The work was performed at the Department of Education of Khazar University

Scientific supervisor: Doctor of Philosophy in Pedagogy,
                               Associate Professor
                               Anvar Mahammad Abbasov

Official opponents: Doctor of Pedagogical Sciences,
                               Professor
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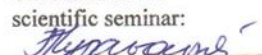   **Ilham Bashir Ahmadov**

Dissertation council of FD 2.49 of Supreme Attestation Commission
under the President of the Republic of Azerbaijan operating at the
Khazar University

Chairman of the   Doctor of Physical and Mathematical
Dissertation council: Sciences, Professor
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scientific seminar: Professor
                               Akif Nuragha Abbasov

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ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

THE SYSTEM OF USING THE DATABASE IN THE MANAGEMENT OF HIGHER PEDAGOGICAL EDUCATION INSTITUTIONS

Speciality: 5802.01 – organization and planning of education

Field of science: Pedagogy

Applicant: **Nazakat Ibrahim Zamanov**

Baku – 2024

The work was performed at the Department of Education of Khazar University

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Chairman of the scientific seminar:	Doctor of Pedagogical Sciences, Professor
_____	**Akif Nuragha Abbasov**

CHARACTERISTICS OF THE RESEARCH

Relevance and development of the topic. The 21st century is called the century of education due to its characteristics. The way of development of mankind and humanity is through education. In accordance with the requirements of the information society, educational institutions are managed by information technologies. he development of the state, society, and economy is dependent on the level of education in the country. Since every society and education exist in a mutually interactive framework, they have become significant factors that condition each other's development. The rapid changes occurring in the information society accelerate the transformation of national education into international education. To achieve this, it is important to study the general directions of the development of international education, as well as the principles – both social and pedagogical in nature – that lead to the integration of Azerbaijani education into the global context.

The stages of civilization's development have been closely linked to science and education, shaping human life and leading to the creation of both material and spiritual values. People have primarily acquired the ability to establish connections between their individual characteristics and the social environment through education. Society has continuously benefited from its heritage, reflecting on the role of education in determining its developmental directions and striving to further develop it in line with the most modern demands and progressive new principles. Therefore, researchers have regarded education as the primary driving force influencing society. Throughout history, people have made use of its opportunities, successfully securing their future prospects by benefiting from the achievements of education, sometimes even viewing education as a social imperative. In order to further develop society, they have demonstrated the potential of education not only to ensure adaptability to innovation through individual and collective learning but also to create new values. Additionally, they have shown that education, based on inheritance – forming a unity between the historical experience accumulated by previous generations and innovation – acts as a force that ensures the dynamism of society.

The attributes of the historical development path of information – writing, printing, electricity, and finally, the mass production of the internet – have led to the rapid advancement of science and innovations, contributing to the globalization of the world and the integration of national economies into the global economy. The education system has evolved in response to the demands of the era, leading to the development of the knowledge economy, the commercialization of knowledge, and the alignment of higher education institutions with business interests. Currently, changes occurring in the digital world are influencing all areas of our lives. The knowledge economy should be aligned with the commercialization of knowledge and tailored to the dynamics of education and teaching, in accordance with the needs of the individual and the demands of the information society. If the object, subject, and the entire society participating in education focus their efforts on immediately embracing innovation, it will be more appropriate to identify its demands in a timely manner. The realization of these joint initiatives largely depends on the management of education. Ensuring competitiveness and the formation of intellectual resources will enable us to meet the demands of the digital world by surpassing physical capital.

The development of education in our country has always been a focal point, and various decisions have been made over time to regulate its progress. One of these is the "State Program for Increasing the International Competitiveness of the Higher Education System of the Republic of Azerbaijan for 2019-2023"[1], adopted in recent years. This document lays the foundation for a completely new phase in the development of the higher education system. The primary goal in the program, which ensures development, is the first direction, which involves achieving progress through international dual degree programs and attracting foreign experts, encompassing the highest standards. The second direction aims to elevate the intellectual level of our university's academic staff through doctoral education abroad.

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[1] State Program on Increasing International Competitiveness in the Higher Education System of the Republic of Azerbaijan for 2019-2023 (approved on November 16, 2018). – Baku: Qanun, – 2018. – 20 p.

The "Social and Economic Development Strategy of the Republic of Azerbaijan for 2022-2026,"[2] adopted in 2022, discusses the development of high-quality human capital and addresses the improvement of education quality, as well as the establishment of financing and management mechanisms. These provisions highlight the necessity of studying the scientific and pedagogical foundations of higher education management. In this context, it becomes relevant to examine the system of management of higher pedagogical schools by utilizing data sources.

