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LANDMARKS FOR THE MANAGEMENT INFORMATION SYSTEM OF HIGHER EDUCATION INSTITUTIONS OF REPUBLIC OF MOLDOVA

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Abstract. The educational reform increased the autonomy of Higher Education Institutions (HEIs) in the Republic of Moldova. Normative regulation of resources by the state has turned into a performance-based and results-oriented management tool. HEIs seeks to improve the efficiency of their processes to direct more resources to improved quality and increased yield. Under these conditions, university managers need to know the state and dynamics of the managed system in order to make appropriate decisions to place the universities on top positions in the international rankings. Motivated by digitization processes, HEIs has recently been paying more attention to the development of high-performance Management Information Systems (MIS) to ensure an intelligent management of information, oriented towards strategic results. Through this paper, we want to present the state of affairs regarding the information systems in the HEIs of the Republic of Moldova and highlight what are the expectations for a MIS capable of improving the decision-making process in the HEIs to ensure national and international competitiveness.
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JEL classification: *M15, I2*

Introduction

We live in the era of digitization, where, on the one hand, a lot of data is used for processing, on the other hand, a lot of information is generated that needs to be assimilated and used. We often fail to do this synchronously because the speed of innovation and generation of information is much higher than the speed of processing and assimilating it. From this point of view, information management acquires a rather large importance in all processes, including within the HEIs.

Starting from the classical theory, we know three types of classical economic resources or classical factors of production that are used in the creation of value. These are nature (raw material), labor and capital. With the growing interest in the digitization of economic and social processes, information has come to be considered a neo-resource, which can also create value and competitive advantage. The problem is that only intelligently managed information gives an advantage to its possessor. This consideration was the basis for the development of the science of information management. On the other hand, as a popular proverb says "if you are informed, you are armed", it makes the use of information a service of first necessity, a fact that determined the development of a new economic segment - the information services sector.

Information, as a concept, has various meanings that can sometimes create confusion. We must distinguish between the notions of information and data. Data is the variety of details about various phenomena, situations and processes and represents the raw matter, obtained as a result of measurements, recordings or observations, which, being processed for different purposes, generate information. Information is a finality of data processing in a logical way, which reflects a cause-effect relationship about a phenomenon or process studied and the factors that condition it. The information is represented by quantitative or qualitative indicators that communicate or transmit a message about new or camouflaged aspects of the studied phenomena and processes, ensure their comparison with various reference bases and serve as an important support for decision-making.

Depending on the nature of the decisions, strategic or tactical, the information will concern both the internal environment of the enterprise and the external business environment. The

information circuit has a double meaning: the accumulation and processing of data to generate information for managers to make decisions and vice versa, the transmission of managerial decisions to the executive staff.

In order to be able to fulfill its role of creating value and competitive advantage, information must be collected, processed, stored and transmitted, stages which are known as information circulation. This role belongs to the Management Information System (MIS), consisting of information management and information services that must provide continuous, rapid information and ensure the achievement of feedback.

The specificity of MIS in HEIs derives from the general objective of university management, which consists in ensuring the competitiveness of local higher education in the global competition of higher education, and emerging from the complexity of university management. The development of a MIS is a source of competitive advantage for HEIs. It should enable objective data to be obtained on how the university's work is seen and valued by key customers.

MIS is a subsystem of the management system of HEIs that derives from the varied nature of academic activities, the diversity of funding sources and the increase in the degree of autonomy, the need to adapt to changes in the national and international business environment, the need to analyze market demand work. MIS generates information from all the basic processes of HEIs: the activity of admission committees, the study process, scientific activity, international relations, university management and administration, human resources, social activity, library services, activity and financial responsibility, publishing, archiving, others.

In modern conditions, HEIs tend to create collaborative partnerships with the business environment, to ensure the relevance of the studies offered and the competitiveness of graduates to implement the needs of its partners. This increases the level of responsibility towards stakeholders, such as students, academic and scientific staff, employers, investors, donors, the Ministry of Education and Research. A MIS must be adjusted to these university needs to meet expectations and maintain the brand of a successful university.

Methodology and data.

The research was developed within the Erasmus+ project "Moldova Higher Education Leadership and Management (MHELM)". The aim of the project is to strengthen governance, strategic planning and management in Moldovan universities, in order to support reforms in the sector by increasing leadership and management capacities and capabilities. For this purpose, courses with topics of major importance for university management have been developed. The courses are taught to current and potential managers for various hierarchical levels from 7 higher education institutions in the Republic of Moldova. One of the themes developed and taught within this project is "The management information system in HEIs". In the teaching process, in the practical activities the learners were encouraged to come up with critical analysis and idea generation for the improvement of MIS in HEIs. For this purpose, activities were organized in teams, with subsequent debates around several topics regarding information management within HEIs. One of the tasks for the teams made up of managers/employees of HEIs was to develop the SWOT analysis for the MIS of the university they represent. At the time of this research, 3 course cohorts were organized, the cumulative total of participants being about 140 administrative staff, experts in the field. The accumulated information presents an informative support for the generalization of the conclusions with reference to the current situation and perspective trends regarding the MIS of HEIs. The research methodology consists in the systematization of the accumulated information to answer the following research questions: 1.What is the current state of SIM and what deficiencies of MIS are faced by HEIs in the Republic of Moldova? 2.What are the expectations of a MIS capable of improving the decision-making process in HEIs? To carry out the research, the methodological apparatus was used, such as: the method of experts, methods of comparative and critical analysis, problem identification, synthesis and modeling, generation of solutions.

