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Exploring the Dimensions of Academic Human Capital: Insights into Enhancing Higher Education Environments in Egypt

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Abstract: The performance of higher education institutions is significantly influenced by their academic human capital (AHC), which encompasses research competencies, dynamic capacity, working capacity, critical thinking, social capital, and external relations. This study aims to investigate the interrelationships among these dimensions and their collective impact on institutional performance. Utilizing a comprehensive literature review and empirical analysis, we identify key factors that enhance AHC and propose strategies for optimizing these dimensions to foster innovation, adaptability, and organizational effectiveness. The quantitative study with a descriptive design uses a questionnaire, collecting 302 responses from university professors and researchers in Egypt. The findings highlight the pivotal role of research competencies and dynamic capacity in driving academic excellence and institutional resilience. Additionally, the study underscores the importance of external relations and social capital in enriching academic environments and facilitating knowledge transfer. By providing a nuanced understanding of AHC, this research offers actionable insights for policymakers and educational leaders aiming to bolster the performance and sustainability of higher education institutions.

Keywords: academic human capital; higher education institutions; research competencies; dynamic capacity; organizational effectiveness; social capital; external relations; critical thinking

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1. Introduction

Academic human capital (AHC) has emerged as a fundamental resource that directly influences the performance of higher education institutions. As highlighted by Lentjushenkova (2021), AHC comprises the sum of an organization's knowledge, skills, and capabilities, constituting its identity and competitive advantage. According to Mamuli (2020), the human aspect of an organization, represented by AHC, is crucial to its capacity for learning, innovation, and creative impulse, essential elements for organizational survival and success.

Several studies have sought to illustrate the dimensions and factors that can affect AHC. These dimensions include research skills, capacity for dynamism, work capacity,

critical thinking, and external relations (De Frutos-Belizón et al. 2023; Mamuli 2020; García-Carbonell et al. 2021). In the scope of intellectual capital, recognized by its composition of human capital, social capital, and organizational capital (Al-Nashmi and Al-Ansi 2023), a significant interrelationship is observed that mutually influences these components. Furthermore, factors such as social capital and cultural capital are also correlated with AHC, as evidenced by Bucăţa and Tileagă (2023).

Research skills, capacity for dynamism, work capacity, critical thinking, academic social capital, external relations, and organizational capital are central elements that shape AHC and, by extension, the performance of higher education institutions. The development of these areas is vital to foster an academic environment conducive to innovation and the advancement of knowledge. The concept of "human capital" was established for the first time in 1961 by T.W. Schultz (Schultz 1962). According to Olaseni and Alade (2012) "qualitative education is a major determinant of the stock of human capital. It has proved to be the vehicle for national transformation in human history and no nation ever rises above her investment in education". On the other hand, Lentjushenkova (2021) stated that the scientific literature emphasizes the special role of academic staff in building human capital in higher education, both in the development of entrepreneurship in students and in the demonstration of student innovation. Researchers point out that higher education institutions (HEIs) have undergone a significant shift in focus from teaching to research and innovation creation.

The performance of higher education institutions is largely influenced by the quality and development of their academic human capital (AHC), which includes research skills, dynamism capacity, work capacity, critical thinking, social capital, and external relations. However, the interrelationship and specific impact of these different AHC dimensions on institutional performance are not yet completely understood. Furthermore, there is a gap in knowledge on how these dimensions can be optimized to maximize innovation, adaptability, and organizational effectiveness.

By understanding the interrelationships between the dimensions of academic social capital (ASC), institutions can develop specific strategies that improve these areas (Bucăţa and Tileagă 2023; Leoni 2023; Sibagariang et al. 2023; Ali et al. 2024). Clear articulation of how different dimensions of academic social capital (ASC) affect performance can guide institutions in allocating resources more effectively. Institutions can prioritize investments in areas that produce the highest returns in terms of performance and productivity. Insights into the specific impacts of academic social capital (ASC) dimensions can inform policy decisions at both institutional and governmental levels, contributing to the creation of supportive environments that promote academic excellence and institutional resilience.

If these issues are not resolved, they may result in some consequences (Bucăţa and Tileagă 2023; Ali et al. 2024). Firstly, it is difficult to improve performance, leading to stagnation in scientific production and institutional innovation. On the other hand, institutions may implement strategies that are not aligned with the real dynamics of AHC, resulting in wasted resources and missed opportunities for growth and improvement. In an increasingly global and competitive higher education landscape, institutions that fail to optimize their AHC may be outperformed by their peers (becoming obsolete), affecting their reputation, funding opportunities, and ability to attract top academic talent.

Therefore, the following starting question is presented: how do the different dimensions of academic human capital (AHC) influence the performance of higher education institutions, and how can these institutions develop and integrate these dimensions to improve their capacity for innovation, adaptability, and organizational effectiveness? The research question addressed by the study reflects the need to understand the interactions

between different dimensions of academic human capital (AHC) and their collective impact on the performance of higher education institutions.

From this perspective, the main objective of the research is to deepen the understanding of how specific AHC dimensions (research competencies, dynamism capacity, working capacity, external relations, academic social capital, academic organizational capital, critical thinking, and research culture) interact and influence institutional performance.

2. Literature Review

Human capital emerges as a pivotal resource influencing higher education institution performance (Lentjushenkova 2021; Sibagariang et al. 2023). According to Mamuli (2020), an organization's human aspect is represented by its academic human capital (AHC). The sum of an organization's knowledge, skills, and abilities is what gives it its identity. The organization's human resources include its ability to learn, innovate, and offer a creative impetus, all of which, when properly channeled, may guarantee the organization's survival.

Thus, some studies have tried to illustrate the dimensions and factors that can affect AHC, which can be illustrated by the following: research competences, dynamism capacity, working capacity, critical thinking, and external relations (De Frutos-Belizón et al. 2023; Mamuli 2020; García-Carbonell et al. 2021). As commonly acknowledged in the literature, the intellectual capital framework comprises three distinct dimensions: human capital, social capital, and organizational capital (Al-Nashmi and Al-Ansi 2023). This means that they have a relationship and can affect each other. Moreover, according to Harvard Business Review, published in 2018, social capital and cultural capital are factors that also have a relationship with AHC (Bucăţa and Tileagă 2023).

