and combination of these skills is an important prerequisite for good economic growth.
- Good generic cognitive and information processing skills include understanding, interpreting, analysing and communicating complex information, as well as the ability to apply this information in everyday life situations [15]. These are general skills that people use in all types of work and that support effective participation in the community.
- Intellectual abilities and personality traits.

Moreover, two national studies conducted by the American Society for Training and Development ASTD [16] and one by the Secretary's Commission on Achieving Necessary Skills [17] are introductory papers identifying commonly used employment skills or starting points for other international, national, national, regional and local studies.

Coopers and Lybrand [18] and Moreley [19] define 'employability skills' in terms of four key areas: (1) Traditional intellectual skills, e.g., critical evaluation, logical argument; (2) Key communication skills, IT, etc.; (3) Personal attributes of motivation, self-confidence; (4) Knowledge of organisations and how they work.

2. Materials and Methods

In the following part of the paper, the research methodology is presented. The research sample is described first, followed by the research instrument and procedure. After that, the results of the research with discussion are presented.

The subject of research in this paper is determining the relationships between higher education and the economy in the Republic of Srpska (Bosnia and Herzegovina). The aforementioned relationship was determined by measuring businessmen's attitudes towards employed personnel with higher education after the introduction of the Bologna Process. We began with the hypothesis that businessmen in the Republic of Srpska value the characteristics of employees in the same way as in more developed countries.

2.1. Research Sample

The research sample consisted of 488 persons with university degrees employed in 175 economic operators. These people were employed after the reform of higher education in accordance with the Bologna and Lisbon documents. The selected sample has a stratum structure reflecting the representation of individual profiles of employees. During the sampling process, we paid attention to the representation of all regions according to the total number of companies and the specifics of the economy in these regions.

All the economic operators perform their activities in the territory of the Republic of Srpska (Bosnia and Herzegovina). Table 1 shows the sample structure according to individual activities and the number of companies and respondents who participated in the research.

Table 1. Sample structure.

No.	Activity	Total Number of Companies	Number of Respondents
1.	Mixed agricultural production	5	25
2.	Forestry and logging	3	10
3.	Extraction of coal and lignite	2	5
4.	Mining of other non-ferrous metal ores (bauxite)	1	5
5.	Gravel and sand mining activities; extraction of clay and kaolin	3	8
6.	Processing and canning of meat and production of meat products	4	12
7.	Processing and canning of fruits and vegetables	5	18
8.	Production of dairy products	2	5
9.	Production of mill products	4	7
10.	Manufacture of bakery products, flour products and cakes	6	12
11.	Tea and coffee processing	2	2
12.	Production of ready-made animal feed	4	10
13.	Manufacture of beverages	2	6
14.	Manufacture of tobacco products	1	2
15.	Manufacture of made-up textile articles, except apparel	3	7
16.	Manufacture of wearing apparel	2	4
17.	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	5	20
18.	Manufacture of paper stationery	1	3
19.	Printing and copying recordings	2	2
20.	Manufacture of bricks, tiles and construction products in baked clay	1	3
21.	Cutting, shaping and processing of stone	1	1
22.	Manufacture of doors and windows of metal	1	2
23.	Manufacture of parts and accessories for motor vehicles	1	5
24.	Manufacture of military combat vehicles	1	5
25.	Manufacture of furniture	1	2
26.	Manufacture of kitchen furniture	2	4
27.	Repair of electronic and optical equipment	2	2
28.	Repair and maintenance of aircraft and spacecraft	1	12
29.	Production and supply of electricity, gas, steam and air conditioning	2	26
30.	Collection, purification and supply of water	1	10
31.	Waste collection, treatment and disposal activities; material recycling	3	7

Table 1. *Cont.*

No.	Activity	Total Number of Companies	Number of Respondents
32.	Construction of buildings	6	18
33.	Construction of civil engineering structures	4	6
34.	Specialised construction activities	4	6
35.	Wholesale and retail trade of motor vehicles and motorcycles; repair of motor vehicles and motorcycles	7	10
36.	Wholesale	10	25
37.	Land transport and pipeline transport	3	5
38.	Postal and courier activities	2	7
39.	Accommodation, food preparation and serving activities; hotel and catering	10	31
40.	Production and distribution of films, video films and television programmes	3	8
41.	Telecommunications	3	20
42.	Computer programming, consultancy and related activities	4	20
43.	Financial and insurance activities	12	30
44.	Professional, scientific and technical activities	15	22
45.	Administrative and support service activities	10	14
46.	Education	5	15
47.	Healthcare and social work activities	3	15
	Total	175	494

Table 2 shows the distribution in the structure of the research sample according to the obtained diploma of higher education.

Table 2. Information on respondents.

