Leyla Akif Yadigarova
doctoral student in the program of doctor of philosophy of the
Institute of Education of the Republic of Azerbaijan
https://orcid.org/0000-0001-8445-2976
https://doi.org/10.69682/arti.2025.92(3).84-90
E-mail: leyla.yadigarova.dok@arti.edu.az

EFFECTIVE MANAGEMENT OF RESEARCH ACTIVITIES IN HIGHER EDUCATION INSTITUTIONS

Leyla Akif qızı Yadigarova
Azərbaycan Respublikasının Təhsil İnstitutunun
fəlsəfə doktoru proqramı üzrə doktorant

ALİ TƏHSİL MÜƏSSİSƏLƏRİNDƏ ELMİ TƏDQİQAT FƏALİYYƏTİNİN SƏMƏRƏLİ İDARƏEDİLMƏSİ

Лейла Акиф гызы Ядигярова
докторант по программе доктора философии
Института Образования Азербайджанской Республики

ЭФФЕКТИВНОЕ УПРАВЛЕНИЕ НАУЧНО-ИССЛЕДОВАТЕЛЬСКОЙ ДЕЯТЕЛЬНОСТЬЮ В ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЯХ

Abstract. In an increasingly knowledge-driven global landscape, research in higher education institutions (HEIs) plays a vital role not only in fostering academic excellence but also in supporting national innovation systems, workforce development, and evidence-informed policymaking. This article explores the governance and management of research activities in HEIs, emphasizing the need for contextually adaptive frameworks amid growing global competition and complexity. Drawing on comparative analysis across post-Soviet and international contexts, the study examines how diverse institutional, cultural, and political environments influence research governance models. The input-process-output (IPO) model is employed as an analytical framework to categorize elements of research governance into three key stages: institutional inputs (such as funding and infrastructure), managerial processes (such as quality assurance and strategic coordination), and research outputs (including impact, publications, and collaboration). Based on literature review, policy documents, and selected case comparisons, the study proposes a generalized, adaptable framework for enhancing research productivity and governance efficiency in universities. Findings suggest that successful research governance hinges on institutional autonomy, leadership, a strong research culture, and mechanisms for stakeholder coordination and quality monitoring. The study also highlights the importance of integrating interdisciplinary and institutional research, fostering innovation ecosystems, and ensuring alignment with broader educational and socio-economic goals. By offering insights into common challenges and best practices, this article contributes to ongoing efforts in building more effective and resilient research management systems within diverse higher education systems.

Keywords: Higher education institutions, research governance, research productivity, policy-making, university research framework

Xülasə. Qlobal dünyanın biliyə əsaslanan kontekstində ali təhsil müəssisələrində (ATM-lərdə) elmi-tədqiqat fəaliyyəti yalnız akademik mükəmməlliyin inkişaf etdirilməsi baxımından deyil, həm də milli innovasiya sistemlərinin dəstəklənməsi, əmək bazarının inkişafı və elmi araşdırmalara əsaslanan siyasi sənədlərinin formalaşdırılması baxımından mühüm rol oynayır. Bu məqalədə ATM-lərdə elmi-tədqiqat fəaliyyətinin idarə olunması və onunla bağlı idarəetmə mexanizmləri araşdırılır, artan qlobal rəqabət və mürəkkəblik fonunda kontekstə uyğunlaşan idarəetmə çərçivələrinin zəruriliyi vurğulanır. Postsovet və beynəlxalq kontekstlər üzrə aparılan müqayisəli təhlilə əsaslanan bu tədqiqat müxtəlif institusional, mədəni və siyasi mühitlərin

