

CONCEPTUAL ANALYSIS OF RESEARCH CAPACITY AS A MULTILEVEL PHENOMENON IN HIGHER EDUCATION

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Abstract

The growing strategic importance of research in higher education has heightened the need to conceptualize research capacity beyond fragmented perspectives that primarily link research potential to individual skills or institutional resources. Existing approaches typically analyze research capacity at isolated analytical levels, giving less attention to the dynamic and interdependent relationships among structural, organizational, cultural and systematic levels. As a result, research capacity is often treated as a static resource rather than as a multilevel, processual and context-dependent phenomenon.

Contemporary global challenges such as the unequal distribution of research capacities between countries, the differing resources of developing and developed systems, difficulties in integrating into the international academic space and the growing demands for quality assurance in research activities, demonstrate that the development of research capacity requires an integrated and multi-level analysis.

This article presents a four-level conceptual model that integrates individual, organizational/institutional, cultural and systemic levels into a unified analytical framework. The model emphasizes the mechanisms of interaction among these levels - including top-down structural influences, bottom-up initiatives and cultural mediation - that collectively shape the sustainability and development of the research environment.

The proposed model responds to these global challenges by enabling a multi-level and integrated analysis of research capacity, allowing for a more comprehensive understanding of structural and dynamic processes across different contexts.

The study contributes to a more structurally grounded and theoretically integrated understanding of research capacity in higher education. The proposed model serves both as a conceptual contribution to the sociology of education and as an analytical tool for the strategic planning and evaluation of research development processes, providing a foundation for subsequent empirical validation across both local and international contexts.

Keywords: Research Capacity, Higher Education, Multilevel Model, Research Environment, Institutional Development, Strategic Planning.

Introduction

In contemporary higher education, research is viewed not only as a mechanism for knowledge production but also as a fundamental pillar of a university's institutional identity and competitiveness. In the context of globalization, academic rankings, international collaboration and a knowledge-based economy, research activities have become a strategic priority for both higher education institutions and states.

Despite the growing importance of research, particularly in the global context, higher education systems face persistent challenges, including the unequal distribution of research capacity across countries, resource asymmetries between developed and developing systems, barriers to integration into the international academic space and increasing demands for ensuring research quality. These challenges demonstrate that the analysis of research capacity cannot be limited to a single level and instead requires a multi-level, systemic perspective that enables a deeper understanding of both structural and dynamic processes within local as well as international contexts. Furthermore, theoretical approaches remains

insufficiently systematized in explaining how research capacity is formed within multilevel structures and through which mechanisms it evolves and is sustained.

The existing scholarly literature mostly examines research capacity through isolated lenses, such as individual competencies, institutional resources or national policies, resulting in fragmented analyses that fail to capture the complex nature of the process. At the same time, higher education systems operate within multilayered social, economic and political environments, where individual skills, organizational practices, institutional strategies, cultural norms and state policies interact as an interconnected and interdependent system.

Under these conditions, understanding research capacity as a multilevel and dynamic phenomenon becomes particularly relevant. Its conceptual systematization allows not only for a theoretical clarification of the structure and internal logic of the research process but also for the establishment of an analytical foundation for more coherent and strategically informed planning of research policy and institutional development.

The aim of this study is to provide a comprehensive conceptual analysis of research capacity in higher education as a multilevel phenomenon, integrating individual, organizational/institutional, cultural and systemic aspects, which addresses both local and global challenges in the field of research and development.

To achieve this aim, the following objectives have been formulated:

- To conduct a critical review of the existing literature on research capacity in higher education;
- To identify and define the primary levels of research capacity;
- To develop a theoretical framework illustrating the relationships between these primary levels.

The main research questions are:

1. How is research capacity conceptualized in the context of higher education?
2. What are the main levels of research capacity and how do they interact with each other?