No.	Completed Higher Education	Number of Respondents
1.	Bachelor of economics	88
2.	Bachelor of law	65
3.	Bachelor of technology	23
4.	Bachelor of mining	24
5.	Bachelor of agriculture	45
6.	Bachelor of management	42
7.	Bachelor of mechanical engineering	18
8.	Bachelor of computer and IT engineering	22
9.	Bachelor of electrical engineering	28
10.	Bachelor of forestry	26
11.	Bachelor of occupational safety	6
12	Bachelor of architecture	12
13.	Bachelor of wood processing	22
14.	Bachelor of traffic	17
15.	Bachelor of aviation	5
16.	Bachelor of civil engineering	32
17.	Bachelor of graphic engineering and design	5
18.	Bachelor of mathematics	1
19.	Bachelor of textile engineering	2
20.	Bachelor teacher of biology	1
21.	Bachelor teacher of chemistry	2
22.	Bachelor of tourism	5
23.	Bachelor of food engineering	7
24.	Bachelor teacher of geography	1
25.	Bachelor of geodesy	2
	Total	494

2.2. Instrument

Although, in scientific literature and practice, there are high-quality questionnaires to examine the relationship of the economy to the higher education system, their direct application in its original form was not possible in the circumstances of higher education and the economy in Bosnia and Herzegovina, for the following reasons:

- Lack of a single economic territory in Bosnia and Herzegovina.
- Different competencies over the higher education system and different plans and programmes.
- Diversity of the founders of higher education institutions, which leaves room for inconsistencies in objectives, method of financing and the impact on them.
- Lack of educational needs studies in the Republic of Srpska (Bosnia and Herzegovina).

These reasons have given rise to the need to create a new instrument that would primarily determine factors that are the essence of the successful functioning of newly employed persons with higher education and then the real relationship of the economy to the higher education system.

Examination of relevant literature [20], based on an earlier [21], formed an instrument containing: company data, data on the respondent and forty questions on the Likert-type scale we assumed to represent the most important personal and work characteristics of the respondents and six questions of the "YES" or "NO" type, with which we sought to determine the relationship between the economy and higher education.

The development of the instrument and the metric characteristics of the questionnaire used are presented in detail in the Results section.

2.3. Procedure

Given the complexity of the research problem and our intention to optimise the research, we divided the research process into three stages: analysis of the problem and defining variables that will be an integral part of the instrument; development of the research instrument; drafting of web questionnaires and collecting data.

The development of the research instrument included two stages: initial research and correction of manifest variables that could be an integral part of the instrument and final design of the research instrument with the calculation of metric values. To develop a better research questionnaire, in the initial survey, in a sample of thirty companies, we offered a possible list of employee characteristics that are necessary for the successful business operations in their companies. Other authors also suggest this procedure [22–24]. In addition, we left a blank space so that features that are not an integral part of the answers already offered can be entered.

When compiling the list of characteristics, we were guided by the OECD recommendations OECD [25,26]. We sent a copy of the initial questionnaire to the Chamber of Commerce of Republic of Srpska with the intention of receiving comments or suggestions for improving the instrument. The remarks of this institution mainly referred to the request to simplify some formulations to make them more easily understood by economic operators. The remarks were accepted.

After receiving the answers, we compiled a final list of manifest variables that entered the research instrument. The questionnaire contains forty questions defined on the Likert scale: 5—Completely agree, 4—Mostly agree, 3—Partially agree, 2—Mostly disagree and 1—Disagree.

The questionnaire also contains five questions of the "yes" or "no" type with space for explanation. These questions are used for a qualitative analysis of the relationship between the economy and higher education.

In stage two, we began creating a web questionnaire to simplify the data collection process. This method is much faster, less expensive and simpler [27].

2.4. Software Tool Description

The software is developed in php, mysql and html. Css rules have been created to align the fields. The php script takes the data from the html form via the POST method and enters it into the database. The database is made with the fields "int" for numbers and varchar (512) for texts. We believe that 512 characters are enough for each description and entries longer than that will be shortened to the first 512 letters of the entry. This limit of 512 can be increased as needed. Software tool front page is shown in Figures 1 and 2. Display of survey results entry is shown in Figure 3.