elmi idarəetmə modellərinə təsirini öyrənir. Elmi fəaliyyətin idarəetmə elementlərini üç əsas mərhələyə ayırmaq üçün təhlil çərçivəsi kimi giriş-proses-nəticə (input-process-output, IPO) modeli tətbiq olunur: institusional dəyərlər (maliyyələşmə, infrastruktur və s.), idarəetmə prosesləri (keyfiyyətin təminatı, strateji koordinasiya) və nəticələr (elmi təsir, nəşrlər, əməkdaşlıq). Ədəbiyyat icmalı, siyasət sənədləri və seçilmiş nümunələrin müqayisəsinə əsaslanaraq bu tədqiqat universitetlərdə elmi məhsuldarlığı və idarəetmənin səmərəliliyini artırmaq üçün ümumiləşdirilmiş və uyğunlaşdırıla bilən çərçivə təklif edir. Nəticələr göstərir ki, uğurlu elmi idarəetmə institutların muxtariyyəti, liderlik, güclü tədqiqat mədəniyyəti, maraqlı tərəflərin koordinasiyası və keyfiyyətə nəzarət mexanizmlərindən asılıdır. Məqalədə, həmçinin, fənlərarası və institusional tədqiqatların inteqrasiyası, innovasiya ekosistemlərinin təşviqi və təhsil-tədqiqat əlaqəsinin əhəmiyyəti vurğulanır. Ümumi problemlər və uğurlu təcrübələrə dair təqdim edilən baxışlar vasitəsilə bu məqalə ali təhsil sistemlərində daha effektiv və dayanıqlı tədqiqat idarəçiliyi sistemlərinin qurulmasına töhfə verir.

Açar sözlər: Ali təhsil müəssisələri, elmi fəaliyyətin idarə edilməsi, tədqiqat məhsuldarlığı, siyasi sənədlər, universitetin elmi tədqiqat çərçivəsi

Аннотация. В современном мире, где знание становится главным ресурсом, научно-исследовательская деятельность в высших учебных заведениях (ВУЗах) играет важную роль не только в развитии академического превосходства, но и в поддержке национальных инновационных систем, развитии рынка труда и формировании политики, основанной на научных исследованиях. В данной статье рассматриваются особенности управления научной деятельностью в ВУЗах, подчёркивается необходимость создания адаптивных управленческих моделей в условиях усиливающейся глобальной конкуренции и усложняющейся образовательной среды. Основываясь на сравнительном анализе постсоветских и международных контекстов, исследование анализирует влияние различных институциональных, культурных и политических факторов на модели управления научными исследованиями. В качестве аналитической базы используется модель «вход–процесс–выход» (input-process-output, IPO), которая позволяет структурировать элементы управления научной деятельностью на три ключевых этапа: институциональные ресурсы (финансирование, инфраструктура и др.), управленческие процессы (обеспечение качества, стратегическая координация) и результаты деятельности (научное влияние, публикации, сотрудничество). На основе обзора литературы, анализа политических документов и сопоставления отдельных примеров в исследовании предлагается обобщённая и адаптируемая модель для повышения научной продуктивности и эффективности управления в университетах. Результаты показывают, что успешное управление научными исследованиями базируется на институциональной автономии, эффективном лидерстве, развитой культуре исследований, координации заинтересованных сторон и действенных механизмах обеспечения качества. В статье также подчёркивается важность интеграции междисциплинарных и институциональных исследований, развития инновационных экосистем и укрепления связи между образованием и наукой. Анализируя общие проблемы и лучшие практики, данная работа вносит вклад в построение более эффективных и устойчивых систем управления научной деятельностью в сфере высшего образования.

Ключевые слова: высшие учебные заведения, управление научными исследованиями, продуктивность исследований, разработка научной политики, научная стратегия университета

Introduction

In modern globalized and competitive world, knowledge is widely recognized as a fundamental driver of economic prosperity, social development, and national progress. Within the context of higher education institutions (HEIs), research serves as a centre of academic excellence, contributing to intellectual advancement and innovation. It not only supports the academic environment but also boosts the institution's ability to attract and retain high-quality faculty members and students. By engaging in research, universities develop their global reputation and foster a culture of continuous learning and innovation. Currently, the role of research extends beyond academic contributions; it also plays an important role in developing curricula that integrate the latest innovations in various disciplines. This ensures that students remain knowledgeable about new trends, methodologies, and discoveries, equipping them with relevant knowledge and skills for future careers. Research-driven education also develops critical thinking, problem-solving skills, local and interdisciplinary collaboration, enabling graduates to solve complex real-world problems. Beyond curriculum development, research is also essential for building and sustaining national, local, and international partnerships. Universities participating in collaborative research initiatives support knowledge exchange. Specifically, establishing

relationships with other local and international HEIs, industry partners and government structures enables institutions to contribute to policy-making, innovation, and economic growth. These collaborations create an environment for innovative knowledge ecosystem where ideas are shared, tested, and improved, leading to significant transformations in various fields of life.