Within the National Qualifications Framework, which reflects and primarily serves as the object of research, how effectively does educational management in the digital world accommodate the rapidly changing innovations? The development of modern teaching technologies and the alignment of the education system with contemporary standards and innovative programs are essential demands of the current era. Educational management in the digital world is about meeting and enhancing innovations, as well as increasing competitiveness in line with global standards[3]. The reforms implemented across all sectors of Azerbaijan's education system have significantly transformed its landscape in both general and content-based terms. The President of the Republic of Azerbaijan, Mr. Ilham Aliyev, expresses these chges as follows: "*Great attention is paid to the improvement of the education system in Azerbaijan. Education is our future*"[4]

Since the early years of our independence, when educational reforms were initiated, one of the primary objectives has been to define the principles of educational management in order to foster the development of individuals who embody the values of a free, democratic society and humanism[5].

The reorganization of management within higher education institutions has been identified as a key strategic objective. In this

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[2] URL: https: //president.az (articles)

[3] Mehrabov, A.O. Conceptual problems of modern education / A.O.Mehrabov, – Baku: Translator, – 2010. – 516 p.

[4] URL: https://xeber.azeri.net › tehsil › ilham-eliyevin-tehsil-sahes...

[5] URL: http://www.azerbaijan-news.az/view-169356/

context, it is imperative to reexamine the organization of management and the direction of institutional activities, particularly through the utilization of information databases, and to develop contemporary management models that align with current academic and administrative needs. Our conducted research stems from this necessity.

To implement innovations and establish management systems in higher education institutions based on innovative principles, several steps have been taken. In accordance with the decrees of the President of the country, the granting of public legal entity status to certain higher education institutions has created favorable opportunities for the introduction of accountability, responsibility, new management principles, and the assurance of academic and financial autonomy in these universities. Moreover, based on the new "Model Charter" approved by the Cabinet of Ministers of the Republic of Azerbaijan, all state higher education institutions, upon acquiring public legal entity status, will be able to benefit from these opportunities[6].

The mission of applying modern innovations and completing its implementation falls on the educational institutions that carry out the researches related to education. The decisions made in the management of educational institutions and its management system in various aspects of the management system are among the scientists who have made great contributions to education M.M.Mehdizade, M.S.Muradkhanov, A.S.Heydarov, Y.S.Karimov, A.S.Bayramov, A.A.Alizade, N.M.Kazimov, A.S.Hashimov, Y.R.Talibov, A.A.Agayev, A.Kh. Pashayev, F.A. Rustamov, A.O. Mehrabov, A.N.Abbasov, H.A. Alizade, L.M. Gasimova, H.H. Ahmadov, I.B.Ahmadov H.A.Isakhanli, S.S. Khalilov, M.C. Mahmudov, R.H.Mammadzadeh, M.S.Mardanov, A.M.Abbasov, S.C.Rasulov, R.Z.Azizov, A.Kh. Pashayev, P.V.Aliyev scientist VV.Krayevski, I.Y.Lerner, M.N.Skatkin, Y.K.Babanski, I.D.Zveryev, M.P.Kashina, I.L.Podlasiy, M.V.Ryzhakov, H.Y.Celikan, Salahattin Gelbal, Buket Aggoyunlu, B.B.M.Ergun, S.B.Filiz, A.P.Liferon, B.A.Bolshov, J.Naisbitt, P.Aburdeneni and others can be mentioned. In addition to these, our classics include Nizami Ganjavi,

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[6] URL: http://www.azerbaijan-news.az/view-169356/

Nasreddin Tusi, Mirza Kazim Bey, Abbasgulu Agha Bakikhanov, Mirza Shafi Vazeh, Mirza Fatali Akhundov, Seyid Azim Shirvani, Hasan Bey Zardabi, Omar Faig Nemanzadeh, Narimam Narimanov, Mustafa Kemal Atatürk, Mammad Amin. The ideas of rich thinkers such as Rasulzadeh, Alibey Huseynzadeh, Heydar Aliyev in their creations, in accordance with historical experiences and the requirements of modern times, are an irreplaceable heritage for us, a valuable source that we will refer to. Among those who directly studied this field, we can mention research scientists such as H.A.Isakhanli, S.S.Khalilov, R.H.Mammadov, S.C.Rasulov, R.Z.Azizov, I.B.Ahmadov, C.F.Valehov, A.O.Mehrabov.

These developments underscore the imperative of conducting a systematic and comprehensive investigation into the pedagogical challenges associated with the governance of higher education institutions within the framework of an information society.

Object and subject of the research: The object of the study is the process of managing higher pedagogical educational institutions. The subject of the study is the system of work on the use of databases in the management of higher pedagogical educational institutions.

Purpose and objectives of the research: The purpose of the study is to study the ways of systematic use of databases in the management of higher pedagogical educational institutions.

The objectives of the study are as follows.

1. Investigation of the management of a higher pedagogical educational institution as a pedagogical problem.

2. Analysis of existing literature and experience from the point of view of the problem.

3. Determination of the principles of management of a higher pedagogical educational institution.

4. Determination of the management system using information technologies in an educational institution using databases.

The methodological basis of the research is a set of principles, methods, means and theoretical concepts applied to study and evaluate pedagogical, social, economic, political, administrative, public, factual events and processes.