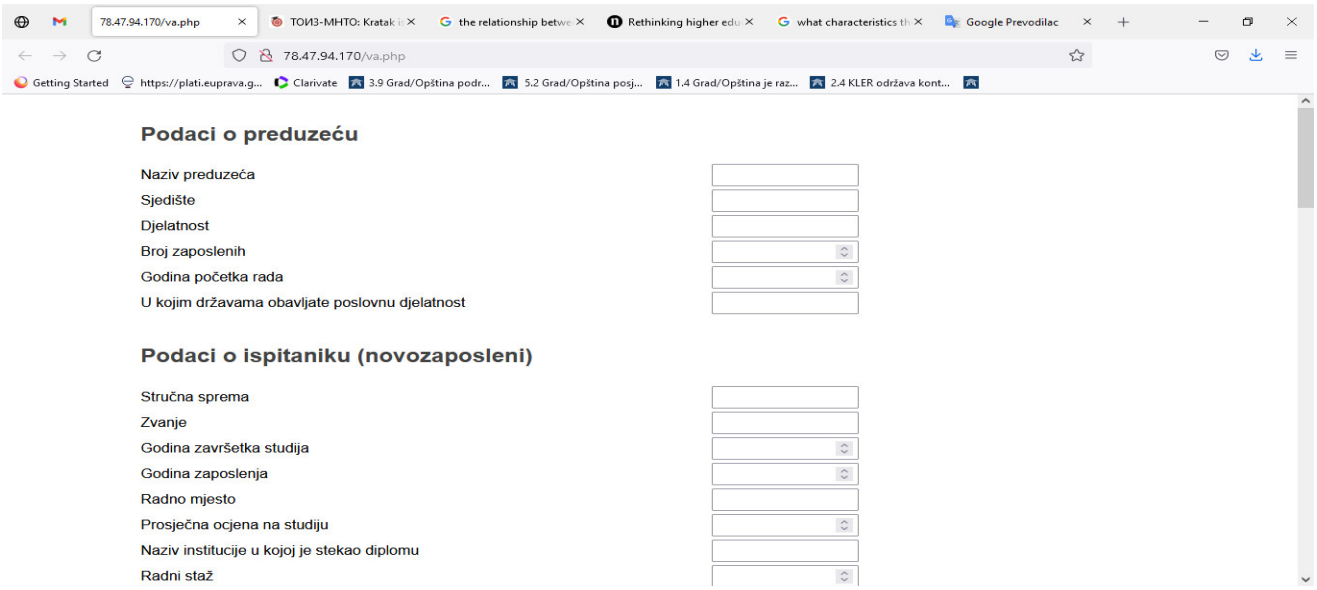

Figure 1. Software tool front page, part one.

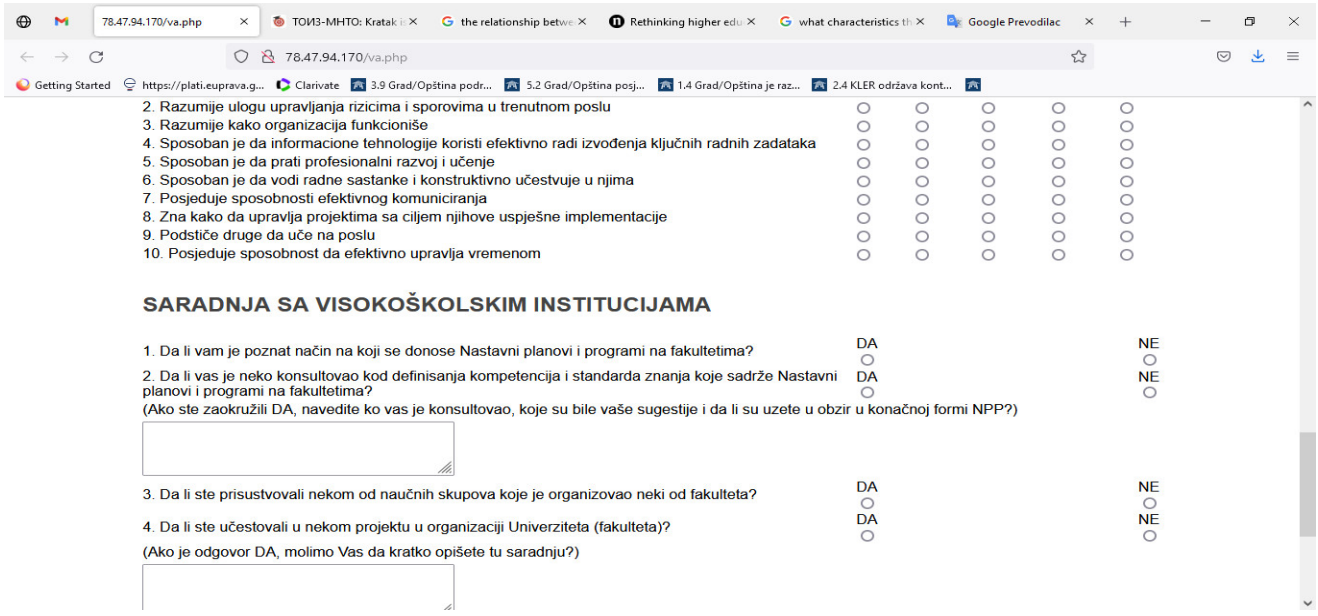

Figure 2. Software tool front page, part two.