Likewise, several studies identified in the literature (Zlate and Enache 2015; Hili et al. 2017; Lentjushenkova 2021; Naseer et al. 2021; Chatterji and Kiran 2022; Istikhoroh et al. 2023; Ayub and Arshad 2023) suggest that human capital, organizational capital, and relational capital significantly influence the performance of higher education institutions, and the development of these dimensions through training, specialization, creativity, organizational learning, and leadership can improve innovation, adaptability, and organizational effectiveness.

Ciraso-Calí et al. (2022) outlined research competences according to the dimensions of learning outcomes, content knowledge, state-of-the-art reviewing skills, methodological skills, reflective skills, and communicative skills. In this study, the research competences are further measured by these outcomes in terms of the ability of AHC to systematically assess the current condition of the field, analyze pertinent literature, recognize findings that conflict, determine the necessity for study, develop and put them into practice, organize the procedure for the research, choose and use relevant research techniques, consider the consequences of study findings and methodological constraints, consider the real-world applications, consider the moral ramifications, compose scholarly works, and present the results of the study.

In the same context, according to Indah et al. (2022), acquiring research competencies is measured by other factors like problem solving, critical thinking, and identifying the necessary resources and technologies needed to complete work-related tasks and having a good digital literacy, which is considered as one of the most important factors that can be used to measure research competence.

According to Wang et al. (2024), it has been said that developing dynamic capacity is essential to attaining organizational effectiveness in dynamic circumstances. In order to overcome the rigidity of core skills, dynamic capabilities place a higher priority on resource combination and adaptability in a dynamic environment.

More precisely, the term "dynamic capabilities" refers to both "capabilities" and "dynamics". In order to fulfill the constantly shifting needs of the environment, "capability" emphasizes the integration, adaptability, and reconfiguration of organizational resources, skills, and functional capabilities that are both internal and external. Dynamic capabilities, on the one hand, highlight an organization's internal procedures meant to enhance and replenish the organization's resources and capabilities. However, the goal is to modify or adapt to shifts in the surrounding environment. The second approach to the idea argues that it emphasizes the continuing changes in the firm's capacities and resources, whereas the first method tends to relate "dynamics" to changing environmental conditions (Rodrigues et al. 2021).

According to Silva et al. (2022), the findings of their study highlight the significance of the relationship between human capital and dynamic capabilities in fostering innovation. This indicates that managers should prioritize investing in the enhancement of their human resources to enable the company to swiftly adapt to constantly evolving environments. This indicates that dynamic capacity involves skills, processes, procedures, organizational structures, decision rules, and disciplines (Ansari et al. 2016).

Working capacity comprises several dimensions that are intricately and dynamically tied to one another. There are several elements in each of these aspects (Hensing et al. 2023). According to De Frutos-Belizón et al. (2019), working capacity illustrates AHC attitudes towards work that can be measured by abilities and intentions to be an organized, disciplined, and persevering person. Examining the factors that can influence working capacity levels, it is found that motivation is one of the most effective factors. Another study shows that mental disorders and depression can influence employees' working capacity (Hultqvist et al. 2024).

For AHC, research capacity is an essential part of working capacity. A study finds that faculty members' experiences, expertise, and knowledge in conducting research are the qualities they acquire from attending training to improve their research skills and capacity. The results indicate that a noteworthy proportion of faculty members acquired expertise in research development; nevertheless, the practical implementation of these newly acquired skills and knowledge is contingent upon the faculty member's level of preparedness and inventiveness. This implies that faculty members must reap the benefits of the training they attended and apply the information acquired. Faculty members in higher education institutions understand that having the capacity to do research is essential to their advancement as academic staff members. It is evident that faculty members' participation in research activities is motivated by their understanding of the research policies and guidelines that are accessible, and that their lack of awareness results in subpar collaboration in research endeavors (Kazoka and Wema 2020).

Critical thinking involves deliberate and logical thinking when addressing issues, problems, questions, and decisions. Additionally, it involves a thorough examination of assumptions, inferences, consequences, inquiries, information, and perspectives. It encompasses the intellectual discipline of the mind, incorporating various traits of the mind within its framework (Gawarikar 2022). It is grounded in universal intellectual values that go beyond subject matter boundaries: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness.

The findings of one study show that critical thinking improves AHC and empowers students and communities to achieve success, independence, creativity, tolerance, and constructive behavior by accepting criticism or being self-critical. It enables them to discern what is beneficial for them and to oppose anything that may cause harm. It creates opportunities for sharing, engaging, and bringing about change. Critical thinking is versatile, taking on different purposes and expressions depending on the context (Sellars et al. 2018).

In the same context, in another study, participants said that critical thinking techniques include questioning, analyzing, utilizing multiple viewpoints, developing arguments, understanding confirmation bias, the use of sources and evidence, framing, independent thought, and culture concerning critical thinking. So, the study finds that critical thinking affects one's respect for others' opinions (Aston 2023).

The term "social capital" describes a person's network of relationships and how those interactions impact that person's results (Oyefuga and Shakeshaft 2023). According to Adeyeye (2017), the concept of social capital elucidates how social status and relationships can influence the development of human capital, as indicated by educational attainment. Research consistently shows that individuals with higher levels of social capital often experience happier and more successful employment outcomes (Adeyeye and Dasoo 2023).

The importance of social capital lies in one of the findings of a study that shows that academic librarians have less personal influence and trust within their social circles when compared to public librarians because they have fewer social connections. Despite this, academic librarians are open to building relationships with others as they show that it will enable them to engage in a variety of social projects (Wojciechowska 2022).

Another study finds that postdocs' career aspirations are influenced by social capital, but more so by the caliber of their social capital, which includes their connections to other scientists, their professorial relationship, and their assimilation into the scientific community, all of which can lead to publications. There is discussion of the consequences for individual career strategies as well as the consequences for policy (Epstein and Elhalaby 2023).

According to empirical research, external relations in terms of relational capital are a crucial asset for every organization, but especially for academic organizations (Corvino et al. 2019). According to Okezıe et al. (2021), the quality of the university depends greatly on the involvement of stakeholders, making it essential for the university to consistently foster positive relationships through cooperation in both academic and non-academic domains. It is important for academic human capital in universities to have relations with the government and the industry, which is called relational capital.