Interdisciplinary research, in particular, has gained recognition for its ability to address complex global challenges through holistic and integrative approaches. Interdisciplinary initiatives encourage the development of diverse perspectives, leading to more innovative ideas and solutions. Universities that engage in interdisciplinary research become established as leaders in addressing critical global problems.

Another important aspect of higher education research is institutional research, which focuses on data collection and analysis to support university management, planning, and decision-making. As Altbach (Altbach, 2014, pp.1314) states, institutional research plays a key role in assessing institutional effectiveness, optimizing resource allocation, and enhancing academic and administrative strategies. However, despite its importance, institutional research is not always given the attention it deserves, limiting its potential to inform evidence-based policies and improvements within HEIs. Malcolm Tight highlights the complexity of higher education research, noting that it is "dispersed within and beyond the academy" (Tight, 2012, pp.93). This complexity highlights the necessity for effective research governance to ensure that the benefits of research activities are fully realized. Without efficient research management, universities may struggle to improve their research output, find external funding, or maintain quality standards in research practices.

The aim of this study is to explore research management and governance from various perspectives by examining different contexts. Given that universities operate within diverse political, economic, and cultural environments, understanding how research activities are structured in various settings can provide valuable insights into best practices and common challenges. By analyzing different governance models, policy frameworks, and administrative structures, this study seeks to identify key principles that contribute to effective

research management. Based on these findings, the study aims to propose a generalized framework for developing research governance structures that can be adapted to different institutional needs. This framework will offer guidelines for universities to enhance research productivity and foster an environment that supports innovation and collaboration.

Literature review

It should be noted that efficient management of research quality in higher education institutions has become an increasingly significant focus, especially as universities are functioning in an era of increasing global competition. With the increasing focus on the importance of innovative management of research endeavours there has been a new requirement to structure the governance models appropriately and align the necessary policy documents as well as management mechanisms. It will be impossible to suggest a one-size-fits-all framework for research management to many institutions. As Douglas emphasizes, universities operate within distinct national and institutional contexts, shaped by unique cultural, political, and economic factors (Douglas, 2016). These differences influence research priorities, funding mechanisms, and governance models, making it impractical to apply a standardized approach across diverse higher education systems. Nevertheless, comparative analyses of research management practices across different countries can provide valuable lessons. By examining various governance structures, funding strategies, and policy frameworks, universities can adopt best practices suited to their specific institutional needs. Such an approach fosters a more adaptive and responsive research management system, enabling universities to enhance their research impact while remaining aligned with broader academic and societal goals. Understanding these diverse models can also inform policymakers and institutional leaders in designing more effective governance strategies that balance regulatory oversight with academic freedom and innovation.

Scholars have explored the connection between administrative strategies and research productivity, highlighting the significant impact of governance structures on institutional research performance (Fiona and Geare, 2013). Researchers have identified several key factors that contribute to higher research productivity in universi-

ties. They found that successful departments often have greater autonomy and a strong research culture (Fiona and Geare, 2013). Similarly, Kozhakhmet et al. emphasized that training and development programs help improve research performance (Kozhakhmet et al, 2020). However, balancing research with teaching responsibilities remains a challenge, as heavier teaching loads can negatively affect research productivity (Kifor, et al, 2023).

Studies comparing research management strategies across different countries reveal some common trends. Schubert highlighted that strong leadership and flexibility are crucial for researchers in German universities (Schubert, 2009). Other scholars examined how factors like team size and composition impact research output. Goodall found that universities led by well-cited scholar-leaders tend to perform better in research (Goodall, 2009). Additionally, Gornitzka pointed out that launching strategic research programs is an effective way to boost research performance (Gornitzka, 2013).

The increasing demand for managing the widening expenses of research in many areas, as well as the desire to be outstanding in a competitive environment for research funding make it imperative for universities to implement appropriate approaches for effective management of research activities (Marlin, 2009). The trend towards increased research in universities, combined with a stronger focus on obtaining funding from other sources, is capable of reshaping how universities deliver administrative support to researchers.