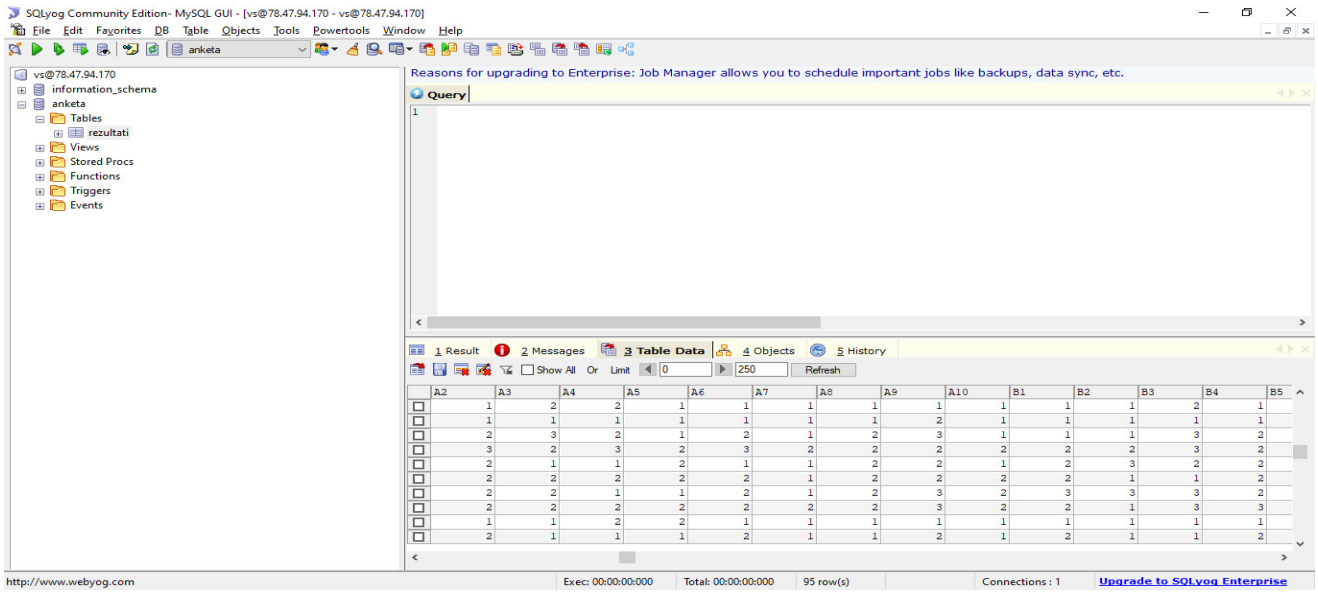

Figure 3. Display of survey results entry.

2.5. Use

The required data are entered into the text fields, such as numbers (years, average evaluation) and marked in such a way that the browser should disable the entry of text in them. Employee assessment questions have buttons that are activated by clicking to select an answer (in the range from 5—Completely agree to 1—Disagree . . .)—the mechanism is such that no more than one answer to one question can be selected. After filling in the questionnaire, by clicking the button "Send" at the bottom of the page, the completed survey is sent and recorded in the database and the user has displayed a message about the successful entry of the survey or an error message if it occurs.

All data are stored in the database and used according to the needs and query system. The database, application logic, graphical interface and website access system can be changed very easily.

We have provided the possibility of easily changing the entire system according to changes in society and user requirements [24].

2.6. Data Collection

In cooperation with the Chamber of Commerce of the Republic of Srpska, we have collected the e-mail addresses of companies from the territory of the Republic of Srpska. After that, we sent them a link to a questionnaire website that they could access and fill out the instrument. We received inquiries several times for instructions on how to complete the instrument and some questions on the content of individual questions. We were able to answer all the questions in a short period of time and speed up the process of receiving data. We checked the database with the received data every day and prepared it for data processing. After the end of the planned time, we had 494 completed questionnaires. The analysis showed that all activities represented in the economic sector are covered and that the database can be used for representative conclusions after processing the results.

2.7. Data Analysis

Data analysis was performed using IBM SPSS Statistics Version 23. The Cronbach's alpha coefficient was calculated to determine internal consistency. The Principal Component Analysis method was used to determine the validity, followed by Varimax rotation with Kaiser normalisation. The number of factors was determined based on the results of the Cattell scree test, using the Guttman–Kaiser criterion and calculating the intracorrelation value.

3. Results

The reliability of the questionnaire was confirmed by Cronbach's alpha coefficient, which was 0.911 for the whole scale, representing a high internal consistency. Item analysis (analysis of items that make up the instrument of the measurement scale) is shown in Table 3.

Table 3. Internal consistency of items in the instrument with a measurement scale.

Item	Mean	Std. Deviation	Corrected Item—Total Correlation	Cronbach's Alpha If Item Deleted
1. Willing to face mistakes and learn from them and readily accepts criticism (feedback)	3.68	0.978	0.461	0.922
2. Aware of own strengths (capabilities/advantages) and limitations.	3.49	1.379	0.449	0.923
3. Has the confidence to take on calculated risk and new projects.	3.93	1.208	0.304	0.915
4. Able to stay calm under pressure or when things are not going well.	4.13	0.961	0.498	0.911
5. Has the ability to refrain from drawing conclusions and not rush to solve problems.	4.27	1.182	0.492	0.921
6. Persistent even when things do not go as expected.	4.27	0.958	0.499	0.921
7. Has a strong desire to do the job as best as possible.	4.26	1.002	0.480	0.918
8. Readily assumes responsibility for projects, including their outcome.	4.52	0.1210	0.415	0.907
9. Has the ability to make difficult decisions.	3.99	0.877	0.495	0.911
10. Readily jumps in to help and performs service tasks when the job requires.	4.06	0.627	0.588	0.912
11. Has the ability to empathise and work productively with people of different profiles	4.15	0.655	0.671	0.919
12. Has the willingness to listen to different views (opinions) before making a decision.	4.25	0.669	0.635	0.912
13. Ability to create and use a network of colleagues to help solve key problems at work.	4.23	0.820	0.569	0.913
14. Understands how different groups that make up an organisation work and how much of an impact they have in different situations.	4.33	0.968	0.515	0.921
15. Able to give a constructive proposal to work colleagues and others without blaming and belittling.	4.21	0.930	0.513	0.918
16. Able to work with older colleagues without fear	4.24	0.541	0.567	0.921
17. Able to motivate others to achieve great success	3.96	0.510	0.547	0.919
18. Able to develop and contribute positively to team projects	4.09	0.695	0.366	0.902
19. Has an international perspective	3.56	0.720	0.507	0.901
20. Aware there is no fixed (set) number of steps to solve problems at work or in project implementation	4.22	0.650	0.565	0.920
21. Able to identify key issues in a large number of details in any situation	4.10	0.562	0.610	0.920
22. Has the ability to use previous experience to understand what happens when the current situation suddenly reverses	3.81	0.539	0.698	0.891