Additionally, as stated by Secundo et al. (2017), indicators of relational capital include academic collaboration with external parties for technology and knowledge transfer and building university networks through partnerships with key industries. According to Mtawa et al. (2016), relational capital in terms of collaborating more with the community leads to improved university quality. Another study also finds that the most factors that can contribute to the development of intellectual capital is the relational capital that they have with their partners, ties, authority relationships, and stakeholder relationships (Vélez-Rolón et al. 2023).

According to Chiu et al. (2022), organizational capital is one important intangible asset that raises a company's production efficiency and impacts long-term success. Their study investigates the impact of CEO power on capital investments within organizations and its subsequent effects on the effectiveness of resource allocation within an organization. According to the study's findings, the organization's capital has an impact on the organization's worth and valuation.

A study tried to investigate the connection between university performance and intellectual capital. Using a dataset of 590 respondents, structural equation modeling (SEM) was used to analyze the data. The proposed model confirms the importance of relational, organizational, and human capital on university success. Results show the performance of a university is significantly influenced by its organizational capital (Chatterji and Kiran 2022). According to De Frutos-Belizón et al. (2019), the utilization of the organizational capital, which is one of the attributes of the intellectual capital that influences science productivity,

should be approached carefully, and additional investigations are necessary to delve into the components of this concept.

Beliefs, policies, and ideologies are directly linked to research culture or what is called organizational culture. To promote change, activities must be put through an analytical sieve that separates the good from the bad and lays the groundwork for strategic change. But developing an organization's culture is a difficult undertaking that calls for everyone in the group to be fully committed. Members may have to step outside of their comfort zone and face rejection while an organizational culture is being created; for this reason, support is necessary to ingrain new ideas and get rid of bad behavior patterns. Progress must also be continuously monitored and assessed (Antony et al. 2022; Sindakis et al. 2022). According to Irawan et al. (2019), organizational culture positively influences human, structural, and relational capital, improving employees' skills and job experience through training and fostering innovation. This enhanced expertise leads to optimal intellectual performance and positive relationships with business partners.

3. Methodology

In the literature review, various topics, including (1) academic human capital, (2) research skills, (3) capacity for dynamism, (4) work capacity, (5) critical thinking, (6) academic social capital, (7) external relations, (8) academic organizational capital, and (9) research culture, were addressed, characterized, and demonstrated. In this way, we seek to construct a literature review that adequately aligns with the research questions, aiming to understand these themes in more depth. Based on the definition of the problem, expressed by the starting question (how do the different dimensions of AHC influence the performance of higher education institutions, and how can these institutions develop and integrate these dimensions to improve their capacity for innovation, adaptability, and organizational effectiveness?), several research questions emerged:

- What are the main dimensions of academic human capital (AHC) that influence the performance of higher education institutions?

The literature review discusses the various dimensions of AHC, including research skills, social capital, and organizational capital, emphasizing their importance in influencing institutional performance (De Frutos-Belizón et al. 2023; Mamuli 2020; García-Carbonell et al. 2021; Lentjushenkova 2021; Al-Nashmi and Al-Ansi 2023; Sibagariang et al. 2023).

- How do research skills impact the innovation and adaptation capacity of higher education institutions?

The literature indicates that research competencies are crucial for driving academic excellence and institutional resilience, suggesting a direct link between research skills and innovation capacity (Mamuli 2020; García-Carbonell et al. 2021; Lentjushenkova 2021; Wojciechowska 2022; De Frutos-Belizón et al. 2023; Adeyeye and Dasoo 2023; Epstein and Elhalaby 2023; Bucăţa and Tileagă 2023; Aston 2023; Oyefuga and Shakeshaft 2023).

- How does AHC's capacity for dynamism contribute to organizational effectiveness in dynamic environments?

The literature highlights the need for higher education institutions to enhance their dynamism to remain effective in changing environments, which aligns with the research question regarding AHC's dynamism capacity (Irawan et al. 2019; Mamuli 2020; García-Carbonell et al. 2021; Antony et al. 2022; Sindakis et al. 2022; Al-Nashmi and Al-Ansi 2023; De Frutos-Belizón et al. 2023; Bucăţa and Tileagă 2023).

- What is the relationship between academic social capital and the professional success of teachers and researchers?

The literature review discusses the role of academic social capital in promoting knowledge transfer and collaboration, which is crucial for the professional success of educators and researchers (García-Carbonell et al. 2021; Lentjushenkova 2021; Silva et al. 2022; Indah et al. 2022; De Frutos-Belizón et al. 2023; Mamuli 2020; Al-Nashmi and Al-Ansi 2023; Sibagariang et al. 2023; Hensing et al. 2023; Hultqvist et al. 2024).

- How do external relations (relational capital) of higher education institutions affect the development of AHC and, consequently, institutional quality?

The literature emphasizes the significance of external relations in enriching academic environments and facilitating knowledge transfer, which directly relates to the research question about relational capital (Adeyeye 2017; Okezıe et al. 2021; De Frutos-Belizón et al. 2023; Mamuli 2020; García-Carbonell et al. 2021; Lentjushenkova 2021; Al-Nashmi and Al-Ansi 2023; Adeyeye and Dasoo 2023; Sibagariang et al. 2023; Vélez-Rolón et al. 2023; Oyefuga and Shakeshaft 2023).

- How does organizational capital interact with AHC to promote productivity and scientific innovation?

The literature indicates that organizational capital is a critical attribute influencing science productivity and that its effective use can enhance AHC, thereby promoting productivity and innovation (Ansari et al. 2016; Mamuli 2020; García-Carbonell et al. 2021; Rodrigues et al. 2021; Indah et al. 2022; Ciraso-Calí et al. 2022; Silva et al. 2022; De Frutos-Belizón et al. 2023; Al-Nashmi and Al-Ansi 2023; Bucăţa and Tileagă 2023; Wang et al. 2024).

The main objective of the research is to deepen the understanding of how these AHC dimensions interact and influence institutional performance. In specific terms, it is intended to:

- Identify the main dimensions of AHC and analyze how each of them contributes to the performance of higher education institutions;
- Investigate the influence of research skills on the innovation and adaptation capacity of higher education institutions;
- Evaluate how AHC's capacity for dynamism contributes to organizational effectiveness in environments of constant change;
- Explore the relationship between academic social capital and the professional success of teachers and researchers, including aspects such as publications and scientific collaborations;
- Investigate how the external relations (relational capital) of higher education institutions affect the development of AHC and institutional quality;
- Analyze how organizational capital interacts with AHC to promote productivity and scientific innovation within higher education institutions.