The study is based on a qualitative methodology and employs a theoretical-analytical approach to examine research capacity in higher education. The research sources consist of secondary data, including scholarly articles, books, policy documents and reports. The identification of the main levels of research capacity and the determination of the mechanisms of interaction between them were carried out through thematic and content analysis. Based on a critical analysis of existing approaches in the literature and a synthesis of the findings, a multilevel conceptual framework was developed, capturing the relationships and dynamic interactions between the levels.

This methodology is widely accepted for conceptual studies and the proposed model is intended to guide future empirical research.

The article presents a novel conceptual framework that integrates multiple previously separated perspectives on research capacity in higher education. Specifically, the study:

- Identifies four primary levels of research capacity – individual, organizational/institutional, cultural and systemic – within a unified model;
- Demonstrates the bidirectional and dynamic relationships between these levels, showing that research capacity is not linear but shaped through the interactions among these levels;
- Develops a multilevel theoretical framework that can be applied in future research;
- Addresses gaps in the existing literature by providing a comprehensive framework;
- Offers recommendations for the effective development of research capacity across all four levels for higher education institutions and other stakeholders;
- Provides an analytical framework that can be applied in both local and international contexts to assess and develop research capacity building mechanisms.

The structure of the paper includes two main chapters. The first chapter discusses the role of research capacity in higher education, presents its conceptual definition, analyzes the analytical limitations of existing approaches in the literature and introduces the new four-level model, with each level discussed

in detail. The second chapter focuses on the analysis of interactions among the levels in the model and explains the mechanisms that operate between them. The paper concludes with a summary of the main research findings.

1. The Role of Research Capacity in Higher Education

Higher education institutions have two primary functions: teaching and research. Teaching equips students with knowledge, skills and autonomy, while research constitutes the process of knowledge production that fosters and advances the academic and innovative environment. These functions are closely interconnected: research activity enhances the quality of teaching, while academic engagement in the teaching process provides a foundation for the development and sustainability of research. Accordingly, the core mission of a higher education institution is grounded in the production and transmission of knowledge, positioning the university as an integrated institutional space of education and research.

The concept of the “university mission” is often used as a term that brings together teaching, research and external societal engagement – the so-called third mission – indicating that the functions of research and teaching are based on a shared objective: the creation and dissemination of knowledge.¹ Moreover, research is regarded as a dynamic process that promotes innovation, prestige and progress at both educational and socio-economic levels.²

Research within the university is not merely a source of new knowledge. It is also an essential means for the development of the academic community, professional preparation and the advancement of academic and scientific skills. In this context, research capacity carries particular significance, as it determines the extent to which students and academic staff are engaged in research activities.

1.1. Conceptualization of Research Capacity

Research capacity has gained particular significance in the international context once it became evident that research productivity cannot be reduced solely to teaching activities. Effective research performance requires an enabling environment that integrates support across different structural levels, ensures institutional stability and fosters a strong research culture.³

The concept encompasses multiple levels and has been interpreted through various theoretical lenses. Initially, research capacity was primarily defined in terms of individual competencies underpinning research activity. Over time, however, this perspective evolved. In contemporary educational landscape, research capacity represents a central component that determines the success of academic staff, students and institutions in research activities across different levels.

These levels vary in terms of the forms of support they provide and their structural organization and they may be examined at the individual, team, organizational and network levels.⁴

One theoretical framework emphasizes the principles that determine the success of research capacity. Among these principles are the strengthening of individual competencies and self-confidence, the promotion of collaboration and practical experience and the systematic dissemination of knowledge. Equally important is the presence of appropriate infrastructure characterized by sustained investment, which ensures the stability and long-term development of the research environment.⁵

¹ Rodríguez-Castro, D. Y., Aparicio, J., „Introducing a Functional Framework for Integrating the Empirical Evidence about Higher Education Institutions’ Functions and Capabilities: A Literature Review“, *Journal of Entrepreneurship, Management and Innovation*, 17(1), 2021. p. 231–267.

² Samim, R., Noori, M. I., „The Significance of Scientific Research in Higher Education Institutions of Afghanistan: Challenges, Solutions, and Strategies for Enhancement (2022-2024)“, *Journal of Social Sciences and Humanities*, 2(4), 2025. p. 183–207.