The research methods are theoretical analysis, observation, interview, questionnaire survey, mathematical statistics, and pedagogical practice.

Main provsions subnutled for Defense:

1. The application of information technologies using a database is the basis for determining new principles of management of a higher pedagogical educational institution, determining the possibilities and ways of management, pedagogical, methodological features.

2. The use of a database in the management of a higher pedagogical educational institution develops the features of flexibility, modularity, parallelism, comprehensiveness, economy, social equality, internationalism, etc. in education, and expands the capabilities of management.

3. The application of IT increases the role of dynamic and static management in education.

4. Ensuring the continuity of education in various emergency situations (pandemic, war, natural phenomenon, etc.) with the application of IT, the efficient use of the database makes management (synchronous, asynchronous) more qualitative.

Scientific Novelty of the Research: This research investigates the pedagogical problems of managing higher pedagogical education institutions for the first time. It identifies the principles of HPEI management that align with the demands of the information society in the digital world. The study also examines the management system through information management capabilities and avenues.

Theoretical Significance of the Research: The systematic management of higher pedagogical education institutions, in accordance with the demands of the information society and based on database references, will:

1) Assist in addressing the pedagogical problems of management.

2) Create favorable conditions for identifying innovative principles, capabilities, and methods of management.

3) Significantly influence the improvement of theories and considerations related to the management of education with information in the digital world, aligning with the demands of the information society and leading to the emergence of new modular methods.

Practical Significance of the Research:

The results of the study will support the management of higher education in the following areas.

1) the database use system of a higher pedagogical educational institution will be improved with the application of information technologies;

2) responsibility and accountability will be ensured in the management of the educational institution;

3) the quality of the institution's management will increase;

4) information technology-based innovations will be utilized in the teaching process.

5) as a result of management through information technologies, integration into the global information education space will be possible.

6) the management of the educational institution in emergency situations (pandemic, epidemic, war, etc.) will become even easier.

Approval query of the Research Results: The core ideas of the research have been published in articles in the scientific works of the Institute of Education and in journals recommended by the Higher Attestation Commission under the President of the Republic of Azerbaijan. The candidate's presentations and theses related to the main findings of the research have been published in the materials of international and national conferences. Additionally, the research has been applied experimentally in the management system at Azerbaijan State Pedagogical University.

The name of the organization where the dissertation work was performed. The dissertation work was performed at the Department of Education of Khazar University.

The structure of the dissertation in characters, indicating the separate volumes of the structural sections of the dissertation. The dissertation consists of an introduction, 2 chapters, 7 paragraphs, a conclusion, and a list of used literature.

Introduction – 10 pages, 15058 characters, Chapter I – 46 pages, 78942 characters, Chapter II – 66 pages, 115714 characters, Conclusion – 5 pages, 8273 characters, a list of used literature – 15 pages, the dissertation work consists of 217987 characters in total.

MAIN CONTENT OF THE RESERCH

The introduction of the research justifies the relevance of the topic, provides information about the level of its development, states the objectives and tasks of the research, explains its scientific novelty, and outlines its theoretical and practical significance.

The first chapter of the dissertation, titled **"General Problems of Higher Pedagogical Education Institutions,"** consists of three paragraphs. In the first paragraph, **"*Management of Higher Pedagogical Education Institutions as a Pedagogical Problem*,"** it is discussed how the management of educational institutions fundamentally differs from other management systems. The role of education and educational institutions as a leading force in societal changes throughout history is examined alongside the pedagogical problems associated with their management.

A brief overview of educational management is provided, focusing mainly on the management of higher pedagogical education institutions, which encompasses the pedagogical processes, scientific methodological activities, their organization and management, and the intentional regulation of information to meet the demands of the information society in a timely manner. The necessity of proposing objectives, conducting a comprehensive analysis of the initial state of the object, planning based on obtained data, and continuously creating feedback loops in the organization of the scientific council and pedagogical processes is emphasized.

With the deepening of the knowledge economy in the digital world and the commercialization of education in mind, new forms and methods of management are compared. It is substantiated that every stage of the management process within higher education institutions, particularly in higher pedagogical education institutions, possesses pedagogical characteristics.

Given that the management of higher educational institutions encompasses pedagogical, socio-psychological, social, and political dimensions, it is imperative that both the research and the solutions derived from it be approached systematically. Furthermore, this analysis concludes that higher educational institutions play a pivotal role in shaping society. As such, they must develop and implement

management structures that are founded on principles essential for addressing societal demands. This necessitates the establishment of a reliable database to facilitate the attainment of higher quality outcomes.

