HUMAN CAPITAL DEVELOPMENT AT HIGHER EDUCATION INSTITUTIONS

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Abstract

Research purpose. Currently, higher education institutions (HEIs) are faced with new challenges. They have to compete globally and take into account modern trends in education and science. Human capital becomes one of the most significant resources for HEI performance. The purpose of the study is to determine which factors influence human capital development at HEI.

Design / Methodology / Approach. Selected human capital development factors were analyzed at Latvian HEIs. Factors including existing laws and conformity assessment procedures and requirements were considered. A survey was utilized to determine the most influential factors in human capital development at Latvian HEIs. The survey results were analyzed by implementing CATPCA to identify the most critical factors.

Findings. The results show that essential elements of human capital at HEI are the pedagogical competence of the academic staff, their scientific competence, and the number of professionals from industry that are part of the academic staff. The CATPCA results revealed four main factors influencing human capital development at HEI, which could be divided into 1) staff competence and motivation; 2) legislation and development strategy; 3) availability of resources; 3) cooperation.

Originality / Value / Practical implications. Human capital is one of the key factors for the sustainability of HEIs in Latvia. By accounting for the factors that influence the development of human capital in HEIs, institutions can more effectively and proactively develop human capital management strategies, which allow the institutions to achieve performance in the long term.

Keywords: human capital, higher education institutions, development.

JEL codes: J24; M12; M50.

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Introduction

The competitiveness of higher education institutions (hereinafter – HEIs) today depends on several factors. Last ten years, HEIs have faced new challenges: globalization, migration, digitalization etc. They have to compete globally and consider modern trends in education and science. The level and quality of human capital within each HEI plays a significant role in an institution's ability to not only deliver high-quality instruction to students but also in an institution's ability to create new business and organizational processes. As the context changes, the requirements that determine the quality of a HEI, such as scientific publications, art-related outputs, books, patents, study courses' content, etc., have changed as well.

By analyzing the indicators of intellectual capital development at Latvian HEIs, utilizing the available information in National Scientific Information System (NZDIS, 2019) and HEIs reports, it could be concluded that the performance of HEIs is different. A HEI is more focused on human capital development and performs better in the fields which are regulated by the legislation and

accreditation criteria. Leading HEIs (mostly universities) have more academic staff with a Doctoral degree and professors. As a result, they have better indicators of scientific activities and outcomes, for example, a larger number of scientific publications in international cited databases, such as Scopus and Web of Science.

The purpose of this study is to determine factors that influence human capital development at HEI. The following hypothesis was formulated: the most important factors influencing human capital development are legislation and the type of HEI (university, academy, university of applied sciences, college).

This study was organized around a semi-structured questionnaire. Using a general sample of respondents who are represented by rectors, vice-rectors, or college principals of 54 Latvian HEIs, the data were analyzed using quantitative statistical methods.

The factors influencing human capital development at HEI could be divided as follows: factors related and linked to conformity assessment; factors related to the quality and motivation of the HEI staff; factors related to cooperation with other institutions; and financial factors.

Literature Review

As the development trends of society change and the degree of globalization increases, the role and tasks of HEIs change. Today, HEIs need to keep pace with global trends in the digitalization of education and access to information, the free movement of people between countries, work organization (where flexible working hours and teleworking are increasingly prevalent), economic change and geopolitical processes (Segundo et al., 2018). HEIs become an ecosystem that unites several stakeholders and in which intellectual capital is accumulated and developed (Dumay et al., 2017).

Today's student is significantly different from a student who studied in higher education ten years ago. At present, HEIs have to offer study content that would be adaptable to the needs of the student and would be available remotely at any time of the day (OECD, 2020). In these circumstances, the ability of HEI staff and teachers to offer such content is significantly increasing. That is why one of the primary tasks of HEIs is the development of human capital.