³ Trostle, J., „Research capacity building in international health: Definitions, evaluations and strategies for success“, *Social Science & Medicine*, 35(11), 1992. p. 1321–1324.

⁴ Cooke, N. J., „Developing research capacity: A review of the literature“, 2005; Lansang, M. A.; Dennis, R., „Building capacity in health research in the developing world“, *Bulletin of the World Health Organization*, 82(10), 2004, p. 764–770.

⁵ Cooke, see footnote 4. P. 4;

All of this points to research capacity as a multilevel, long-term and context-dependent process. This, in turn, requires not only the development of individual competencies but also the strengthening of institutional and national mechanisms.

In the literature, definitions of research capacity are generally presented along two main lines. The first reflects broader approaches that emphasize technical competencies and underlying values, enabling systems – from the initial level (the individual) to the highest level (the national) – to perform their functions effectively.⁶ The second line of interpretation is more directly research-oriented and focuses on the ability of individuals, groups or institutions to produce high-quality research outputs.⁷

Ultimately, research capacity cannot be understood as a standardized process. It emerges within specific local contexts through the ongoing integration of ethical standards, geopolitical conditions and cultural factors. This encompasses both short-term engagement and long-term strategic planning and investment. Its effective development is closely linked to conditions that support the continuity and sustainability of research.

The key elements that determine the development of research capacity include:

1. Human resources and skills (disciplinary knowledge and methodological competencies);⁸
2. Infrastructure (appropriate material and technical facilities that enable the implementation of research activities);
3. Financial support (grants and funding necessary for the production of research outputs);
4. Organizational structure (strategic management oriented toward research development);⁹
5. Research culture (values that promote the strengthening and prioritization of the research process);
6. Collaboration (local and international partnerships, opportunities for expanding social capital, mobility and co-authorship).¹⁰

The integration of these elements ensures the sustainability of research, fosters the engagement of the university community in research activities and supports participation in the international academic arena.

1.2. Analytical Limitations of Existing Approaches

The existing literature on research capacity in higher education is extensive, yet analytically fragmented. One strand focuses on individual competencies and skills, viewing research capacity primarily as the outcome of personal professional development. A second direction concentrates on institutional resources, infrastructure and managerial strategies. A third approach situates research capacity within the framework of development policy and national funding systems.

While these perspectives offer valuable insights, they are rarely integrated into a unified analytical framework. As a result, several aspects remain insufficiently theorized, including:

- The dynamic interaction between different levels;
- The role of cultural factors as mediating mechanisms;
- The combined influence of systemic and institutional forces on the individual level.

Consequently, research capacity is often perceived either as a matter of individual skills or as a resource-dependent process, which fails to capture its structural and dynamic nature.

⁶ Morgan, P., „The design and use of capacity development indicators“, CIDA, 1997.

⁷ Finch, J., „Commentary: A look at the bigger picture in building research capacity“, *Nursing Times Research*, 8(6), 2003, p. 427–428.

⁸ Brew, A., „Teaching and research: New relationships and their implications for inquiry-based teaching and learning in higher education“, *Higher Education Research & Development*, 22(1), 2003, p. 3–18.

⁹ Clark, B. R., „Creating entrepreneurial universities: Organizational pathways of transformation“, Elsevier, 1998.

¹⁰ Altbach, P. G., „The research university in transition“, *Higher Education Policy*, 22(1), 2009, p. 5–14

The proposed four-level model seeks to overcome this theoretical fragmentation by integrating the individual, organizational/institutional, cultural and systemic levels into a coherent analytical framework.

1.3. A Four-Level Model of Research Capacity

In this article, research capacity is conceptualized not as a static resource, but as a system of interrelated structural and dynamic levels. The four-level model developed within the framework of this study is grounded in the assumption that no single level operates in isolation. Rather, the quality of the research environment emerges from the interaction among these levels.

