# STRUCTURAL PROBLEMS OF INTELLECTUAL CAPITAL REPORTS OF UNIVERSITIES

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***Introduction.*** During the second half of the 20th century, economic theories more or less recognized the existence of intangible elements that explain part of economic growth. Interest in intangible resources continued to grow in the first decade of the current century. Despite the apparent novelty of the issue, the concept of intellectual capital is not new at all [Canibano and Sanchez, 2008, 8]. The roots of intellectual capital theory come from both management and macroeconomic theory. The theory of intellectual capital is based on the premise that under modern circumstances, undisclosed intangible assets are very important for the company's operation, as they can significantly increase the value of the assets and the market value of the company. Further development of these ideas was carried out by Schumpeter, who emphasized the recombination of knowledge as a necessary precondition for the emergence of innovative products [Radjenovic and Krstic, 2017, 15].

The term knowledge assets is used by economists, and intellectual capital is used in management and legal literature, both of which refer to the intangible value contained [Fazlagic, 2022, 2] in managers and relationships with employees, management personnel, customers and other stakeholders.

Looking at the role of universities and research organizations in this context, it is obvious that they act as knowledge creation institutions and their funds are mainly invested in research, innovation and human resources. Therefore, the two most valuable assets of our startups, as well as their results, are most often intangible in nature [CAÑIBANO and SANCHEZ, 2008, 8-9 ], which accounts for the growing interest in intangible resources in the last decade, extending from companies to public institutions such as are universities [Todericiu and Şerban, 2015, 716].

Knowledge, being the most important output of universities, is embodied in research outputs, publications, educated students and effective relationships with their stakeholders. Among the most valuable resources of the latter are their researchers, managers and students, with their organizational processes and networks of relationships

[Córcoles, 2013,1-2]. The imperative of time makes the necessity of presentation of university reports more than up-to-date, as a factor of facing the growing competition.

***Methodology.*** In the framework of the research work, an analysis of theoretical material was performed, research methods such as content analysis of documents were used, which argues the need to present reports on the intellectual capital of universities, the concept of intellectual capital and its component elements are discussed, they are considered in the context of universities, applied case study analysis method,which made it possible to present the reporting experience on the example of universities that have implemented reporting practices, the reporting model developed by the Danish Agency for Trade and Industry, the model of the Poznań University of Economics, as well as the experience of Spanish universities in intellectual capital reporting were considered, the studies formed the basis of our reporting for proposals that can become fundamental for the implementation of an effective reporting system in RA as well.

***Literature review.*** The assessment of the intellectual property of universities, their presentation through reports have been addressed by various researchers, the information in this article is based on foreign sources, in which the need to submit reports is justified, in particular, they are considered as a means of making a rational decision about the choice, [CAÑIBANO and SANCHEZ, 2008, 16 -17], as well as a way to achieve competitive advantage in the face of growing competition [Sa´nchez and Elena, 2006, 535]. The article presents the most common approach to the division of intellectual capital components, by which the authors divide intellectual capital into human, structural and relational sub-components [Bratianu, 2014, 5-7]. Also, the localization of the three-component model is considered in the context of the division of intellectual property components of universities [Córcoles, 2013, 1-19]. Case studies were based on the reporting model developed by the Danish Agency for Trade and Industry, the model of the Poznań University of Economics [Fazlagic, 2022, 4-6], as well as the experience of Spanish universities in intellectual capital reporting [Bratianu, 2014, 12-13].

***Scientific novelty.*** This article has revealed the nature of dynamic developments and trends in university intellectual capital management, justifying the importance and inevitable necessity of reporting. Recommendations for successful implementation of the reporting process were presented, which introduces a new reporting format. Based on the studies, several issues of intellectual capital management and reporting in RA universities are presented.

***Analysis.*** *The need to measure the intellectual capital of universities.* Intellectual capital reporting is becoming important in universities as universities have continuous external demands to provide greater information and use public funds to increase transparency [Córcoles, Ponce, and Agustín González, 2013, 1423]. By increasing the satisfaction level of users' information needs, it becomes appropriate to present information

on intellectual capital. It should be emphasized that information asymmetry is important in the conditions of competition for research grants and attracting funds.