In the second paragraph of Chapter I, titled *"Analysis of Existing Literature,"* the examination of prior research related to the topic at hand is discussed. This section emphasizes the importance of analyzing educational management through the lens of historical experiences and the intellectual contributions of notable figures in the field. It reveals that numerous initiatives have been undertaken for the restructuring and management of higher education institutions, particularly in the realm of higher pedagogical education. Scholars such as A.O.Mehrabov, H.A.Isakhanli, S.S.Khalilov, M.C.Mahmudov, R.H.Mammadzade, A.A.Aayev, A.M.Abbasov, M.S.Mardanov, I.B.Ahmadov, A.Kh. Pashayev, F.A.Rustamov and P.V.Aliyev, alongside international figures like O.Akbash, E.Karib, Ch. Gzdemir, S.Buyukalan Yıldiz, A.P.Liferon, and B.A.Bolshov, are noteworthy contributors to this discourse. The services of American sociologist Daniel Bell, economist, publicist and pedagogue Peter Drucker, journalist, writer and futurist Elvin Toffler, media critic, sociologist, writer Herbert Schiller and historian-philosopher Mark Poster can also be noted in this regard. At the same time, John Naisbitt, Patuso Aburdena's prediction about the events that will happen every ten years in the information society also attracts attention from the point of view of the problem.

The literature indicates that considering education exclusively as either a national or a universal phenomenon is an overly narrow perspective. Research findings reveal that the management of higher education institutions has not been sufficiently established as a distinct object of scholarly inquiry. Although scholars examining the management of higher pedagogical education institutions have highlighted its significance, they have not rigorously investigated its organizational methodologies. In particular, the principles, methods, directions, and prospective applications of database utilization remain underexplored as a dedicated focus of research.

In the third paragraph of the section titled *"Analysis of the Situation in Higher Pedagogical Education Institutions in Terms of*

Problems," it is stated that the independence of educational institutions, the supremacy of laws, and the openness of educational reforms to innovation are essential conditions that ensure the development of the education system and educational institutions, thus creating a healthy environment for the development of education. Comparative analyses are presented, and the situation of educational institutions is examined. In developed countries, the autonomy of educational institutions ranges from the freedom of management in classrooms to owning large corporations. Using the example of the United States, where there is no centralized federal structure that defines and manages the activities of schools and higher education institutions, it is shown that each state has its own education system and educational institutions. Universities and colleges are free to evaluate their activities within a market economy and choose their development strategies independently. While analyzing the reasons for the success of education in America, it is emphasized that there are distinct characteristics compared to the European education system. In Europe, the education system is subordinated to the Ministry of Education, and student selection is determined solely by the results of entrance exams, meaning that the leadership of higher education institutions has little influence on the student selection process. In contrast, the main goal of American universities is to attract the best students to education, and they offer full tuition waivers to make it more appealing. The management of the American education system differs from that in Europe. In the research, it is particularly emphasized that when noting the successes and shortcomings of higher education institutions, it is essential to correctly understand their type and nature, and to consider their goals and objectives without overlooking them. According to the study, it is stressed that the independence of higher education institutions should be examined together with their level of responsibility and the transparency of their actions. It is highlighted that in the higher education policies of states, it is more appropriate for each institution, especially higher pedagogical education institutions, to be assisted in their independent management, with the state acting as a guide at best. The situation regarding the use of information databases in higher

pedagogical education institutions is studied, and the work carried out is summarized. A survey and interviews conducted with the management structure of higher pedagogical education institutions reveal deficiencies in the direct management of education. At the same time, a second survey conducted with students analyzes the situation of the educational institution. Another interesting subject related to the problem is the survey conducted with students' parents, which is useful for the investigation of the study. Survey questionnaires directly help identify deficiencies in the management of education and are significant for studying the current situation.

Table 1.3.1

Results of the II questionnaire survey on the state of the educational institution taken from students of Azerbaijan State Pedagogical University

Line	a)	b)	c)	d)	Notes
1.	40%	38%	12%	10%	Based on the score and tuition Fees
2.	15%	35%	45%	5%	Position and Financial aspects
3.	35%	15%	40%	10%	Not satisfied
4.	50%	20%	25%	5%	Infrastructure
5.	32%	28%	38%	2%	To be provided with a job

At the same time, the survey received from parents, who are another subject of education, is also useful for the study of the state of the educational institution, multi-structured research. II Survey results.

Table1.3.2

Results of the III questionnaire survey on the state of the educational institution taken from the parents of students of the Azerbaijan State Pedagogical University

Lines	a)	b)	c)	d)	Notes
1.	22%	36%	32%	10%	Has been and shared
2.	27%	35%	33%	5%	Good Personnel, Position
3.	25%	35%	40%		Professional stuff, finding job
4.	43%	40%	16%	1%	National and Modern

The comprehensive identification of problems is facilitated by the insights obtained from surveys and interviews conducted directly with the subjects and objects of education. Based on the conducted research, an analysis of the state of management regarding the issues facing higher pedagogical educational institutions has been concluded. It has been determined that the dynamic and developmental nature of contemporary times necessitates that higher pedagogical educational institutions respond more swiftly to the challenges of the era. Primarily, this intensifies the requirements for the management system in terms of efficiency and effectiveness, as well as ensuring that operational standards align with quality benchmarks. Additionally, the consistent implementation of reforms necessitates the enhancement of the autonomy of higher pedagogical educational institutions, which in turn requires the establishment of a robust material and technical resource base that facilitates the use of information databases.