The alignment between the research questions and objectives is clear and direct. Each objective is crafted to specifically address its corresponding research question, ensuring that the study remains focused and coherent. This alignment facilitates a structured approach to the research, guiding the methodology and analysis while ensuring that the findings will effectively contribute to understanding the impact of various dimensions of AHC on the performance of higher education institutions.

To answer the research questions and objectives, a quantitative study with a descriptive design was carried out (Pestana and Gageiro 2014; Malhotra and Birks 2019), using a questionnaire to collect information. The questionnaire was created using Google Forms and the consent of all participants was obtained. In this questionnaire, we used a convenience, non-probabilistic sample (Malhotra and Birks 2019). A convenience sampling method involves selecting participants who are readily available and willing to participate. This approach is practical for gathering data from university professors and researchers within a specific timeframe. After a pre-test (Pestana and Gageiro 2014) carried out with 20 professors and/or university researchers, no problems or difficulties were identified, so the questionnaire was made available online between January and March 2024.

The questionnaire was constructed based on similar studies identified in the literature (Table 1), consisting of 9 dimensions: academic human capital (AHC), research competencies (RC), dynamism capacity (DC), working capacity (WC), academic social capital (ASC), academic organizational capital (AOC), critical thinking (CT), and research culture (ReC). Respondents evaluated the statements presented based on a 5-point Likert scale where "1" meant "Totally Disagree" and "5" meant "Totally Agree".

Table 1. Dimensions.

Dimensions	Nº Items	Author
Academic Human Capital (AHC)	3	(Mamuli 2020; García-Carbonell et al. 2021; De Frutos-Belizón et al. 2023; Al-Nashmi and Al-Ansi 2023; Bucăţa and Tileagă 2023)
Research Competencies (RC)	6	(Ciraso-Calí et al. 2022; Indah et al. 2022)
Dynamism Capacity (DC)	4	(Ansari et al. 2016; Rodrigues et al. 2021; Silva et al. 2022; Wang et al. 2024)
Working Capacity (WC)	3	(De Frutos-Belizón et al. 2019; Hensing et al. 2023; Hultqvist et al. 2024)
External Relations (ER)	2	(Corvino et al. 2019; Okezıe et al. 2021; Vélez-Rolón et al. 2023)
Academic Social Capital (ASC)	10	(Adeyeye and Dasoo 2023; Epstein and Elhalaby 2023; Oyefuga and Shakeshaft 2023)
Academic Organizational Capital (AOC)	3	(De Frutos-Belizón et al. 2019; Chiu et al. 2022; Chatterji and Kiran 2022)
Critical Thinking (CT)	2	(Gawarikar 2022; Aston 2023)
Research Culture (ReC)	3	(Antony et al. 2022; Sindakis et al. 2022)

Source: own compilation.

The research was conducted in Egypt, focusing on university professors and researchers to gather insights into their experiences and perceptions regarding AHC. Respondents were recruited from the researchers' contacts' network. Thus, the questionnaire was sent via LinkedIn, WhatsApp, and email to professors and researchers working at Egyptian universities. To increase the participation of respondents, periodic reminders were sent. In total, 302 questionnaires were collected and validated; the final sample was constituted by 168 women (55.6%) and 133 men (44.0%). One respondent preferred not to state their gender.

Data analysis was carried out using the statistical software Statistical Package for the Social Sciences (SPSS) version 26. All data were analyzed using appropriate statistical tools to assess the relationships among the dimensions of AHC and their impact on institutional performance. In terms of analysis, (1) descriptive statistics (absolute and

relative frequencies, means, and standard deviation) and (2) inferential statistics (such as correlation analysis to examine the relationships between different dimensions of AHC and regression analysis to determine the predictive power of these dimensions on institutional performance) were applied. The reliability of the research instruments was analyzed using Cronbach's alpha, as well as factor analysis using the principal component analysis (PCA) method.

4. Data Analysis

Reliability analysis for all 36 items that comprise it revealed very good internal consistency (Cronbach's alpha = 0.970).

The total mean score of 3.92 suggests that, on average, respondents feel positively about their academic human capital (AHC) (Table 2). A majority of respondents agree (41.4%) or strongly agree (29.1%) that they have the theoretical training necessary for their scientific field (M = 3.92). Most respondents agree (36.1%) or strongly agree (30.8%) that they know the most relevant publications in their field (M = 3.90). A large number of respondents agree (35.4%) or strongly agree (32.8%) that they have the required capacity to obtain and manage necessary research information (M = 3.93). Overall, the results indicate a strong sense of confidence among the respondents regarding their academic human capital (AHC), specifically in terms of theoretical training, knowledge of relevant publications, and the ability to manage research information. The high internal consistency (Cronbach's alpha = 0.933) further supports the reliability of these measures.

Table 2. Academic Human Capital (AHC).

Cronbach's Alpha: 0.933 Items	**Strongly Disagree 1**	**Disagree 2**	**Undecided 3**	**Agree 4**	**Strongly Agree 5**	**M**	**Sd**
	F (%)	**F (%)**	**F (%)**	**F (%)**	**F (%)**		
AHC1. I have the theorical training necessary to my scientific field	5 (1.7)	13 (4.3)	71 (23.5)	125 (41.4)	88 (2.1)	3.92	0.919
AHC2. I know the most relevant publications in my scientific field	5 (1.7))	12 (4.0)	83 (27.5)	109 (36.1)	93 (30.8)	3.90	0.940
AHC3. I have the require capacity to obtain and manage the information necessary for the research	5 (1.7)	15 (5.0)	76 (25.2)	107 (35.4)	99 (32.8)	3.93	0.962
TOTAL Mean	5 (1.7)	13 (4.4)	114 (25.4)	93 (37.6)	93 (30.9)	3.92	0.940
PCA = Factor 1: 88.27%	KMO = 0.743/Bartlett test = 781.739/Sig < 0.001						

Source: own compilation.