The management of research activities in universities involves overseeing and coordinating the various processes and resources associated with the research activities that are conducted within the higher education institution. It encompasses a range of activities designed to ensure the effective planning, implementation, and dissemination of research results. It is important to emphasize research management as a decision-making process embedded within specific organizational and cognitive frameworks. The domain of research management represents an ongoing scholarly activity that systematically considers the intricate and dynamic institutional research environment, thus facilitating effective and fruitful research outcomes. This environment is characterized by the simultaneous existence of competitive and collaborative dynamics among entities with distinct, at times conflicting, objectives and varying access to organizational, governmental, and asset-based resources. The imperative for research management arises from a convergence of three interconnected factors. First, many research organisations engage in competitive activities to obtain resources from governmental and private sector. Secondly, the solution of complex scientific problems requires collaborative activities without disciplinary limitations. Therefore, research management plays a central role in leading universities toward impactful research practices, fostering innovation, collaboration, and contributing to the development of knowledge and social well-being.

Within the modern university policy framework, the administration and leadership of research within university settings have emerged as priority considerations. Over the last decades, research has transformed from an individual activity to an institutional endeavour, featured by its project-oriented nature, external funding opportunities and continuous monitoring through assessments at the national, institutional, and individual levels.

The necessity to develop a system for managing the research activities of a HEI has also emerged as a response to "the need to manage growth in the number and complexity of research awards over the last fifty years and is an activity and profession that continues to mature" (Langley, 2012, pp. 71).

The transformative effect of the increase of the research endeavours has extended its impact among many higher education institutions across Europe and globally. In the context of South Eastern Europe, where research has traditionally been concentrated within academies of sciences, there exists a distinctive institutional history. Nevertheless, several countries in the region have undergone university reforms that have maintained the prominence of university-based research. While the principles underpinning reflections on research management are universally applicable without geographical distinctions, it is evident that dimensions of these reflections may vary contingent upon the historical background of the respective university systems. In the Russian Federation it is thought that the management of the research activities of universities should involve the following

aspects: identification of the indicators of research activities, organization of research activities, improvement of the staff / student motivation to engage in research activities, monitoring of the implementation, coordination of R&D activities by responsible persons at all stages of its implementation (Ketoeva, et al, 2021).

The issues that the research managers have to encounter in practice are numerous including research organisation, human resources, resource management, development of the research culture, research vision, research performance assessment, mechanisms for developing research capacity, performance appraisal, research coordination, internationalization of research, research impact, and others (Bahtilla and Huang, 2024; Hazelkorn, 2005; Nguyen, 2016; Tikhonova and Raitskaya, 2024).

Methodology

This study employs a comparative approach to analyse research governance models in higher education institutions across different national contexts, specifically the countries in post-Soviet area. Data is collected from academic literature, policy documents, university reports, and global university rankings to examine existing research management frameworks.

The study follows an input-process-output framework, categorizing research governance elements into three key stages:

• Inputs: Institutional capacity, funding, faculty development, and infrastructure.

• Processes: Research quality assurance, strategic management, and administrative coordination.

• Outputs: Research impact, publications, and knowledge transfer.

A comparative analysis is conducted to identify best practices, common challenges, and adaptable strategies for structuring research activities in universities. The findings are synthesized to propose a generalized framework that universities can adopt to enhance research productivity and governance efficiency.

Discussion

Based on the analysis of the existing academic literature as well as experiences and best practices of neighbouring countries the following framework can be suggested for structuring the research endeavours within HEIs. The proposed framework structured around 3 stages (inputs, processes and outputs) aligns with the study's aim of examining research management from various perspectives and developing a generalized framework for structuring research activities in universities. By analysing various research governance models across different contexts, the study seeks to identify core elements that contribute to effective research management. The input-process-output structure (Table1) presents a systematic approach to understanding how research capacity is built, managed, and evaluated across institutions with varying structures.