Chapter II, titled **"The Strategy for Utilizing Information Databases in the Management of Higher Pedagogical Educational Institutions,"** comprises four paragraphs. The first paragraph of Chapter II, titled **"*Fundamental Principles of Management in Higher Pedagogical Educational Institutions*,"** examines educational philosophy in light of the characteristics of the third millennium. It concludes that the following attributes should be considered to ensure the effective management of higher pedagogical educational institutions through the use of information databases:

1. The dependency of social-functional communication on information within the management system, specifically between the governing and governed environments.

2. The reliance of innovative content and methods on information in establishing educational content standards within the educational institution.

3. The preparedness of educational leaders for pedagogical management activities, particularly within a democratic society. This involves ensuring the rule of law, granting the necessary autonomy to educational institutions, and enacting laws that reflect dynamic and situational contexts.

The scientific management of higher education institutions requires adherence to the principles of public administration:

1) Principle of statehood.
2) Principle of scientificity.
3) Principle of democratization.
4) Principle of humanization.
5) Principle of purposefulness.
6) Principle of competence.
7) Principle of optimization.
8) Principle of initiative and activity.
9) Principle of objectivity in the evaluation of the performance of higher education institution staff.
10) Principle of combining collegiality with personal responsibility.
11) Principle of autonomy and self-management.

The second paragraph of Chapter II is titled **"T*he Role of Information Databases in the Management of Higher Pedagogical Educational Institutions*".**

Figure 2.2.1
Description of the infrastructure of electronic science
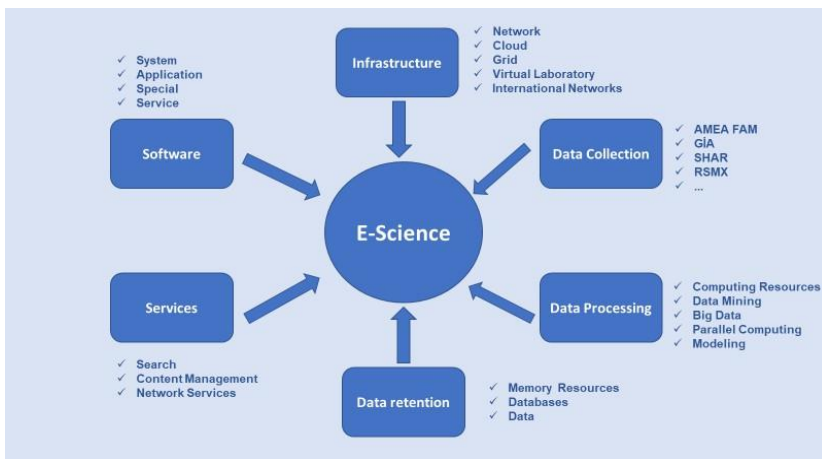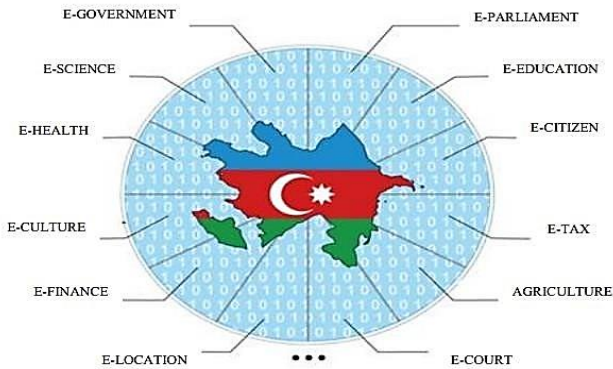
Figure 2.2.2

Description of national e-science

In order to regulate the growing information landscape, ensure its security, and utilize it as a foundational resource for scientific inquiry, this study analyzes various aspects of Informatics—namely, Science metrics, Webometrics, Cybermetrics, and Bibliometrics—through the lens of information management within the realms of science, education, and higher educational institutions (HEIs).

The national "e-science" initiative is predicated on addressing fundamental challenges, such as the reconstruction of the dynamic scientific environment to align with the requirements of Information Communication Technology (ICT), as well as its effective implementation and application via contemporary technological advancements. To achieve this objective, the following strategies are proposed:

The question *"What is a database?"* has been addressed, and it has been noted in the scientific literature that the concept of a "database" is defined in various ways. It is emphasized that a database is a structured collection of information (such as articles, calculations, regulations, court decisions, and other similar materials) that can be searched and processed using computer systems.

The creation of databases and their utilization in the methodological support of HEI curricula are illustrated through the following strategies:

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1. Compilation of databases pertaining to science, education, and other fields;

2. Integration of database materials produced by student-led scientific and organizational efforts into the teaching process;

3. Development of educational databases by HEI faculty members, along with the formulation of guidelines and assignments for student engagement with these resources in the educational process;

4. Involvement of students in the creation and management of educational databases.

Automated management system of educational institutions, control of management processes of higher educational institutions. This is ultimately calculated to improve the quality of education in the university. The quality of education includes the implementation of the educational process and the evaluation of specialist training on the results.