Students, teaching staff, and funding agencies should make their decisions based on available information, which should preferably be related to the organization's organizational capacity and research potential [CAÑIBANO and SANCHEZ, 2008, 16-17]. The need for the latter is highlighted due to the awareness of the increasingly competitive environment of the higher education system, where universities face important challenges; such as the creation of new (public and private) universities, education provided by companies, the training process of own employees and increasing the level of internationalization of education and research [Sa´nchez and Elena, 2006, 535]. In this context, intellectual capital reporting can be a new tool to fulfill these requirements. From another perspective, intellectual capital reporting has two functions:

- internal function as a tool aimed at improving the management process,
- external function as a communication tool that connects the internal business environment with the external business environment.

Internally, intellectual capital reporting can facilitate managerial decisions by improving understanding of university operations and goals, identifying intangible resources and opportunities, and improving investment structure and capital allocation. From an external point of view, it helps to improve transparency and attract new employees, partners and collaborators [Bratianu, 2014, 10].

*University intellectual capital components and reporting models*. The concept of intellectual capital is defined as all those non-monetary and non-physical resources that are fully controlled by the organization and that contribute to the creation of the organization's value. According to the author, the structure of intellectual capital is the sum of human capital, structural or organizational capital and customer or relational capital [Bratianu, 2014, 5]. As a result of the study of scientific literature, it becomes clear that the authors, presenting the component elements of intellectual capital, put forward different approaches of division, in which different classifications of components are distinguished. Perhaps it is noticeable that in the component division of intellectual capital, it is most often divided into three main and highly interrelated components: human capital, structural capital and relational capital. In case of separation of each component of intellectual capital models, the most important thing is their clear description, definition of sub-components. In the case of presentation of intellectual capital reports of universities, attention should be paid to the selection of the appropriate model of division and the determination of the structure of the reports based on the classified components.

Based on the classic three-component structure, we consider it necessary to briefly present each of the components, and then consider them as part of the intellectual capital of universities, on the basis of which models of university reports can be built.

Human capital includes all the knowledge, skills, intuition and values that employees possess, both individually and collectively. It is an important feature that organizations can use the said intangible resource, over which the organization may not have ownership rights [Bratianu, 2014, 5]. G. Becker emphasizes that human capital is of exceptional importance for growth in the modern world and calls the end of the 20th century and the beginning of the 21st century the era of human capital. Today, human capital is a primary determinant of a country's standard of living and an indicator of how well a country is utilizing the skills and knowledge of its people. These skills and knowledge must be developed through investment in people and used in an economic environment with a healthy market structure. [Becker, 1993, 21-23]

Structural capital contains the intangible resources that are owned and fully controlled by the organization: organizational structure, database, intellectual property, processes, organizational culture, organizational history, brands, etc. Relational capital includes the entire spectrum of relationships between the organization and the external business environment. When we consider organizations as open systems related to knowledge transfer, relational capital can be represented as a dynamic ability to manage knowledge flows [Bratianu, 2014, 5-7].

In the case of universities, we can define the components as: human capital is the totality of explicit and tacit knowledge of university staff, acquired through formal and informal educational and other processes [Córcoles, 2013, 1-19]. They can include the level of education, hidden knowledge, skills and experience, moral values, organizational and socio-professional culture, innovative activity [Vladimirova, Sergeva, 2014, 5].

- Structural capital is clear knowledge related to the internal process of dissemination, communication and management of scientific and technical knowledge in the organization. It can be both organizational (operational environment resulting from the interaction of research, management and organizational processes, technology and culture) and technological (patents, licenses, proprietary software, databases, etc.).
- Relational capital includes a wide range of economic, political and institutional relations developed and maintained by universities [Córcoles, 2013, 1-19]. It also brings together a wide range of economic, political and institutional relationships between the university and its non-academic partners: businesses, non-profit organizations, local government and society at large. It includes the perception of the university; the latter's image, attractiveness, reliability. [Córcoles, Ponce, and Agustín González, 2013, 1424].

In recent years, the increase in the role of intellectual capital, the developing trend of the need for its presentation have been the basis for the formation of various reporting models, the differences of which are based on the characteristics of universities, the development of the educational system of the given country, a number of socio-economic, cultural factors and other basic differences.