Table 3. *Cont.*

Item	Mean	Std. Deviation	Corrected Item—Total Correlation	Cronbach's Alpha If Item Deleted
23. Able to identify the underlying problem and then test it in practice	3.77	0.598	0.580	0.892
24. Able to monitor and assess the consequences of an alternative sequence of activities and to select the most appropriate	4.14	0.501	0.671	0.894
25. Able to revise the action plan in accordance with actual developments after implementation	4.17	0.686	0.500	0.902
26. Able to detect how seemingly unrelated activities are related and to create an overall picture	4.26	0.537	0.607	0.908
27. Able to set and justify priorities	4.61	0.499	0.586	0.911
28. Has own opinion	4.19	0.552	0.660	0.901
29. Creative and entrepreneurial	4.17	0.598	0.582	0.901
30. Has the ability to recognise a pattern in a complex situation	4.18	0.591	0.510	0.892
31. Has a high level of technical expertise relevant to the requirements of the current job.	4.26	0.688	0.405	0.912
32. Understands the role of risk and dispute management in current job	4.23	1.066	0.237	0.955
33. Understands how the organisation works	4.53	0.763	0.440	0.921
34. able to use information technology effectively for the execution of key work tasks	4.70	0.615	0.511	0.921
35. Able to follow professional development and learning	4.49	0.824	0.495	0.921
36. Able to lead working meetings and participate constructively in them	4.55	0.816	0.540	0.920
37. Has the ability to communicate effectively	4.33	0.966	0.237	0.925
38. Knows how to manage projects with the aim of their successful implementation	4.13	0.763	0.440	0.881
39. Encourages others to learn at work	4.37	0.615	0.511	0.901
40. Has the ability to manage time effectively	4.49	0.824	0.495	0.921

Values of the alpha reliability coefficient for individual items on the measurement scale range between 0.881 and 0.925, which indicates high internal consistency.

Validity Analysis

To examine the adequacy of data, the Kaiser–Meyer–Olkin measure was applied to all variables together. The Kaiser–Meyer–Olkin measure ranges from 0 to 1, where values lower than 0.5 indicate the inadequacy of the correlation matrix for factor analysis, i.e., the value of 0.6 is recommended as the minimum acceptable for good factor analysis. Bartlett's test is used to test the null hypothesis that there is no significant correlation between the original variables. The data are shown in the Table 4.

Table 4. KMO and Bartlett's Test.

Kaiser–Meyer–Olkin Measure of Sampling Adequacy		0.897
Bartlett's Test of Sphericity	Approx. Chi-Square	3,496,121
	Df	595
	Sig.	0.000

Since the Kaiser–Meyer–Olkin measure is 0.897, it can be concluded that the data of variables used are suitable for conducting factor analysis.

The screen plot diagram (Figure 4), based on Cattell's diagram, shows an interruption between factors four and five, which confirms the separation of four factors because their eigenvalues are separated from the eigenvalues of the remaining factors. Cattell recommends keeping all factors above the curve of that diagram, as they contribute the most to explaining the variance in the dataset. More specifically, the fracture of the diagram at the junction of factors four and five is noticeable, which implies the conclusion that the first four factors explain a much higher variance percentage than the remaining factors. Table 5 shows eigenvalues of the factors after Varimax rotation.

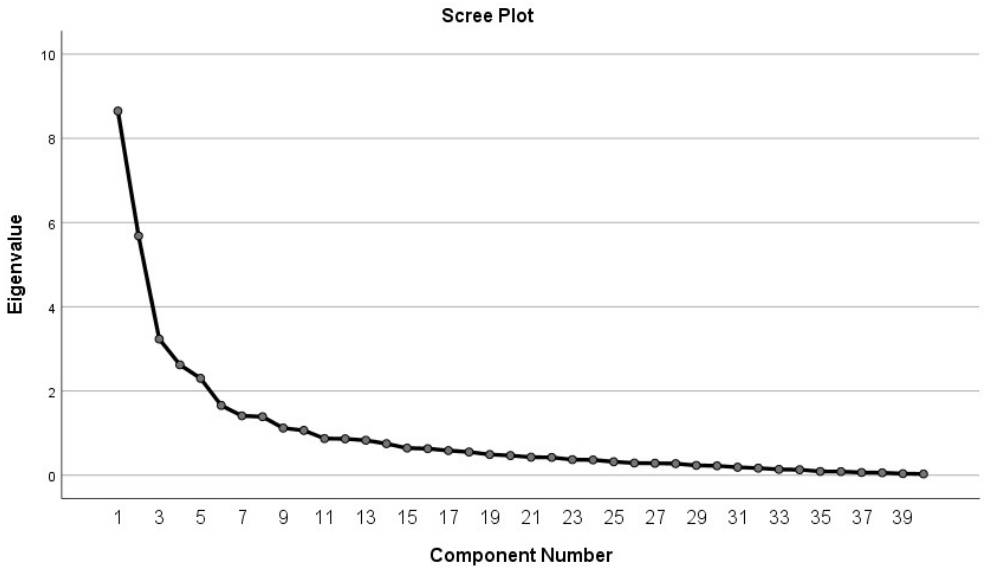

Figure 4. Own value/eigenvalue for the number of components.