This achievement of the research is that the databases of the educational institution can be systematically used with the satisfaction of the interested parties. This, in turn, will stimulate the discovery of new ways in management. The establishment of the Board of Trustees accelerates public administration and makes it possible to achieve the acquisition of various financial resources. At the same time, it accelerates the introduction of new standards that ensure the transformation of the information-education-research-innovation center and the training of skilled specialists at the university.

The third section of Chapter 2, titled "***Possibilities and Ways of Utilizing Databases in the Management of Higher Educational Institutions,***" asserts that the information environment of any organization adheres to principles of awareness and order. Each system endeavors to acquire the most reliable and comprehensive information regarding its internal and external environments to ensure continual operation and self-preservation. Management information is intrinsically linked to management functions, components of management activities, and the subjects of the management system. Information underpins management activities and drives the operational outcomes of HEIs, as

well as planning and forecasting efforts. Through analytical reasoning, the following actions are derived:

1. Development of strategic models and future action plans for the team;

2. Execution of organizational and executive functions within management activities;

3. Continuous facilitation of information exchange and processing;

4. Collection of necessary, specific, and objective information during intra-university assessments, leading to the implementation of regulatory and corrective measures based on the findings.

Essentially, management encompasses three main phases as an information process:

• The collection of data regarding the status of the managed object and its external environment;

• Data processing and analysis;

• Issuing managerial directives (decisions).

Additionally, the discussion highlights the characteristics and functions of information, which serves as the primary tool of management, as well as its role within the structure of a database.

As a conclusion, it is determined that managing education through an information-based database enables effective and transparent monitoring while facilitating the identification of future prospects. This approach also supports the detection of high-risk operational plans, thereby contributing to more informed and strategic decision-making.

In the fourth paragraph of the second chapter titled *"Development Directions and Prospects for the Management of Higher Pedagogical Educational Institutions with Information,"* the existing management modules within educational systems, pathways for innovative management in the higher education sector, and widely applied models such as management by the governing board, entrepreneurial management, and collegial management are discussed. It is noted that the higher educational institution has to maintain its existence dynamically and according to the situation.

It is determined from the research that the education system is formed according to the socio-economic structure of each country, it

is shown that accepting innovations and managing with information is primarily related to the independence and freedom given to it, and specific management is closer to the unique initiative management, as it was said in the survey, more to the management model of our country shown to be appropriate. It is emphasized that a higher pedagogical education institution must preserve its existence in a dynamic and situationally appropriate manner. The research determines that, depending on the socio-economic structure of each country, the education system is formed, and the ability to accept innovations and manage through information is primarily linked to the level of independence and freedom granted to the institution. It is shown that specific management and unique entrepreneurial management are more aligned with our country's management model, as indicated in the survey. The study justifies, through the participation of representatives from the advisory council and other interested parties, the importance of systematic management of educational institutions, the establishment of a new management model, the creation of various financial resources, and the potential for these institutions to also become producers of new resources, based on global experience. Considering the commercial orientation of specific management knowledge and with the initiative and encouragement of interested parties, the transformation of the university into an education-research-innovation center is seen as a way to accelerate the application of new standards that ensure the training of competitive specialists.

This paragraph analyzes the directions and prospects for the management of higher pedagogical educational institutions through information. Based on the identified directions and prospects, a new model is proposed and substantiate.

Table 2.4.1
Management structure

Academic Stuff	
Board of Trustees	
Supervision: instution and public opinion	

Considering the commercial orientation of specialized management knowledge and the initiatives and incentives of stakeholders, it is concluded that transforming universities into education-research-innovation centers and accelerating the implementation of new standards for training competitive professionals can be effectively achieved.

The essence of information-based management is elucidated, emphasizing its potential to ensure inclusive participation in governance, thereby elevating public administration and fostering civic solidarity on a global scale.

In conclusion, it is essential to note that in the future, building an information-based education management system will require reliance on a database created in alignment with transparency and democratic principles. This database would serve as a foundation for developing operational systems guided by strategic actions derived from its conceptual framework. Furthermore, it is recommended to prioritize the adoption of new forms and methods aligned with the demands of the digital era at all stages – from innovative management of education to the organization of dynamic and situational learning.

The research has enabled the following conclusions and recommendations:

The research demonstrates that, while there are fundamental similarities in the management of education, the governance of higher pedagogical education institutions is a unique and specific form of pedagogical management. The teacher, as the future custodian of knowledge, is responsible for completing the sequence of training, education, and development, while also fulfilling the scientific and creative stages. The adaptation of the individual to society and their transformation into a personality primarily occurs within educational institutions through the consistent implementation of pedagogical processes. The management of higher pedagogical education institutions is pedagogical in nature and, in accordance with the demands of the information society, necessitates the investigation of pedagogical issues and the search for new forms and methods.