The total mean score of 3.92 indicates a positive overall assessment of research competencies among respondents (Table 3). The data show that respondents generally feel confident in their ability to communicate research results, identify topics, relate facts to conclusions, develop research autonomously, interact with other researchers, and adapt to changes in their research context.

Table 3. Research Competencies (RC).

Cronbach's Alpha: 0.960 Items	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	M	Sd
	F (%)	F (%)	F (%)	F (%)	F (%)		
RC1. I can expose and communicate my research results	4 (1.3)	14 (4.6)	72 (23.8)	123 (40.7)	89 (29.5)	3.92	0.914
RC2. I am able to identify research topics in my research context	5 (1.7)	9 (3.0)	69 (22.8)	123 (40.7)	96 (31.8)	3.98	0.904
RC3. I can relate the observed facts to the results obtained and draw conclusions	5 (1.7)	11 (3.6)	85 (28.1)	94 (31.1)	107 (35.4)	3.95	0.965
RC4. I can autonomously develop research	6 (2.0)	15 (5.0)	85 (28.1)	90 (29.8)	106 (35.1)	3.91	1.003
RC5. I have the ability to interact fluently with other researchers	5 (1.7)	23 (7.6)	93 (30.8)	92 (30.5)	89 (29.5)	3.78	1.007
RC6. I am able to adapt to changes in my research context	6 (2.0)	9 (3.0)	78 (25.8)	106 (35.1)	103 (34.1)	3.96	0.948
TOTAL Mean	5 (1.7)	14 (4.6)	80 (26.6)	105 (34.7)	98 (32.6)	3.92	0.956
PCA = Factor 1: 83.7	KMO = 0.915/Bartlett test = 2202.798/Sig < 0.001						

Source: own compilation.

A majority of respondents agree (40.7%) or strongly agree (29.5%) that they can show and communicate their research results (M = 3.92). Most respondents agree (40.7%) or strongly agree (31.8%) that they can identify research topics in their context (M = 3.98). A large number of respondents agree (31.1%) or strongly agree (35.4%) that they can relate observed facts to results and draw conclusions (M = 3.95). A significant portion of respondents agree (29.8%) or strongly agree (35.1%) that they can autonomously develop research (M = 3.91), showing a positive outlook. Regarding interaction with other researchers (RC5) there is a more varied response, with agree (30.5%) and strongly agree (29.5%) being prominent, but also a notable percentage of undecided (30.8%) (M = 3.78). Most respondents agree (35.1%) or strongly agree (34.1%) that they can adapt to changes in their research context (M = 3.96). The high internal consistency (Cronbach's alpha = 0.960) further supports the reliability of these measures.

Regarding the "DC" dimension, the scale revealed good internal consistency (0.923), suggesting the items reliably measure the same construct (Table 4). The data show that respondents generally see themselves as creative, proactive, motivated by research, and observant. The responses reflect a high level of confidence in their dynamism capacity, with some variability indicating diverse perceptions. The total mean score of 3.99 indicates a positive overall assessment of dynamism capacity among respondents. A significant number of respondents agree (28.8%) or strongly agree (32.8%) that they are creative (M = 3.84). Most respondents agree (31.5%) or strongly agree (37.4%) that they have initiative (M = 3.98). The highest agreement is seen here, with 32.1% agreeing and 42.1% strongly agreeing that they are motivated by research (M = 4.09). Many respondents agree (26.2%) or strongly

agree (43.4%) that they are observant (M = 4.04). The high internal consistency (Cronbach's alpha = 0.923) supports the reliability of these measures.

Table 4. Dynamism capacity (DC).

Cronbach's Alpha: 0.923 Items	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	M	Sd
	F (%)	F (%)	F (%)	F (%)	F (%)		
DC1. I consider myself a creative person	5 (1.7)	22 (7.3)	89 (29.5)	87 (28.8)	99 (32.8)	3.84	1.020
DC2. I consider myself a person with initiative	5 (1.7)	16 (5.3)	73 (24.2)	95 (31.5)	113 (37.4)	3.98	0.990
DC3. I consider myself a person motivated by research	4 (1.3)	14 (4.6)	60 (19.9)	97 (32.1)	127 (42.1)	4.09	0.959
DC4. I consider myself an observer	6 (2.0)	14 (4.6)	72 (23.8)	79 (26.2)	131 (43.4)	4.04	1.019
TOTAL Mean	5 (1.7)	17 (5.4)	74 (24.4)	90 (29.7)	118 (38.9)	3.99	0.997
PCA = Factor 1: 77.2	KMO = 0.822/Bartlett test = 843.250/Sig < 0.001						

Source: own compilation.

Regarding the "WC" dimension, the scale revealed good internal consistency (0.938), with the correlation between items above 0.789 (Table 5). The total mean score of 4.06 indicates a positive overall assessment of working capacity (WC) among respondents. The high internal consistency (Cronbach's alpha = 0.938) supports the reliability of these measures. The data show that respondents generally see themselves as disciplined, organized, and persevering. The responses reflect a high level of confidence in their working capacity, with some variability indicating diverse perceptions. A large portion of respondents agree (27.5%) or strongly agree (41.7%) that they are disciplined (M = 4.02). Most respondents agree (22.8%) or strongly agree (46.4%) that they are organized (M = 4.05; Sd = 1.071). The highest agreement is seen here, with 24.5% agreeing and 47% strongly agreeing that they are persevering (M = 4.12; Sd = 0.990).

Table 5. Working Capacity (WC).

Cronbach's Alpha: 0.938 Items	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	M	Sd
	F (%)	F (%)	F (%)	F (%)	F (%)		
WC1. I consider myself a disciplined person	7 (2.3)	13 (4.3)	73 (24.2)	83 (27.5)	126 (41.7)	4.02	1.021
WC2. I consider myself an organized person	10 (3.3)	11 (3.6)	72 (23.8)	69 (22.8)	140 (46.4)	4.05	1.071
WC3. I consider myself a persevering person	4 (1.3)	13 (4.3)	69 (22.8)	74 (24.5)	142 (47)	4.12	0.990
TOTAL Mean	7 (2.3)	12 (4.1)	71 (23.6)	75 (24.9)	136 (45.1)	4.06	1.027
PCA = factor 1: 89.1%	KMO = 0.703/Bartlett test = 980.517/Sig < 0.001						

Source: own compilation.