Component	Description	Key elements
Input	Key foundational elements required for research productivity, influenced by governance and policy frameworks.	• Institutional capacity building • Faculty development • Funding and infrastructure • Research management • Knowledge transfer • Cooperation
Process	Mechanisms ensuring research quality through structured monitoring and strategic management.	• Quality assurance mechanisms • Strategic research management • Research integrity processes • Peer review • Evaluation systems
Output	Research outcomes and their broader impact, ensuring effective dissemination and application of results.	• Publication and dissemination of research • Social and economic impact • Research commercialization • Knowledge transfer outcomes

Table 1. A framework for research management and governance

The Inputs section represents critical elements necessary for research productivity, including institutional capacity building, faculty development, funding and infrastructure, research management structure, and knowledge transfer strategies. These elements are influenced by governance and policy frameworks. The Processes section highlights the mechanisms through which research quality is ensured, highlighting monitoring and strategic management. Developing appropriate and efficient quality assurance mechanisms and strategies is essential at this stage. The Outputs section focuses on research outcomes and their broader impact. This approach to planning and implementation of the research activities within universities can help to ensure all-encompassing stability to the conduct of research endeavours. Effective governance structures for efficient impact ensure that research results are appropriately disseminated, utilized, and contribute to social and economic benefits. The framework provides adaptable strategies for universities to maximize the benefits of their research activities.

Conclusion

In an era where knowledge constitutes the key part of economic situation, social development, and geopolitical influence, universities are increasingly expected to enhance their research capacity in a strategic manner. The growing center of research in national and global agendas has shifted expectations for higher education institutions (HEIs), demanding not only excellence in teaching but also contributions to innovation, policy development, and societal development.

In this case, the effective management of research becomes a critical institutional function. However, in many HEIs – particularly in developing or transitional systems—research management remains an under-prioritized issue, often characterized by inefficient coordination, inappropriate funding mechanisms, lack of performance metrics, and insufficient alignment between institutional goals and national research priorities. These weaknesses can constrain the ability of universities to respond to complex challenges, attract external funding, and engage in international academic networks.

To overcome these limitations and achieve transformative potential of research, universities should adopt a systematic model of research governance. The input–process–output (IPO) frame-work offers a practical approach to managing research activity in an effective manner. This model emphasizes three core stages:

• Input refers to the strategic allocation of resources, including human capital, infrastructure, funding, and institutional support structures;

• Process focuses on the organization and execution of research, encompassing internal coordination, quality assurance, ethical oversight, and interdisciplinary collaboration;

• Output captures the measurable outcomes and impacts of research, including publications, policy influence, technological innovation, and societal contributions.

By structuring research governance in a broad administrative and strategic planning functions of the university, institutions can develop a culture of research excellence. This integration not only improves institutional research efficiency but also ensures that research efforts are mission-driven, impactful, and aligned with national development strategies and global scientific agendas. A well-organized research ecosystem enables institutions to be more adaptable to external pressures, such as changing funding approaches and policy reforms. Strengthening research management is not only about enhancing institutional performance – it is also about positioning universities as key actors in the production of knowledge and the promotion of economic growth.

Scientific novelty. The scientific novelty of this article lies in the development of an adaptable **input–process–output (IPO) framework** for the effective management of research activities in universities. Unlike existing studies that focus either on policy-level recommendations or üseparated institutional practices, this study offers an approach that combines structural, managerial, and contextual issues that affect research productivity. The study introduces a new conceptual framework that connects macro-level policy analysis with micro-level institutional strategies. This framework helps to evaluate research capacity through several dimensions, offers a structure of research governance in transitional and developing education systems.

Practical significance. This article holds practical significance for university administrators, policy-makers, and research managers trying to enhance institutional research capacity. The IPO-based framework provides a **solution for evaluating current problems, planning interventions, and monitoring progress**. By identifying key inputs (e.g., funding, infrastructure, governance), processes (e.g., quality assurance, strategic planning), and outputs (e.g., scientific productivity,

societal impact), the model helps to achieve evidence-based decision-making. In countries where research management is fragmented, particularly in post-Soviet context, the application of this framework can lead to more efficient, and impactful research practices.

Relevance. The topic of this article is relevant in the current global context, where higher education institutions are under increasing pressure to demonstrate the value and impact of their research. In many countries within post-Soviet region, there is a need to reform and modernize research structures to ensure alignment with international standards. The study contributes to the discourse on improving the quality, accountability, and societal relevance of university research.

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