Table 5. Total Variance Explained.

Component	Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1.	6550	18,567	18,567	6054	17,196	17,196
2.	5581	16,985	43,327	5687	16,722	33,918
3.	5424	16,234	48,013	5543	16,116	50,034
4.	4524	12,556	64,342	5526	14,308	64,342

Factor analysis of the main components was applied in the research. The basis for its implementation was an unreduced correlation matrix. By applying the factor analysis of the main components, after the transformation of variables into orthogonal axes has been performed, the factors are extracted on the basis of their eigenvalues. Table 6 shows the matrix of factor structure for 40 variables after the analysis of main components and the rotation of factors.

Four extracted factors after rotation have critical values greater than 1 and these four factors explain 65.34% of the variance. Similar to the proposals [18,20,25,28], we isolated four factors: personal traits, ability to communicate and understand interpersonal relationships, intellectual abilities and technical and organisational capacities. It is noticeable that the percentage of total variance for the relevant factors is greater than 0.60, or 60%, which is the lower allowable limit in social research. The greater the variance, the greater the simplicity of factors.

Table 6. Rotated Component Matrix.

	1	2	3	4
GSS4	0.923			
GSS3	0.918			
GSS7	0.851			
GSS1	0.835			
GSS10	0.830			
GSS5	0.828			
GSS6	0.764			
GSS9	0.690			
IO7		0.710		
IO4		0.674		
IO11		0.667		
IO10		0.654		
IO5		0.651		
IO6		0.650		
IO3		0.626		
IO9		0.600		
IO2		0.575		
IO8		0.518		
IO1				
GSS8				
SK1				
LO9			0.685	
LO10			0.653	
LO8			0.635	
LO7			0.627	
LO4			0.578	
LO5			0.561	
LO3			0.506	
LO6				
LO2				
LO1				
SK6				0.779
SK3				0.751
SK5				0.698
SK7				0.617
SK2				0.573
SK4				0.518
SK8				
SK9				

Manifest variables were almost ideally grouped around some latent factors [29] that we were able to name: personal traits of respondents, ability to communicate and understand interpersonal relationships, intellectual abilities and technical and organisational capacities [18,19]. Three manifest variables within each factor of personal traits and factor of ability to communicate and understand interpersonal relationships, and one within each factor of intellectual abilities and technical and organisational capacities, had a lower value than the given criterion, which gives us the task to correct the questionnaire. This is evidently a complex structure of questions that the respondents found difficult to distinguish.

This way, we confirmed the validity of the instrument, as well as correspondence of the opinion of the economic sector in Herzegovina (Republic of Srpska) with opinions of economic sectors in the world in terms of desirable characteristics of new employees.

A descriptive analysis determined the satisfaction of employers by individual characteristics of new employees. The data are shown in Table 7.

Table 7. Employer satisfaction by individual characteristics of new employees.

Nº	Activity	Personal Traits	Intellectual Abilities	Ability to Communicate and Understand Interpersonal Relationships	Technical and Organisational Capacities	Total
1.	Engineering and related fields	88%	91%	88%	92%	89.75%
2.	Information technology	83%	90%	69%	90%	83%
4.	Agriculture and environmental protection	81%	88%	81%	88%	84.5%
5.	Civil engineering and architecture	76%	87%	80%	88%	82.75%
6.	Service activities	75%	85%	90%	81%	82,75%
7.	Law and economics	74%	84%	90%	78%	81.5%
8.	Education	86%	89%	89%	88%	88%
9.	Healthcare and veterinary medicine	82%	89%	89%	80%	85%

Employers are most satisfied with employees in the engineering profession and least satisfied with law and economics. It is obvious that students from technical faculties acquire competencies that are applicable in real-time.

For comparison, we present the findings from the Australian "'Employer Satisfaction Survey" for 2021 [28]. This survey lists ten assessed areas: natural and physical sciences, technical sciences, information technology, architecture and civil engineering, agriculture and environmental protection, management and economics, healthcare education, arts, social sciences and culture. New employees were assessed in six characteristics: fundamental skills, ability to adapt, cooperation and communication, technical and information skills, employability and overall satisfaction.

Of all occupations, the best average grade was given to employees in technical sciences (90.4%) and the lowest to agriculture and environmental protection. The assessment is carried out every year.

In further analysis, we determined the relationship between the economy and higher education institutions. Out of the total number of respondents, 63% said they knew how curricula were adopted, but only 19% said they were consulted when adopting the document. The consulted companies mainly participated in joint projects with individual faculties and therefore had the opportunity to give their opinions on changes in curricula to acquire the desired competencies.