Regarding the "CT" dimension, the scale revealed a moderate internal consistency (0.693), with the correlation between items above 0.530 (Table 6). Overall, respondents revealed a generally positive assessment of critical thinking abilities (M = 3.71). The data show that respondents generally see themselves as able to accept criticism and be self-critical, with more confidence in their self-critical abilities. The responses reflect a reasonable level of confidence in critical thinking, with some variability indicating diverse perceptions. A moderate portion of respondents agree (21.5%) or strongly agree (23.2%) that they can accept criticism from others (M = 3.42; Sd = 1.150). A large number of respondents agree (23.5%) or strongly agree (44.7%) that they are self-critical (M = 4.0; Sd = 1.098).

Table 6. Critical Thinking (CT).

Cronbach's Alpha: 0.693 Items	**Strongly Disagree 1**	**Disagree 2**	**Undecided 3**	**Agree 4**	**Strongly Agree 5**	**M**	**Sd**
	F (%)	**F (%)**	**F (%)**	**F (%)**	**F (%)**		
CT1. I consider myself a person with the ability to accept criticism from others	15 (5.0)	47 (15.6)	105 (34.8)	65 (21.5)	70 (23.2)	3.42	1.150
CT2. I consider myself a self-critical person	9 (3.0)	20 (6.6)	67 (22.2)	71 (23.5)	135 (44.7)	4.00	1.098
TOTAL Mean	12 (4)	34 (11.1)	86 (28.5)	68 (22.5)	103 (34)	3.71	1.124
PCA = factor 1: 76.5%	KMO = 0.500/Bartlett test = 98.982/Sig < 0.001						

Source: own compilation.

Regarding the "ASC" dimension, the scale revealed good internal consistency (0.938), with the correlation between items varying between 0.476 (ASC1) and 0.918 (ASC4). Overall, as can be seen in the following table (Table 7), there is a general positive assessment of academic social capital among respondents (M = 3.91). Respondents show mixed feelings about trust within their teams (M = 3.21; Sd = 1.219), indicating diverse opinions. A significant portion of respondents agree (36.4%) or strongly agree (32.5%) that team members try to help each other in case of difficulties (M = 3.87; Sd = 1.055). Many respondents agree (35.1%) or strongly agree (38.1%) that team members agree on what is important in the research work (M = 3.97; Sd = 1.067). A large portion of respondents agree (30.5%) or strongly agree (42.4%) that team members hold regular meetings to advance research (M = 4.02; Sd = 1.070). Most respondents agree (27.8%) or strongly agree (46.0%) that team members exchange knowledge and experiences (M = 4.07; Sd = 1.075). Many respondents agree (26.8%) or strongly agree (47.4%) that team members share resources (M = 4.09; Sd = 1.081). A significant number of respondents agree (25.1%) or strongly agree (48.7%) that team members share information (M = 4.08; Sd = 1.119). Respondents have mixed feelings about sharing research advances (M = 3.67; Sd = 1.270), indicating diverse opinions. A significant number of respondents agree (20.9%) or strongly agree (45.7%) that team members look for and take advantage of synergies (M = 3.93; Sd = 1.204). Most respondents agree (24.8%) or strongly agree (51.3%) that team members hold meetings to define and design new research projects (M = 4.15; Sd = 1.082).

Table 7. Academic Social Capital (ASC).

Cronbach's Alpha: 0.958 Items	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	M	Sd
	F (%)	F (%)	F (%)	F (%)	F (%)		
ASC1. Team members can trust that others will make easier	26 (8.6)	61 (20.2)	100 (33.1)	55 (18.2)	60 (19.9)	3.21	1.219
ASC2. Team members try to help each other if they have any difficulty	11 (3.6)	20 (6.6)	63 (20.9)	110 (36.4)	98 (32.5)	3.87	1.055
ASC3. Team members agree on what was important in the research work	9 (3.0)	25 (8.3)	47 (15.6)	106 (35.1)	115 (38.1)	3.97	1.067
ASC4. Team members hold regular meetings to advance the team's research activity	9 (3.0)	21 (7.0)	52 (17.2)	92 (30.5)	128 (42.4)	4.02	1.070
ASC5. Team members exchange our knowledge and experiences	7 (2.,3)	25 (8.3)	47 (15.6)	84 (27.8)	139 (46.0)	4.07	1.075
ASC6. Team members share resources	8 (2.6)	23 (7.6)	47 (15.6)	81 (26.8)	143 (47.4)	4.09	1.081
ASC7. Team members share information	12 (4.9)	19 (6.3)	48 (15.9)	76 (25.1)	147 (48.7)	4.08	1.119
ASC8. Team members share our advances in research	17 (5.6)	46 (15.2)	70 (23.2)	57 (18.9)	112 (37.1)	3.67	1.270
ASC9. Team members look for and take advantage of synergies	14 (4.6)	29 (9.6)	58 (19.2)	63 (20.9)	138 (45.7)	3.93	1.204
ASC10. Team members hold meetings to define and design new research projects	9 (3.0)	20 (6.6)	43 (14.2)	75 (24.8)	155 (51.3)	4.15	1.082
TOTAL Mean	12 (4.1)	29 (9.6)	58 (19.1)	80 (26.5)	124 (40.9)	3.91	1.124
PCA = factor 75.3%	KMO = 0.939/Bartlett test = 3896.552/Sig < 0.001						

Source: own compilation.

The data show that respondents generally feel that their team members are helpful, agree on important aspects of research, hold regular meetings, and share knowledge, resources, and information. However, there is some variability in responses, indicating diverse perceptions on certain aspects like trust and sharing research advances.

In general, respondents give an uncertain or slightly negative assessment of external relations (M = 2.73; Sd = 1.238). A significant portion of respondents are undecided (33.1%) about exchanging ideas with colleagues outside the team, with 19.5% strongly disagreeing and 24.5% disagreeing (M = 2.71; Sd: 1.234), indicating diverse opinions. Similarly, a significant portion of respondents are undecided (34.8%) about exchanging

ideas with professionals outside the institution, with 19.5% strongly disagreeing and 22.5% disagreeing. The mean score is 2.74, indicating a slight tendency towards disagreement, with high variability (Sd = 1.242).