The research made it possible to reach the following **conclusions.**

1. While there are generally similar aspects in the management of education, the management of higher pedagogical education institutions is distinctly specific, characterized as pedagogical management. It is the responsibility of educators, as the custodians of the future, to ensure the continuity of training, upbringing, and development, alongside completing scientific and creative stages. The adaptation of individuals to society and their personal development primarily occur through consistent educational processes executed within educational institutions. The management of higher pedagogical education institutions necessitates the investigation of pedagogical challenges and the pursuit of new methods and forms, in alignment with the demands of the information society.

2. Considering the evolving demands of the digital age, the ability to adapt to rapidly changing trends has emerged as a critical issue, intersecting social, pedagogical, and psychological domains. Addressing this multifaceted challenge places significant responsibilities on educational institutions. The realization of this mission depends on the establishment of an innovative management framework and the effective implementation of corresponding mechanisms.

3. Managing higher pedagogical education institutions effectively requires the seamless and timely exchange of information, the swift identification and resolution of issues through data analysis, and the generation of innovative proposals. These objectives can be achieved using information and communication technologies, which play a pivotal role in advancing education's innovative development. To meet the evolving needs of the information society, ongoing scientific inquiry in this field remains essential. Although management literature is abundant, there is a noticeable gap in research focused specifically on the education sector. However, insights from international studies on educational management, particularly in countries with diverse social, economic, and cultural contexts, provide valuable theoretical perspectives that can inform comparative analysis and practical applications.

4. The findings of this research suggest that, by proactively anticipating the evolving trends and challenges of the era, and by implementing continuous reforms, it is possible to achieve a

modernized management structure in higher pedagogical education institutions. Furthermore, granting autonomy to these institutions plays a crucial role in facilitating this transformation and ensuring effective, adaptive governance.

5. The research concludes that identifying and implementing innovative principles in educational management is essential for fostering new creative initiatives and ensuring the dynamic advancement of development pathways. Applying these principles in management is critical for achieving meaningful results in education and organizing pedagogical activities effectively. Studies indicate that managing higher pedagogical education institutions through scientific principles necessitates adherence to specific management guidelines. The research identified the following principles: *the principle of statehood, the principle of scientific rigor, the principle of democratization, the principle of humanization, the principle of goal-orientation, the principle of competence, the principle of optimization, the principle of initiative and proactivity, the principle of objectivity in assessing staff performance, the principle of balancing collegiality with individual responsibility, and the principle of autonomy and self-management.*

6. Since the 20th century, the advent of digital revolutions and the growing reliance on information technologies have introduced significant opportunities, offering an optimal approach to the management of higher pedagogical education institutions. As noted by educational leaders, these advancements represent a form of effective management. Public governance, in this context, refers to the democratization of management processes, made possible by the rapid, targeted information accessible through databases. The innovative management of educational institutions, which integrates pedagogical, scientific, and creative elements, not only enhances the social and psychological methodologies within pedagogical practices but also stimulates the generation of new, forward-thinking ideas.

7. A database is a structured collection of data that can be searched and processed through a computer. The purpose of creating any database is to compile an information array that performs query functions. A database is designed as accessible data within a specific

time context and is limited by a time frame. Since the information array in any field of knowledge is constantly expanding, it is essential for it to be updated regularly. A specific type of database is a knowledge base. This type not only contains factual data but also includes information systems that allow for automatic inference from newly entered facts, incorporating inference rules for decision-making (managed information repositories)

8. Each department within a higher education institution is tasked with unique responsibilities, requiring the design and implementation of tailored programmatic solutions. It is crucial to ensure seamless interaction among the various subsystems. The resolution of this challenge lies in the development of a unified automated information system for the institution. With its modular architecture, such a system guarantees centralized data storage, fosters efficient communication and data exchange between subsystems, and offers the requisite flexibility for adaptation. The adoption of an integrated system of this nature can substantially improve the overall effectiveness and efficiency of institutional management.

9. It is recommended to establish automated workstations for staff members of higher education institutions, tailored to their specific responsibilities. These workstations act as efficient tools, enabling professionals to carry out their specialized tasks effectively. The design of these automated work environments should be grounded in the customization of application software to meet the unique needs of the institution, alongside ongoing modernization to address evolving demands, and the seamless integration of specialized functional programs.

10. The automated workstations should be structured to align with the management hierarchy of the higher education institution. At the senior management level, automated workstations for the rector and vice-rector should serve as key components of the leadership framework. These workstations should be equipped with the following capabilities:

- The ability to generate report data in the required format and within the specified time frame, utilizing the corporate database in an automated mode, in response to user inquiries.

- Provision of dialogue service tools for the rector's office, enhancing the speed and efficiency with which necessary information is retrieved and tailored to the institution's current needs.

- The facilitation of seamless interaction with other data sources, both internal to the institution and in the broader external environment, ensuring comprehensive and integrated data management.