Human capital is the stock of skills, knowledge and expertise of employees that plays a significant role in increasing the productivity of the organization (Kucharcikova et al., 2015). Human capital refers to the intangible value that resides in individual competencies, which includes the expertise, knowledge, and experiences of academics (Secundo et al., 2015). The European Commission's project "Measuring Intangibles to Understand and Improve Innovation Management" (Canibano et al., 2002) formulates human capital as the knowledge that an employee takes with him when leaving the job as well as the employee's abilities. Lapina (2010) uses the broadest definition of human capital: it is a person with his physical and mental abilities, including knowledge and skills, a way of thinking, the ability to act in a certain way, in a certain sphere and environment, which determines his place and role in the society and the socio-economic development of the country.

The research mentions knowledge, skills, experience, creativity, loyalty, problem-solving skills, motivation, ability to work in a team, etc., as components of human capital (Johanson, 2005; Hsu & Fang, 2009; Hormiga, Batista-Canino & Sanchez-Medina, 2011). Human capital is an integral part of intellectual capital is not only a valuable HEI resource but also an asset capable to create value (Lentjushenkova and Lapina, 2016). Organizational and human knowledge, and competence as a special type of investment improve the functioning of the University (Yu. Levina et al., 2019). HEI staff is able to create value for various stakeholders: both HEI and students, and the society as a whole (Sultanova et al., 2018).

Passaro et al. (2018) consider that one of the most important aspects of the development of human capital in higher education is practice-oriented entrepreneurial courses and activities for students and aspiring academic entrepreneurs (third mission) to encourage entrepreneurialism and develop human capital that will allow students to pursue entrepreneurial careers, rather than become job seekers after graduating. Moreover, creative, highly trained, experienced, and motivated staff who

are equipped with other resources and a well-structured network of customers is a key factor for innovation performance within organizations (Castro et al., 2013). Human capital can enable an organization's innovation capacity when it is combined with other components of intellectual capital. Employees' skills level and organizational learning capabilities (i.e., human capital), the codified knowledge and experience embedded in the processes (i.e., structural capital), and the network of customers and suppliers and organizational culture (i.e., relational capital) make preconditions for product innovation (Manor et al., 2007, Travica, 2013).

In the last decade, in several countries, including Latvia, increased attention has been paid to the place of HEIs in various rankings. It is used as one of the tools for evaluating the achievements of the HEI. The rankings have a high proportion of science-related criteria. Consequently, the HEI started to concentrate resources and set up development strategies, quality management systems and personnel evaluation systems, which are based on the results of scientific activities. These trends are leading to a shift from quality to quantity at many HEIs. By embedding the specific requirements of measurable performance systems, HEI modified its existing performance measures, emphasizing both the quality and quantity of research publications. Traditional responsibilities, such as teaching and administration, were considered secondary (Martin-Sardesi et al., 2017). Martin-Sardesi and Guthrie (2018) believe that it is important to pay attention not only to the results of teachers' scientific activities, such as the number of publications but also to the motivation and quality of teachers not only to perform scientific activities but also to perform teaching functions.

The quality of teaching staff and the quality of their activities, namely the results of pedagogical and research activities, also play a large role in the accreditation criteria of HEIs and study programs. In accordance with the requirements of regulatory enactments, HEIs must ensure compliance with these criteria to receive accreditation.

Taking the above-mentioned into account, in the development of human capital, HEIs must comply with a number of conditions dictated by current trends in the world, as well as the requirements of regulatory enactments.

Methodology

A semi-structured questionnaire was utilized to answer the research question: are legislation and the type of HEI (university, academy, university of applied sciences, college) the most important factors influencing human capital? The questionnaire consists of a few sections:

Section A: information about human capital elements and human capital development.

Section B: statements on the factors which influence human capital development.

Section C: respondent profile.

Section A is designed to include elements of human capital that are mentioned in the scientific literature (for example, competence, motivation, etc.) as well as specific elements that are specified in the regulations of HEI activities (e.g., number of lecturers with doctoral degrees, number of professors, number of foreign lecturers, etc.).