Here are some responses:

- "We have never been consulted about a possible change in the curricula, although we have clearly expressed a request through the Chamber of Commerce regarding certain competencies necessary for the production process".
- "As part of joint projects with the faculties, we expressed our views on changing the objectives of education, but we did not receive responses about accepting our views".

Representatives of 43% of the surveyed companies attended scientific conferences, many of whom provided funds for their organisation. The companies in the field of technical and economic sciences are at the forefront here.

Most faculties find ways to participate in a project. These are most often projects funded by competent ministries or financial institutions from abroad (Erasmus, etc.). In this type of project, the most common partners are companies from the region where the faculty is located. Here is one of the answers of the representatives of the economy regarding the participation in projects of the faculties:

- "We have twice participated in a joint project with the Faculty of Economics, and both projects were related to providing internship training for students."
- "The faculty provided us with training for employees".

- "The faculty provided us with training and protective equipment for experimental agricultural fields".

Out of the total number of surveyed companies, 28% participated in joint projects with faculties.

Most of the companies that had student trainees positively evaluated their commitment, interests, desire to learn, but there is a lack of competencies in the field of knowledge application and a sufficient level of self-initiative.

Here is an example from one company: "Student trainees carefully observe the process and do nothing, but when you give them a specific task, they gladly participate in solving it". These indicators clearly show that there is no systematic approach to the communication between higher education and the economic sector. Students most often prepare for work in the economy; therefore, it would be of particular importance that their competencies meet the requirements for specific jobs but also qualifications for lifelong learning. Strategic documents adopted by individual levels of government prescribe the obligatory nature of this relationship, but there is no operationalisation.

4. Discussion

This research is part of a continuous process that began in 2008. We had the opportunity to see the transformation of two key sectors that affect the reconstruction and prosperity of a country in the circumstances of post-conflict time, as it was in Bosnia and Herzegovina, namely higher education and economic development. During this period, we were twice supported by the Ministry of Scientific and Technological Development, Higher Education and Information Society Republic of Srpska. In the research process, we had two goals: to develop a theoretical understanding of the connection between higher education and economic development and attempt to design tools for a successful assessment of newly hired graduates by employers to determine their satisfaction with the competencies students acquire at universities and a possible impact on curriculum change. We analysed several key documents, i.e., Development Strategies for education in the Republic of Srpska for the period during 2008–2021; Strategies for the development of individual industries in the Republic of Srpska and economic policies. We received indicators via analysis that pointed to basic weaknesses in the operationalisation of individual stated documents, on the basis of which we built a hypothesis about the insufficient influence of the economy on the education system, even though they were prescribed by documents. In our research, we were directed by positive experiences of developed countries (Australia, Ireland and Korea). These countries have a very well-developed system for monitoring the impact of education systems on the economy. Evaluation of the satisfaction of the economic sector with the quality of education was performed annually. The results are publicly disclosed. Since Bosnia and Herzegovina is a developing country, in the text, we also analysed data from several developing countries (Cyprus, Botswana, Kenya, Ghana and the Republic of South Africa). Analysing the university management system, we noticed that there are no tools to collect data from the economic sector on the quality of work of newly-employed students and because of that, we decided to make an online questionnaire for this purpose. We also hoped that the questionnaire would be accepted because it is an integral part of the project financed by the competent ministry.

In the first step, we designed a questionnaire with fifty-five questions, which we shortened to forty questions after the initial survey. The questionnaire also includes six open-ended questions that helped us to qualitatively assess the relationship between the economy and higher education.

After the factor analysis, we had four factors that represent the characteristics of new employees: personal traits, ability to communicate and understand interpersonal relationships, intellectual abilities and technical and organisational capacities. The analysis showed that employers evaluated the qualities of newly employed engineering professions the best and the newly employed economic and legal professions the poorest.

We also obtained results that show a weak impact of the economy on the education system in higher education institutions, from the impact on curriculum creation to cooperation in the field of knowledge exchange and participation in joint projects.

5. Conclusions

These research results speak in favour of the need for greater involvement of economic operators in the process of creating education programmes, as well as the inclusion of guest lectures by experts from practice. This way, the actual education profiles necessary for economic development can be defined. The research results will be presented to the education and economic public to initiate the necessary dialogue between these two key factors of social and economic development. Future research will be based on improving the software solution and the necessary correction of the web questionnaire in accordance with changes in the structure of education based on the postulates of Education 4.0.

The above requires that the existing information system at the university would be upgraded so that representatives of the economy can fill in some of the questionnaires on offer to affect the system of decision-making (profiling new staff, curriculum changes, manner of cooperation, etc.) with their proposals.

As for the next step, we intend to make the results of the research available to the public and ensure that the survey is preferably taken every year with the possibility of improving the instruments and software solutions.