The chart presented below illustrates the multilevel model of research capacity in higher education. The model is based on the premise that research capacity cannot be reduced to individual skills alone. Instead, it is formed within a system of interconnected levels. It encompasses organizational/institutional, cultural and systemic dimensions, which function in continuous interaction and feedback with one another.

The model demonstrates that the development of research capacity requires multilevel analysis and an integrated approach.

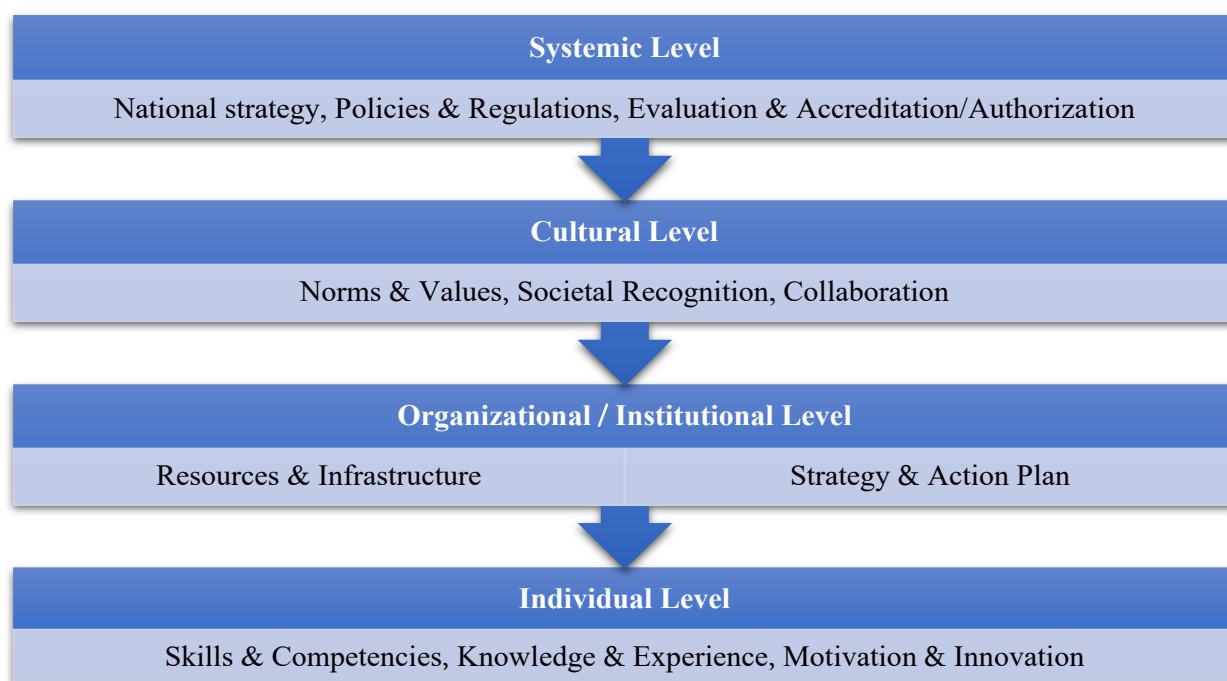


Chart N1. Multilevel model of Research Capacity in Higher Education

1.3.1. Individual Level

The individual level encompasses the personal competencies and motivations of students, researchers and academic staff that are essential for conducting high-quality research. Particular emphasis is placed on methodological competence, critical thinking and the development of research design and analytical skills.¹¹

Strengthening individual capacities provides a foundation for personal growth and professional advancement. However, this level cannot fully develop without coherent and sustained systemic support.

¹¹ Finch, see footnote 7, p. 5; Brew, see footnote 8, p. 5.

1.3.2. Organizational / Institutional Level

Following the individual level, the organizational and institutional dimensions emerge as structurally interconnected components. Together, they represent the university level. However, they perform relatively distinct functional roles.