The often intangible nature of the components of intellectual capital makes it difficult to measure and evaluate the latter, which should be the basis of reporting, but the process of converting them into measurable features makes it possible to present the component elements of the report.

Measurements of intellectual capital should consider different product qualities: an organizational output (eg, a publication, a training course) and a customer/user output (eg, a problem solved). A. Fazlagits, presenting a table for calculating intellectual capital, refers to two components: human and structural capitals.

The number of researchers, the share in total employment, the average age, the share of women's representation among researchers, the share of university graduate researchers are considered as resource components of human capital. Investments for human capital include research and IT costs, time spent on internal seminars for each employee. Outcomes include the number of newly recruited staff, staff satisfaction, staff turnover, value added per employee, composite employee satisfaction index, and average number of publications per researcher.

Referring to the structural capital as a resource with the same division, the share of women occupying leadership positions, the number of chairs, the average employment in chairs, etc. are presented.

In the investment context: total investment in research infrastructure, project acquisition success ratio, research expenditure per chair, participation in international conferences (number of conferences attended, number of researchers participating in conferences), number of ongoing research projects.

A special presentation structure has been developed at the Poznań University of Economics: more than thirty indicators are presented in intellectual capital reports, which are generally divided into the following main parts.

−Strategic management: a list of thirteen areas was defined, each area was assessed on the scale of implementation.

−Results of knowledge: numerical data on intellectual capital must be balanced with qualitative criteria such as descriptions.

−Employee satisfaction. the results of the employee satisfaction survey are presented with quantitative data.

−Student satisfaction: the results of students' satisfaction are presented with quantitative data.

−University graduates: the most accurate and reliable measure of a university's output is the long-term success of its graduates.

−Organizational structure. universities are complex structures in which a large number of people work, it is necessary to present that structure.

–Indicators of intellectual capital: indicators of human and structural capital, the set of numerical indicators allows comparisons to be made over time and compared with indicators of other universities [Fazlagic, 2022, 4-6].

The experience of Spanish universities in the intellectual capital report is based on a study carried out by the Autonomous University of Madrid (AUM). A starting concepttual model is the "Strategy Matrix," designed to interactively link five key dimensions of academic and research processes: funding, human resources, academic performance, mission, and governance; with five dimensions of institutional profile: autonomy, strategic capabilities, attractiveness, differentiation profile and territorial embeddedness. Experts working on the model of intellectual capital of the university proposed to transform this strategic matrix so that the report of the intellectual capital of the university is composed of three main sections.

–The vision of the institution. this section covers the strategic objectives, strategic capabilities, and key intangible resources that drive any organization.

–Summary of intangible resources and activities. this section contains the intangible resources that the institution can mobilize and the various actions taken to enhance the value of these resources.

–System of indicators. this section contains a set of indicators that can characterize the three main components of intellectual capital: human capital, structural or organizational capital, and relational capital.

Indicators reflect both tangible and intangible resources; "As for the system of indicators, we consider it important to note that financial and non-financial indicators are included, and that most of them are not self-explanatory. Therefore, descriptive or narrative elements become important to contextualize and better understand the information provided by the indicators. Descriptive stories complement quantitative information and are essential to accurately assess the role of each indicator" [Bratianu, 2014, 12-13].

Observation of examples of intellectual capital reports of universities, study of theoretical material give us the basis to make the following proposal for presentation of university reports. The intellectual capital of universities is a complex, adaptive system with a dynamic nature, with the characteristic features of the system, it is composed of a large number of components, it is subject to changes, responding to environmental stimuli, so the intellectual capital reports of universities should contain three time courses: initial, present, future information that allows to measure the dynamics of development.

From another point of view, intellectual capital includes the whole tangible and intangible resources, with which the separation of tangible and intangible natures of reporting components is indicated, it is proposed, based on the canonical model of the division of intellectual capital, by which it is divided into human, structural and

relational capitals, each divide the component into tangible and intangible elements. Intellectual capital reports of universities are proposed to be presented through three main groups, which are presented below.

Human capital - knowledge, experience (indicate in quantitative data the number of years of teaching, research work, and other work experience for each individual), education (in quantitative data, present the sum of the years of formal education of each), the amount of hours of attended trainings and courses, participation in the activities of other scientific and research institutions, average values of quantitative data can be presented in reports according to the evaluation model.