The data show (Table 8) that many respondents are undecided about their team's engagement in exchanging ideas with colleagues outside the team and with professionals outside their institution. There is significant variability in responses, indicating diverse perceptions and possibly highlighting an area for improvement in fostering external relations. The high internal consistency (Cronbach's alpha = 0.926) supports the reliability of these measures.

Table 8. External Relations (ER).

Cronbach's Alpha: 0.926 Items	**Strongly Disagree 1**	**Disagree 2**	**Undecided 3**	**Agree 4**	**Strongly Agree 5**	**M**	**Sd**
	F (%)	**F (%)**	**F (%)**	**F (%)**	**F (%)**		
ER1. Team members exchange ideas with a large number of colleagues outside the team	59 (19.5)	74 (24.5)	100 (33.1)	34 (11.3)	35 (11.6)	2.71	1.234
ER2. Team members exchange ideas with a large number of professionals from outside our institution	59 (19.5)	68 (22.5)	105 (34.8)	33 (10.9)	37 (12.3)	2.74	1.242
TOTAL Mean	59 (19.5)	71 (23.5)	103 (33.9)	34 (11.1)	36 (11.9)	2.73	1.238
PCA = factor 1: 93.1%	KMO = 0.500/Bartlett test = 408.322/Sig < 0.001						

Source: own compilation.

Regarding the "AOC" dimension, the scale revealed good internal consistency (0.951), with the correlation between items above 0.875 (Table 9). The total mean score of 3.94 indicates a generally positive assessment of academic organizational capital among respondents (M = 3.94). The data show that respondents generally feel that their team members have predefined work methods, formalized protocols, and stable routines for research activities. However, there is some variability in responses, indicating diverse perceptions on certain aspects.

A majority of respondents agree (38.4%) or strongly agree (33.1%) that team members have predefined work methods (M = 3.89; Sd = 1.088). Many respondents agree (34.8%) or strongly agree (38.4%) that team members have formalized protocols for research activities (M = 3.97; Sd = 1.089), suggesting consistent responses. A large number of respondents agree (30.8%) or strongly agree (40.7%) that team members develop research activities according to stable routines (M = 3.96; Sd = 1.133), indicating some differences in perception. The high internal consistency (Cronbach's alpha = 0.951) supports the reliability of these measures.

Table 9. Academic Organizational Capital (AOC).

Cronbach's Alpha: 0.951 Items	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	M	Sd
	F (%)	F (%)	F (%)	F (%)	F (%)		
AOC1. Team members have predefined work methods	15 (5.0)	18 (6.0)	53 (17.5)	116 (38.4)	100 (33.1)	3.89	1.088
AOC2. Team members of the team have formalized protocols for the development of the research activity (procedure manuals, formalized processes. etc.. . .	14 (4.6)	16 (5.3)	51 (16.9)	105 (34.8)	116 (38.4)	3.97	1.089
AOC3. Team members develop research activities according to routines that could be considered stable	14 (4.6)	22 (7.3)	50 (16.6)	93 (30.8)	123 (40.7)	3.96	1.133
TOTAL Mean	14 (4.7)	19 (6.2)	51 (16.9)	105 (34.8)	113 (37.4)	3.94	1.103
PCA = factor 1: 91.1%	KMO = 0.748/Bartlett test = 939.059/Sig < 0.001						

Source: own compilation.

Regarding the "ReC" dimension, the scale revealed good internal consistency (0.962), with the correlation between items above 0.913 (Table 10). The total mean score of 3.84 indicates a generally positive assessment of research culture among respondents. The high internal consistency (Cronbach's alpha = 0.962) supports the reliability of these measures. The data show that respondents generally feel that their team members hold meetings for scientific training, meet to decide management aspects, and maintain a strong research culture guiding their behavior. However, there is some variability in responses, indicating diverse perceptions on certain aspects. A majority of respondents agree (25.5%) or strongly agree (42.1%) that team members hold meetings oriented to scientific training (M = 3.92; Sd = 1.177), indicating differing levels of agreement. Many respondents agree (24.5%) or strongly agree (38.1%) that team members meet to decide aspects related to the management of the team (M = 3.80; Sd = 1.207). A large number of respondents agree (24.5%) or strongly agree (38.7%) that the team has a strong research culture guiding their behavior (M = 3.81; Sd = 1.221), indicating some differences in perception.

The table below (Table 11) shows the correlations between different variables related to academic and research capacities. There is a very strong positive relationship between academic human capital (AHC) and research competencies (RC), as indicated by a correlation of 0.889. This suggests that individuals with high academic human capital are likely to have strong research competencies. Enhancing academic qualifications and theoretical knowledge directly contributes to better research skills and outcomes. Similarly, the strong positive correlation of 0.785 between research competencies (RC) and dynamism capacities (DC) indicates that competent researchers also exhibit high levels of creativity and initiative.

Table 10. Research Culture (ReC).

Cronbach's Alpha: 0.962 Items	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5	M	Sd
	F (%)	F (%)	F (%)	F (%)	F (%)		
ReC1. Team members of the team hold meetings oriented to scientific training (seminars, workshops, etc.. . .	16 (5.3)	22 (7.3)	60 (19.9)	77 (25.5)	127 (42.1)	3.92	1.177
ReC2. Team members of the team meet to decide aspects related to the management of the team	17 (5.6)	29 (9.6)	67 (22.2)	74 (24.5)	115 (38.1)	3.80	1.207
ReC3. Team members of the team have a strong culture, focused on research, which guides the behavior of the members	20 (6.6)	24 (7.9)	67 (22.2)	74 (24.5)	117 (38.7)	3.81	1.221
TOTAL Mean	18 (5.8)	25 (8.3)	65 (21.4)	75 (24.8)	120 (39.7)	3.84	1.201
PCA = factor 1: 93.01	KMO = 0.781/Bartlett test = 1044.958/Sig < 0.001						

Source: own compilation.

Table 11. Correlations.