Section B is designed to align with the literature review. A total of 18 factors have been selected, some of which have been determined based on scientific literature and some based on regulatory requirements. All factors are grouped into seven groups: legislation, location, management processes, staff competence, staff motivation, finance, and cooperation.

To evaluate each statement, respondents have been offered to use a 4-point Likert type scale. The opportunities for evaluation are as follows: 1 – most important, 2 – important, 3 – relatively important, 4 – not important. Table 1 details the alignment of the literature review and the survey factors that indicate human capital influence.

Table 1. Factors influencing human capital development at HEI (Source: author's compilation)

Factor	Group of factors	Source
Law	Legislation	National Law on Higher Education; Concept on Higher Education Development 2020; European Standards and Guidelines in Higher Education 2015
Accreditation rules for HEI		
Reputation of HEI (incl. rankings)		
Location of HEI: Riga or region	Location	Matoushek et al., 2005
Development strategy of HEI	Management processes	Huang et al., 2005; Huang et al., 2008; Maritan et al., 2011; Travica, 2013; Kianto et al., 2014.; Iacoviello, 2019; Veltri et al., 2020
HR management practices at HEI		
Academic staff assessment system		
Administrative staff assessment system		
Organizational culture of HEI		
Academic staff competence	Staff competence	Redding, 1996; Menor et al., 2007; Boujelben et al., 2011, Castro et al., 2013; Levina et al., 2019.
Administrative staff competence		
Motivation of academic staff	Staff motivation	Castro et al., 2013; Martin-Sardesi et al., 2018, Sultanova, 2018,
Motivation of administrative staff		
Availability of financial resources	Finance	National Law on Higher Education; European Standards and Guidelines in Higher Education 2015
Collaboration with other HEI	Cooperation	Menor et al., 2007; OECD, 2013; European Standards and Guidelines in Higher Education 2015
Collaboration with employers and professional organizations		
Participation in international projects		
Participation in international programs (i.e., ERASMUS+)		

The total number of HEIs in Latvia is 54. That is why the general sample consists of 54 Latvian HEI rectors and principals. The number of respondents, who took part in the interviews, was 19 rectors or principals of HEIs. Three Universities, 3 Universities of Applied Sciences, 3 Academies and 6 Colleges took part in the survey. The most significant part of HEIs are public HEIs (10 institutions) with the number of students from 1000 to 4000 (9 institutions) and located in Riga (12 institutions).

An initial analysis was performed by calculating frequencies in the SPSS environment. The procedure of ranking was made based on the ratings "Most important (1)" and "Important (2)" frequencies. In addition, the data set was also analyzed to specifically examine part B of the questionnaire and CATPCA (Categorical Principal Component Analysis) was utilized. It was selected because it is preferable for ordinary scaled data (Linitig et al., 2017). The reliability of the scale was checked by assessing an internal consistency with the application of Cronbach's alpha. According to Cortina (1993), the critical value for the coefficient was determined at 0.7 level.

Results

Table 2 and Table 3 present the result of frequency analysis (part A data). The respondents agree that the most important elements of the human capital of HEI are the pedagogical competence of academic staff, scientific competence of academic staff and a number of professionals from industry that are part of academic staff. This result reflects the common opinion of the main issues about the academic staff of HEIs and its quality in Latvia and other countries.

Table 2. Elements of Human Capital at HEI (Source: author's compilation)

Element	Most important	Important
Pedagogical competence of academic staff	66.7%	33.3%
Number of professionals from industry as an academic staff	50.0%	50.0%
Scientific competence of academic staff	50.0%	44.4%
Competence of administrative staff	44.4%	44.4%
Organizational competence of academic staff	38.9%	50.0%
Number of academic staff with Doctoral degree	22.2%	66.7%
Number of academic staff who are experts of the Latvian Council of Science	22.2%	55.6%
Number of professors	16.7%	61.1%
Number of foreign professors	16.7%	55.6%

According to the respondents' statements, the main HEI activity for human capital development is the recruitment of academic staff. In addition, another critical element in the development of HEI human capital is the continued development of the competencies of all types for academic staff, as well as the continued involvement of professionals from the industry.