Structural capital - the number of types of registered intellectual property, technical saturation, availability of software, databases, organizational culture.

Relational capital - credibility of the university, relations with cooperating structures, investment companies, students, employees, perhaps the latter can be completely measured by quantitative data that can be collected through surveys, the number of funded projects, signed contracts.

In the case of relational capital, it is important to look at time, for example, projects that started in the past and continue today, collaborations that are being developed in the present and will be implemented in the future. In the intellectual capital reports of universities, a combination of qualitative and quantitative data should be made, which will form the overall content of the report, it is recommended to present the components of the above three groups based on two types of data:

—in the first to contain the material statement presenting costs, investments, benefits, other quantifiable data presented above.

—second annual achievement report to record and present new changes, achievement and other qualitative data.

The presentation of reports on intellectual capital in universities is a difficult task, which is due to the complexity of intellectual processes within any university, the manifestation of the will to organize the process of administrative disorganization. A number of basic problems are noticeable in the implementation of intellectual capital management processes in Armenian universities, which determine the problem of its effective use. In the universities of developed countries, the evaluation system KPY operates, which is not yet widespread in the universities of our country and the teacher, who is supposed to be a creator of knowledge and bring that result to the audience, regardless of whether he has implemented that process or not, receives a reward. Here the motivation function is completely absent. In universities, the KPY system mainly has these three components:

−educational process, the evaluation of which is done through cross-questioning (by the student, by the immediate supervisor, by a colleague, with the option of self-evaluation)

−a research component, which is mainly based on the publication of research papers in high-quality journals

−public (social) processes.

It is also important that the major part of the budget of RA universities, about 80 percent, is formed at the expense of student fees, and in advanced knowledge-creating universities, the generation of funds is mainly based on the sale of scientific products, grants and other funds.

Inadequate availability of funds is also an important factor that RA universities are still not at a sufficient level in terms of intellectual capacity.

***Conclusions.*** In the matter of intelligent implementation of knowledge management, the presentation of the intellectual capital of universities through reports is essential, as a necessary factor for the improvement and continuous development of the higher education system.

Intellectual capital reporting by universities is an important driver for increasing the productivity of knowledge-based work. The latter has an internal investigative meaning, which enables the involved organizations to find out where the shortcomings exist, but especially at the initial stage of reporting, the results should not be punitive.

It is necessary to keep in mind that due to technical, cultural and procedural barriers, not all important information can be contained in the first reports, for which an additional obstacle is the incomplete understanding of the administrative staff that ensures the implementation of the reports regarding the concept of intellectual capital management.

For the effective implementation of the reporting practice, it is necessary to raise the level of awareness of the need and importance of intellectual capital management, to create a working group for the measurement of intellectual capital, to consistently ensure the timely and comprehensive implementation and publication of results.

It is undeniable that the development of science and technology, the need to survive in a competitive market environment led to the acceleration of scientific and technical developments [Vladimirovna, Sergeyevna, 2014, 3]. Under this reality, producers in the market of educational services compete for the quality of services, the variety of educational programs, the introduction of new technologies, the number of students, the reputation of the university and the high ranking among universities.University intellectual capital reports, which will become an important prerequisite for achieving a compe-

titive advantage, are of great importance for securing the latter, increasing transparency, and increasing trust.

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**Structural issues in universities' intellectual capital reports**

*Key words: intellectual capital, university reports, human capital, structural capital.*

The article's purpose is to argue the necessity of presenting reports and examples of published reports. For the stated purpose, we have studied the concept of intellectual capital and its component elements, we considered the localization of their sub-components on the example of universities, we present case studies of university reports, and recommendations are made based on the studied material. In the framework of the research work, an analysis of theoretical material was performed, and research methods such as content analysis of documents, and analysis of case studies were used. The conducted studies allow us to draw conclusions that the presentation of intellectual property reports of universities is an important necessity that will become a competitive advantage. The presentation of reports should be based on the choice of one of the types of classifications of intellectual capital, the competence of the implementing staff, and the awareness of researchers about intellectual capital should be increased, it is important to give this practice a continuous nature in order to achieve positive results.