- The organizational aspect refers to the internal functional structures of the university – departments, research groups, administrative units and management bodies. Each of these actors governs and assumes responsibility for the research processes and the allocation of resources.¹² This is the operational level at which day-to-day research activity takes place. An effective organizational environment provides adequate infrastructure, strategic coordination of research activities, institutional support mechanisms and opportunities for collaboration. These conditions enhance the engagement of individuals and groups in research processes. The organizational level thus creates an environment in which staff competencies can be fully utilized and research activity becomes sustainable.
- The institutional aspect, by contrast, encompasses the normative and strategic framework of the university as a social institution. It includes overarching policies, strategic priorities, action plans and mechanisms of national and global coordination.¹³ It defines the rules, values and priorities that shape organizational behavior. At this level, emphasis is placed on the systemic development of research capacity, the establishment of institutional support structures and the creation of mechanisms for grants, research projects and professional development. It also determines how national policies, research strategies and university priorities are integrated into organizational practice, thereby ensuring sustainability, the production of high-quality research and engagement with national and international actors.

This level also shapes opportunities for international integration, thereby enhancing universities' competitiveness and research effectiveness. In this sense, the organizational aspect is primarily operational, whereas the institutional aspect is normative and strategic in character.

1.3.3. Cultural Level

This level encompasses academic traditions, patterns of collaboration and the institutional norms governing research activity.¹⁴ Research culture shapes how research is perceived within the university, the value attributed to it and the extent to which collaboration, innovation, academic freedom and knowledge sharing are encouraged. A strong cultural environment ensures that individual competencies, organizational resources and institutional structures are effectively transformed into meaningful and productive research activity. In doing so, it enhances the engagement of both students and academic staff in research processes.

1.3.4. Systemic Level

The final level of the model – the outermost layer – captures the influence of national policy, state regulation and strategic priorities on the development of research capacity in higher education institutions.

Universities cannot function in isolation. They operate within a broader national and global political-economic ecosystem that defines priorities, allocates resources and regulates research outputs. This

¹² Clark, see footnote 9, p. 5; Chu, K. M., et al. „Building research capacity in Africa: Equity and global health collaborations“, *PLoS Medicine*, 11(3), 2014, e1001612.

¹³ OECD, „How can research and initial teacher education institutions support research use?“, OECD Publishing, 2025.; Altbach, see footnote 10, p. 6.

¹⁴ Brew, A., „Imperatives and challenges in integrating teaching and research“, *Higher Education Research & Development*, 29(2), 2010, p. 139–150; European Association for Quality Assurance in Higher Education, European Students' Union, European University Association, & European Association of Institutions in Higher Education, „Standards and guidelines for quality assurance in the European Higher Education Area (ESG)“, ENQA, 2015.

layer includes mechanisms such as research funding schemes, national research strategies, regulatory frameworks and state-led initiatives.¹⁵

Public policy directly shapes institutional strategies and determines funding structures, which in turn affect the organizational level – departmental priorities, resource distribution and internal support mechanisms.

In this sense, the outer layer of national policy functions as a structural enabling factor that defines the conditions under which universities operate. Its influence is both direct and indirect. Highlighting this layer underscores that the sustainable development of research capacity requires alignment among individual, institutional and national forces.

2. The Four-Level Model – Interconnections Among the Levels

The proposed four-level model of research capacity represents a multi-layered and dynamic system in which each level – from the individual to the systemic – exerts reciprocal and multidimensional influence on the others. The effectiveness of research activity depends not solely on the development of individual competencies, but on the extent to which organizational structures, institutional strategies, cultural norms and values and broader national policy frameworks are coherently integrated.

2.1. Interaction Among the Levels of Research Capacity

Each level influences the others through both direct and indirect mechanisms. Individual skills and knowledge constitute the core of the research process; however, their effectiveness is significantly enhanced through organizational support and institutional strategy. The organizational level provides resources, infrastructure and coordination among departments and administrative units, thereby strengthening individual research capacity. At the institutional level, research priorities are defined strategically and the political, financial and regulatory frameworks necessary for their implementation are established. The cultural level shapes the extent to which the environment fosters innovative thinking and supports research-oriented values and practices. Meanwhile, the systemic level reinforces institutional strategic priorities by determining national research agendas, funding schemes and grant mechanisms. These systemic priorities are subsequently reflected at the organizational level, influencing internal structures, resource allocation and operational focus. Thus, the interaction among levels is cyclical and mutually reinforcing, forming an integrated ecosystem of research capacity development.