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References

1. Sidiropoulos, E. The Influence of Higher Education on Student Learning and Agency for Sustainability Transition. *Sustainability* **2022**, *14*, 3098. [CrossRef]
2. Chen, Y.; Gan, N. Sustainable Development of Employability of University Students Based on Participation in the Internship Promotion Programme of Zhejiang Province. *Sustainability* **2021**, *13*, 13454. [CrossRef]
3. Dahlman, C.J.; Andersson, T. *Korea and the Knowledge-based Economy: Making the Transition*; The World Bank: Washington, DC, USA, 2000.
4. Hargreaves, A. *Teaching in the Knowledge Society: Education in the Age of Insecurity*; Teachers College Press: New York, NY, USA, 2003.
5. Looneya, A.; Klenowski, V. Curriculum and assessment for the knowledge society: Interrogating experiences in the Republic of Ireland and Queensland, Australia. *Curric. J.* **2008**, *19*, 177–192. [CrossRef]
6. Musyck, B.; Hadjimanolis, A. Towards a knowledge-based economy: Does the Cyprus R&D capability meet the challenge? *Sci. Public Policy* **2005**, *32*, 65–77.
7. Mokyr, J. *The Gifts of Athena: Historical Origins of the Knowledge Economy*; Princeton University Press: Princeton, NJ, USA, 2002.
8. Shapiro, S.P. Agency theory. *Annu. Rev. Sociol.* **2005**, *31*, 263–284. [CrossRef]
9. Barnett, M. Social constructivism. In *The Globalization of World Politics: An Introduction to International Relations*; Baylis, J., Smith, S., Owens, P., Eds.; Oxford University Press: Oxford, UK, 2017; pp. 145–158.
10. Pillay, P. *Higher Education and Economic Development: A Literature Review*; Centre for Higher Education Transformation: Cape Town, South Africa, 2010.

11. Vilkė, R.; Vidickienė, D.; Gedminaitė-Raudonė, Ž.; Simonaitytė, V.; Ribašauskienė, E. *Rural Economic Developments and Social Movements: A New Paradigm*; Palgrave Macmillan: Cham, Switzerland, 2021.
12. OECD. *Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies*; OECD Publishing: Paris, France, 2012. [CrossRef]
13. OECD. *Skills beyond School: Synthesis Report*; OECD Reviews of Vocational Education and Training; OECD Publishing: Paris, France, 2014. [CrossRef]
14. Montti, G. The causes and consequences of field-of-study mismatch. In *OECD Social, Employment and Migration Working Papers*; OECD Publishing: Paris, France, 2015; p. 167.
15. OECD. *Skills for Social Progress: The Power of Social and Emotional Skills*; OECD Skills Studies; OECD Publishing: Paris, France, 2015. [CrossRef]
16. Carnevale, A.P.; Gainer, L.J.; Meltzer, A.S. *Workplace Basics: The Essential Skills Employers Want*; Jossey-Bass Inc.: San Francisco, CA, USA, 1990.
17. U.S. Department of Labor. *What Work Requires of Schools: A SCANS Report for America Scans*; U.S. Department of Labor: Washington, DC, USA, 1991.
18. Coopers, M.; Lybrand, D. *Skills Development in Higher Education*; Report for CVCP/DfEE/HEQE, November; Committee of Vice-Chancellors and Principals of the Universities of the UK (CVCP): London, UK, 1998.
19. Morley, L. Producing New Workers: Quality, Equality and Employability in Higher Education. *Qual. High. Educ.* **2001**, *7*, 131–138. [CrossRef]
20. Fitzpatrick Associates. Irish National Employer Survey. 2019. Available online: https://hea.ie/assets/uploads/2019/01/21-01-19-J8961-Irish-National-Employer-Survey-Final-Report.pdf (accessed on 20 March 2022).
21. Simeunović, V.; Milic, S. Software Solution of Web Questionnaires for the Analysis of the Economy in Relation to the Competence of Students. *Asian J. Educ. Train.* **2018**, *4*, 1–8. [CrossRef]
22. Gaddis, S.E. How to Design Online Surveys. *Train. Dev.* **1998**, *52*, 67–72.
23. Burgess, T.F. A General Introduction to the Design of Questionnaires for Survey Research. University of Leeds, Information System Services. 2001. Available online: http://www.websm.org/uploadi/editor/File/Burgess_2001_A%20general_introduction.pdf (accessed on 20 March 2022).
24. Dillman, D.A.; Tortora, R.D.; Conradt, J.; Bowker, D. Influence of Plain vs. Fancy Design on Response Rates for Web Surveys. Presented at the Joint Statistical Meetings, Dallas, TX, USA, 9–13 August 1998.
25. OECD. *OECD Skills Outlook 2017: Skills and Global Value Chains*; OECD Publishing: Paris, France, 2017. [CrossRef]
26. OECD. *OECD Skills Strategy 2019: Skills to Shape a Better Future*; OECD Publishing: Paris, France, 2019. [CrossRef]
27. Couper, M.P. Web Surveys: A Review of Issues and Approaches Get access Arrow. *Public Opin. Q.* **2000**, *64*, 464–494. [CrossRef] [PubMed]
28. *The Quality Indicators for Learning and Teaching (QILT) Survey Program*; Australian Government Department of Education, Skills and Employment: Melbourne, Australia, 2021.
29. Brown, T.A. *Confirmatory Factor Analysis for Applied Research*; The Guilford Press: New York, NY, USA, 2006.