11. The findings from this research have the potential to significantly impact the quality of management within higher pedagogical education institutions in several key ways: upper management level. The automated workplaces for senior management should provide the following functions:

• By utilizing the institutional database and transparently sharing the results of all internal processes with the public, regulatory authorities, and the media, the management system can stimulate institutional growth, shift administrative governance towards a more public-oriented model, and ultimately enhance civic unity.

• This approach allows for the effective harnessing of public opinion. Moreover, by ensuring that long-term, short-term, and prospective plans are dynamic and contextually relevant, it facilitates the analysis of potential risks and outcomes, paving the way for more informed and effective decision-making.

• Additionally, such a management model strengthens democratic governance by promoting accountability, enhancing responsibility, and ensuring transparency across all levels of the institution.

• The scope of distance education, encompassing both synchronous and asynchronous learning modalities, will be expanded. This flexibility, along with the development of educational forms, methods, and training program designs, ensures continuous progress, even under challenging or extreme conditions, free from the constraints of time and space.

• Finally, through innovative management practices, the appeal of domestic education will be heightened, helping to prevent brain drain. This will also contribute positively to increasing the number of international students in our educational institutions, further enriching the academic environment.

Recommendations:

1. The integration of artificial intelligence elements in the development of databases and the establishment of an automated management system for higher education institutions warrants further exploration. Such advancements have the potential to significantly enhance the institution's database, thereby fostering more efficient and streamlined management processes.

2. It is recommended to establish automated workstations for staff members within the framework of an automated information system for higher education institutions, with each workstation tailored to their specific responsibilities. These workstations act as powerful tools, enabling professionals to efficiently carry out their specialized tasks. The design and organization of these workstations should be grounded in the adaptation of application software to the unique needs of the institution, ensuring it is continuously modernized to meet evolving demands, while integrating specialized functional programs to optimize performance.

3. Automated information systems in higher education institutions should primarily focus on supporting educational and scientific activities. The emphasis should be placed on managing and utilizing information resources derived from the following sources:

- legislation, decisions, directives, and decrees issued by ministries and regulatory bodies;

- Orders, instructions, reference materials, and other relevant documents pertaining to the educational institution.

The main results of the dissertation are reflected in the following works:

1. Ways to Develop Intellectual Potential in Azerbaijan // – Baku: News of the Pedagogical University, Humanitarian, social and pedagogical-psychological sciences series, – 2011, No. 5. – p.207-209.

2. Information Society and Education // – Baku: News of the Pedagogical University, Humanitarian, social and pedagogical-psychological sciences series, – 2018, v.66, – p.352-357.

3. Problems of Teaching and Managing the Subject of Economic and Social Geography of the World // – Baku: ARTI, Scientific works, 2018. No. 1(85), p.46-48.

4. Information society and education // Materials of the XXII Republican scientific conference of doctoral students and young researchers, – Baku, Publishing House of the Azerbaijan State Pedagogical University, – 2019, Volume II, – p.390-393.

5. Education, Innovation, and Geography // – Poltava, Poltava Regional Pedagogical Institute, – 2019. – p.6-7.

6. Management of Higher Pedagogical Education Institutions as a Pedagogical Problem // – Baku: ARTI, Scientific works, – 2019. №2(86), s.63-66.

7. Education, Teacher, and Student of the 21st Century // – Moscow, Education and science in Russia and abroad, – 2019. №4(52), – p.429-434.

8. Education in the Digital World // Materials of the International Conference on Digital Economy, Modern Challenges and Real Opportunities, – Baku: UNEC, – 2020, – p.257-259.

9. Perspectives of Managing Education in the Digital World // – Baku: BQU, Scientific works. – 2020, №4, – p.250-254.

10. The Principle of Innovation in the Management of Higher Pedagogical Education Institutions // – Baku: ARTI, Scientific works, – 2020. No. 4(87), – p.59-62.

11. Education During the COVID-19 Pandemic // International Paris Conference on social sciences, – Paris: France, 07-08 February, – 2021, – p.752-756.

12. Paths of Education Development in the Digital World // Baltic humanitarian journal. – 2021, Vol. 10. No. 3(36), – p.57-59.

13. Training of Pedagogical Personnel in the Digital World // Materials of the Republican scientific conference "Training of pedagogical staff: Modern approaches and trends" of the Azerbaijan State University of Education, – Baku, – 2021, – p.55-59.

14. The Impact of Digitization on Science and Education // 7th International New York Conference on Evolving Trends in

Interdisciplinary research And Practices, – New York: October 1-3, – 2022, – p.341-342.

15. Rating Evaluation in the Digital World // – Baku: News of the Pedagogical University, Humanitarian, social and pedagogical-psychological sciences series, – 2023. No. 2(71), – p.196-203

16. Cybersecurity in Science and Education // – Baku: ARTI, Scientific works, – 2023. No. 2(90), – p.45-47.

17. The Teacher's Welfare in Education // – Baku: ARTI, Scientific works, – 2024. No. 1(91), – p.66-70.

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