Results and empirical findings.

The analysis of the accumulated information shows that HEIs from the Republic of Moldova pay special attention to the development of MIS. There are areas of MIS that are largely common and similarly developed at most HEIs. All universities have functional websites where we can find information about normative and institutional acts, institutional departments, the study process, timetable, announcements and events, admission. Among the shortcomings, some universities mentioned the lack of a unique style of structuring information at the faculties, not at all universities the information is translated into several languages, the degree of information updating is reduced, the communication and promotion capacity is not used to the maximum of the institution.

All universities have student record programs that are comprehensive and the institutional database and personal files are kept for the duration of their studies in the institution, which allows a strict monitoring of the students and the students have the opportunity to see their success. At the same time, the lack of internet reduces access to the database, data is entered manually, mechanical and even intentional errors are still present, there is incompatibility with new operating systems/platforms, the program is not correlated with all subsystems, the career tracking option is not configured in the field of specialization and it is not possible to generate diversified reports as per any need.

The human resource records program provides centralized information about personal data, employment, payroll, performance, orders and decisions. It was complained that at some universities the electronic file is missing, the indicators of interest are not covered, it is difficult to process the enormous volume of data and because of this the updating is reduced, the platforms are not compatible with accounting programs, and their degree of security it is weak.

For libraries, universities apply the institutional open access policy, they have the institutional repository, electronic catalog, partnerships are developed for subscriptions to international databases.

A larger gap between universities was found in learning resources. Among the learning resources, various platforms were mentioned, such as Moodle, ClassRoom, Teams, information sources at the library, but also useful information on university websites about study programs and curricula. There are still some gaps in the skills of teachers and students in working with digital resources, the lack of motivation is also an epidemic for the development of digital skills, in some places the material placed on the platforms is very theorized, there are few practical resources, there are restrictions to the volume of files for uploading due to the reduced capacity of information storage.

The MIS on admissions activity also differentiates between universities. Some universities have managed to develop more complex e-admission platforms that allow the submission of the file, others are limited only to the university website as an informative and promotional tool. The e-admission platforms are continuously developing with the universities' own forces, because the lack of financial sources limits the universities' possibilities of purchasing programs for this purpose.

All universities reported the lack of a platform for creating complex databases for monitoring teaching and scientific activity and the involvement of academic staff in various projects, initiatives, national and international events. Automatic generation of reports with different content and complexity by various actors of the same institution is a problem for all universities. The lack of interconnection and integration with the information systems of state and local authorities and regional management structures overburdens academic staff to generate reports of various forms. Another problem is the insufficiency of the technological capacities to adapt to the change of operating conditions, most often these are developed by the specialized employees of the universities.

One of the shortcomings identified by experts in teamwork and which is mentioned in various scientific researches is the fragmented and chaotic collection of information and the lack of an integrated MIS system. What is desired for HEIs is the development of a MIS that satisfies the general management's need to know how the institution operates, how it compares with its competitors, and what would be the sources of competitive advantage. The collection and processing of databases with the subsequent generation of useful information for decision-making must be designed in such a way as to eliminate the chaotic element and be oriented towards the strategic objectives of the HEIs. MIS

must create clear, measurable links between objectives, operations, resources and results. It is also important that strategic planning is vertically synchronized, from the institutional level to the faculties to the degree programs and also to the academic staff level.

Starting from the areas of interest and internal processes, indicators for strategic objectives can be defined and target values can be determined to help evaluate the progress of these objectives both at the institutional and hierarchical levels. At the same time, a MIS is expected to ensure an efficient level of communication between the different departments and staff. For this purpose, MIS transparency is extremely important, ensuring a process of self-evaluation and continuous learning. Institution members are welcome to have different system user rights and roles. An advantage of the decentralized system is that teachers and others can see directly how their work plans contribute to the strategy of the administrative unit and the entire institution.

In addition to the above, in the view of experts, the design of a high-performance MIS of HEIs would also include the following aspects:

• All processes of university activity to be integrated in a single informational space;

• Creating complex databases to store a wide range of information;

• Increasing the degree of generation of reports of any nature, at the request of various interested actors, from various hierarchical levels, depending on the access to information;

• Ensuring a high degree of compatibility and interoperability of information flows between various processes and procedures of university activities;

• Ensuring a high degree of compatibility and interoperability of university information flows with that of state institutions;

• Ensuring a high degree of flexibility and ability to adjust to the changes that occur in the educational system;

• Extensive use of collaboration applications and automation of internal procedures;

• Increasing managerial efficiency by creating management systems for the management of corporate activities.

A performing MIS of HEIs must be designed not only from the point of view of creating, storing and reproducing information, but also from the point of view of analysis, forecasting and, moreover, situational modeling of options for managing university processes and resources.

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