Table 3. Human Capital Development Activities at HEI (Source: author's compilation)

Element	Most important	Important
Academic staff recruitment	55.6%	44.4%
Foreign professors' recruitment	55.6%	16.7%
Development of the teaching competence of the academic staff	61.1%	38.9%
Development of the scientific competence of the academic staff	44.4%	44.4%
Development of the organizational competence of the academic staff	61.1%	22.2%
Involvement of professionals from the industry in the study process (as an academic staff)	61.1%	38.9%
Development of the competence of the administrative staff	44.4%	44.4%
Team building activities	61.1%	38.9%

The data set from part B of the questionnaire was investigated by applying CATPCA. After checking for internal consistency between the items, to ensure the reliability of the scale, Cronbach's alpha was calculated for the whole data set and was equal to 0.837, which points to the high level of internal consistency.

To determine the number of components, the author firstly applied CATPCA for the maximum number of the components (18) following Manisera, Kooij & Dusseldorp (2010). The decision criteria considered “eigenvalue greater than 1 criterion” (Fabrigar et al., 1999). Eigenvalues for the first six components are greater than 1.

The author performed CATPCA, and a scree plot was developed to see the bend of the curve (Fig.1.).

Fig.1. Scree plot of the 6-component CATPCA solution (Source: author’s calculations)

Based on the “scree criterion” (Fabrigar et al., 1999), the last component that "accounts for a considerable amount of variance in the data" (Linitig et al., 2017) is either the fifth or fourth. Applying "eigenvalue greater than 1 criterion", in both cases (selecting five or four dimensions), the VAF is acceptable (80.61% and 74.29, respectively).

The third criterion is an “interpretability in the solution” that is based on factor loadings. Following Manisera et al. (2009, 2010), the author used a critical value of 0.5 for factor loading. Results for 5-dimensional and 4-dimensional solutions are presented below (see Table 4 and Table 5).

Table 4. The CATPCA results: 5-dimensional solution (Source: author’s compilation)

	Dimension				
	1	2	3	4	5
Academic staff assessment system	0.684	0.414	-0.074	-0.208	-0.478
Law	-0.568	0.484	0.568	-0.327	-0.076
Accreditation rules for HEI	-0.567	0.487	0.566	-0.329	-0.074
Location of HEI: Riga or region	0.528	0.393	-0.283	-0.192	0.437
Development strategy of HEI	-0.562	0.489	0.570	-0.330	-0.069
HR management practices at HEI	0.162	0.285	-0.098	-0.449	0.566
Organizational culture of HEI	0.582	-0.063	-0.043	-0.517	0.418
Reputation of HEI (incl. rankings)	0.123	0.502	-0.553	-0.104	-0.110
Academic staff competence	0.500	-0.223	0.491	0.263	0.209
Administrative staff competence	0.806	-0.063	0.460	0.014	-0.089
Motivation of the academic staff	0.756	-0.046	0.575	0.157	-0.015
Motivation of the administrative staff	0.831	-0.012	0.480	0.022	-0.083
Administrative staff assessment system	0.700	0.397	-0.089	-0.190	-0.474
Availability of financial resources	0.638	0.491	-0.133	0.115	0.075
Collaboration with other HEIs	0.087	0.579	-0.402	0.319	-0.274

Collaboration with employers and professional organizations	-0.389	0.586	-0.036	0.519	0.107
Participation in international projects	0.106	0.592	-0.018	0.315	0.475
Participation in international programs (i.e., ERASMUS+)	-0.013	0.327	0.462	0.608	0.175

Table 5. The CATPCA results: 4-dimensional solution (Source: author's compilation)