Level	Mechanism of influence	Impact on other levels
Individual	Skills, knowledge, motivation, methodological competence	Organizational/Institutional, cultural
Organizational / Institutional	Resources, infrastructure, management, Departmental policies	Individual, institutional
	University policy, strategy, international cooperation	Organizational, individual
Cultural	Norms, values, Research collaboration, academic freedom	Individual
Systemic	Research funding at the national level, strategy, regulations	Organizational / Institutional

Table 1. The Four-Level Model: Interactions Among the Levels

¹⁵ OECD, see footnote 13, p. 8; Altbach, see footnote 10, p. 6.

Table 1 illustrates how each level of the model interacts with the others and through which mechanisms influence is exerted across levels. This visual representation reinforces the central argument that sustainable research capacity does not develop exclusively at the individual or organizational level. Rather, it emerges from an integrated set of processes that require a coherent, structured and systemic approach.

2.2. Mechanisms of Interactions Among the Levels

The proposed model is grounded not only in the identification of distinct levels, but also in the mechanisms operating between them.

1. Top-down mechanism:

Policy decisions adopted at the systemic level – for example, changes in research funding regulations – shape institutional priorities. Institutional strategies, in turn, influence the allocation of organizational resources, which ultimately affect individual research capacity.

2. Bottom-up mechanism:

Individual initiatives, innovative research practices or successful research outcomes may become embedded in organizational routines and subsequently be integrated into institutional strategy as recognized strategic directions.

3. Cultural mediation:

The cultural level functions as either an enabling or constraining factor. A strong research culture amplifies the effect of structural support, whereas a weak cultural environment may diminish the impact of available resources and policy frameworks at the individual level.

Thus, the model reflects not a linear relationship among levels, but a dynamic, feedback-oriented system characterized by reciprocal influence.

Conclusion

The four-level model presented in this study underscores that research capacity in higher education constitutes a multi-layered and interconnected system encompassing individual, organizational/institutional, cultural and systemic levels. Each level exerts influence both independently and through interaction with the others, enabling universities to sustain high-quality, context-sensitive and durable research processes.

It is important to emphasize that research capacity cannot be reduced to individual skills and competencies alone. Its development depends on the integrated alignment of organizational structures, institutional policies, research culture and national support mechanisms. The creation of a sustainable research environment therefore requires strategic vision, a systemic approach and multilevel engagement.

Particular attention must be paid to the systemic level, especially the role of national policy, as the state provides the strategic, financial and regulatory frameworks necessary for research development. Through such support, universities are better positioned not only to strengthen institutional and organizational capacities, but also to foster the development of individual researchers and deepen international engagement.

The proposed four-level model serves as a strategic instrument for planning and shaping research policy in higher education institutions. It enables:

1. Identification of the levels at which targeted intervention is required;

2. More effective allocation of critical resources to support the development of a sustainable research environment;
3. Promotion of an integrated approach in which individual, organizational and institutional elements operate in alignment with national policy priorities;
4. The design of monitoring and evaluation systems that ensure the effective utilization and continuous development of research capacity.

In future research, the model may be applied in comparative analyses of different countries or universities to examine variations in research capacity development. It may also be used to assess the impact of institutional or policy changes – for example, how shifts in national funding structures influence research processes. Furthermore, the integration of cultural and social factors allows for the formulation of research strategies that are responsive to both global and local contexts.

Overall, the model functions as an analytical framework through which research capacity can be understood as an interconnected and dynamic system. Its theoretical contribution lies in integrating previously fragmented perspectives into a coherent multilevel structure. Its practical significance derives from its applicability as a tool for strategic planning and evaluation in higher education. Further refinement and empirical validation of the model represent important directions for future research.

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