	Dimension			
	1	2	3	4
Academic staff assessment system	0.485	-0.364	-0.242	0.515
Law	-0.810	0.511	0.095	-0.021
Accreditation rules for HEI	-0.815	0.501	0.109	-0.038
Location of HEI: Riga or region	0.263	-0.101	0.734	-0.426
Development strategy of HEI	-0.809	0.513	0.096	-0.020
HR management practices at HEI	0.033	0.072	0.456	-0.557
Organizational culture of HEI	0.526	0.134	0.181	-0.593
Reputation of HEI (incl. rankings)	-0.032	-0.589	0.440	-0.031
Academic staff competence	0.552	0.541	-0.039	0.177
Administrative staff competence	0.760	0.482	0.040	0.053
Motivation of the academic staff	0.653	0.621	0.089	0.228
Motivation of the administrative staff	0.729	0.567	0.168	0.025
Administrative staff assessment system	0.811	-0.342	0.006	0.225
Availability of financial resources	0.449	0.065	0.677	0.007
Collaboration with other HEIs	-0.162	-0.269	0.654	0.244
Collaboration with employers and professional organizations	-0.427	-0.150	0.414	0.615
Participation in international projects	-0.187	-0.045	0.735	0.251
Participation in international programs (i.e., ERASMUS+)	-0.023	0.387	0.301	0.654

According to CATPCA results, four dimensions could be distinguished:

- 1) Dimension 1: Staff competence and motivation;
- 2) Dimension 2: Legislation and development strategy;
- 3) Dimension 3: Availability of resources;
- 4) Dimension 4: Collaboration.

The first dimension includes all items related to staff (both academic and administrative), competence and motivation, and organizational culture. The second dimension consists of items that are related to law, accreditation, and quality assurance external and internal legal documents. The third dimension includes the availability of financial resources, collaboration with other HEIs, participation in international projects and location of the HEI. These items influence each other, e.g., collaboration with other HEIs allows the HEI to use its resources in the most effective way and save them. The fourth dimension is related to collaboration with industry and international organizations, including HEI.

Conclusions

The approach to higher education has changed significantly over the last decade, setting new requirements and standards for higher education. This, in turn, affects the quality of the resources required. Currently, HEIs are forced to focus not only on teaching but also on research and student support through a student-centered approach. All this has a significant impact on the formation of human capital and its development at HEI.

The scientific literature emphasizes the special role of academic staff in building human capital in higher education: both in the development of entrepreneurship in students and in the demonstration of student innovation. Researchers point out that HEI has undergone a significant shift in focus from teaching to research and innovation creation. On the other hand, considering accreditation standards and guidelines, attention must be paid to teaching methods that are able to ensure the satisfaction of students' learning needs and the achievement of learning outcomes.

The results show that the factors influencing human capital development could be divided into four dimensions. The first dimension includes the academic and administrative staff competence and motivation. This dimension is closely related to the law and quality assurance standards which are mandatory for each HEI. The second dimension consists of all items related to the law and internal rules and strategy of the HEI. According to the law and standards, each HEI should provide a certain number of professors, scientific publications etc. These requirements influence human capital development directly and describe a HEI's ability to attract and develop its human capital. The third dimension is related to resources which the HEI has and its ability to attract additional financial resources by collaborating with other institutions. The fourth dimension includes items that describe the HEI collaboration with professional organizations, employers and foreign HEIs. Such collaboration increases organizational knowledge and allows to improve the quality of the academic staff.

Despite the lack of funding and bureaucracy in the quality assurance system, factors related to the law and availability of financial resources are not most important from respondents' perspective.

The survey results confirm the common view on human capital development in the higher education sector. The most important elements of human capital are the pedagogical competence of the academic staff, the scientific competence of the academic staff and the number of professionals from industry as an academic staff. The author could conclude that Latvian HEIs focus their efforts on the quality of the staff as the main activity of human capital development.

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