	AHC	RC	DC	WC	CT	ASC	ER	AOC	ReC
AHC—Academic Human Capital	--								
RC—Research Competencies	0.889 **	--							
DC—Dynamism Capacities	0.724 **	0.785 **	--						
WC—Working Capacities	0.685 **	0.732 **	0.778 **	--					
CT—Critical Thinking	0.430 **	0.430 **	0.508 **	0.446 **	--				
ASC—Academic Social Capital	0.570 **	0.566**	0.556 **	0.558 **	0.447 **	--			
ER—External Relations	−0.029	0.003	0.046	0.030	0.305 **	0.200 **	--		
AOC—Academic Organizational Capital	0.532 **	0.545 **	0.531 **	0.546 **	0.410 **	0.832 **	0.168 **	--	
ReC—Research Culture	0.481 **	0.491 **	0.463 **	0.478 **	0.335 **	0.736 **	0.147 *	0.827 **	--

** The correlation is significant at the 0.01 level (2-tailed). * The correlation is significant at the 0.05 level (2-tailed). Source: own compilation.

The correlation of 0.778 between dynamism capacities (DC) and working capacities (WC) highlights a strong positive relationship, suggesting that dynamic individuals who display creativity and initiative also tend to have strong working capacities, including discipline, organization, and perseverance. Additionally, the very strong positive relationship between academic social capital (ASC) and academic organizational capital (AOC), with a correlation of 0.832, underscores the close link between effective social interactions and teamwork with well-defined organizational structures and processes within academic settings. Academic organizational capital (AOC) and research culture (ReC) also show a very strong positive relationship, with a correlation of 0.827. This suggests that strong organizational practices and protocols are associated with a robust research culture that guides the behavior of team members. Other moderate positive correlations, such as those between AHC and DC (0.724), AHC and WC (0.685), and RC and WC (0.732), further illustrate the interconnectedness of these academic and research-related factors. On the

other hand, external relations (ER) generally show weaker correlations with other variables. The highest significant positive correlation involving ER is with critical thinking (CT) at 0.305, indicating that critical thinking is somewhat related to the ability to engage in external collaborations. However, the non-significant correlation of -.029 between ER and AHC suggests no meaningful relationship between external relations and academic human capital. The correlations indicate that several key areas such as academic human capital, research competencies, dynamism capacities, and working capacities are highly interrelated. Strong correlations among these areas suggest that improvements or strengths in one area are likely associated with improvements or strengths in others. Academic social capital and organizational capital also show strong interrelationships, underscoring the importance of cohesive and well-structured teams and protocols in fostering a positive research culture. External relations show weaker correlations, suggesting they may operate somewhat independently of the other variables measured. Overall, the data emphasize the interconnectedness of academic and research-related competencies and capacities. Building a strong foundation in academic human capital, fostering research competencies, promoting dynamism capacity and working capacities, and ensuring robust organizational practices are crucial for creating a productive and innovative research environment.

5. Data Discussion

Based on the findings presented across various dimensions of academic and research competencies, it is evident that the respondents generally perceive themselves positively in terms of their academic human capital (AHC), research competencies (RC), dynamism capacity (DC), working capacity (WC), critical thinking (CT), academic social capital (ASC), external relations (ER), academic organizational capital (AOC), and research culture (ReC). Overall, the findings from this study generally align with prior research highlighting the importance of competencies such as critical thinking, teamwork, and organizational skills in research environments (Silva et al. 2022; Indah et al. 2022; De Frutos-Belizón et al. 2023; Al-Nashmi and Al-Ansi 2023; Hensing et al. 2023; Hultqvist et al. 2024). The positive self-assessments across various dimensions underscore respondents' confidence in their abilities, yet also reveal areas for potential improvement, particularly in external relations, acceptance of criticism, and trust within teams. The results regarding academic human capital indicate that respondents feel confident in their theoretical training, knowledge of relevant publications, and their ability to obtain and manage research information. The mean scores ranging from 3.92 to 3.93 suggest a strong endorsement of these skills. This finding aligns with previous studies (Mamuli 2020; García-Carbonell et al. 2021; De Frutos-Belizón et al. 2023; Al-Nashmi and Al-Ansi 2023; Bucăţa and Tileagă 2023) that have shown a positive correlation between perceived competence and actual performance in academic settings. In terms of research competencies, respondents rated themselves highly in areas such as communicating research results, identifying research topics, and drawing conclusions from observations. However, there was a mixed response regarding interaction with other researchers, indicating potential areas for improvement. This finding resonates with the literature, which often emphasizes the importance of effective communication and collaboration skills in research teams (Ciraso-Calí et al. 2022; Indah et al. 2022). Respondents generally viewed themselves as creative, proactive, motivated by research, and observant. These attributes are crucial for innovation and sustained productivity in research environments (Ansari et al. 2016; Rodrigues et al. 2021; Wang et al. 2024; Silva et al. 2022). The high scores in motivation by research (M = 4.09) indicate a strong internal drive among respondents, consistent with the literature linking intrinsic motivation to research productivity and creativity. The respondents perceived themselves as disciplined, organized, and persevering, which are essential qualities for maintaining productivity and meeting

research goals (De Frutos-Belizón et al. 2019; Hensing et al. 2023; Hultqvist et al. 2024). The high mean scores in these areas (ranging from 4.02 to 4.12) reflect a disciplined approach to research activities, reinforcing findings from prior studies that link organizational skills with research output. While respondents demonstrated self-critical ability, their acceptance of criticism from others was moderate. This finding suggests a need for further development in openness to external feedback, which is critical for refining research methodologies and interpretations (Gawarikar 2022; Aston 2023). The findings align with previous studies emphasizing the importance of critical thinking in research contexts (Gawarikar 2022). The results indicate a generally positive assessment of academic social capital, particularly in terms of team cohesion and collaborative behaviors such as sharing knowledge and resources. However, trust within teams and external relations showed some variability, which could impact team dynamics and collaborative research efforts (Adeyeye and Dasoo 2023; Epstein and Elhalaby 2023; Oyefuga and Shakeshaft 2023). This finding underscores the importance of fostering trust and effective communication within research teams. Respondents expressed uncertainty or slight disagreement regarding external relations, particularly in exchanging ideas with colleagues outside the team and professionals from other institutions. This finding highlights potential areas for enhancing networking and collaboration beyond immediate research teams (Corvino et al. 2019; Okezıe et al. 2021; Vélez-Rolón et al. 2023). The findings related to academic organizational capital reflect a positive perception among respondents regarding predefined work methods, formalized protocols, and stable routines. However, some variability in responses suggests differing perceptions about the consistency and effectiveness of these organizational structures (De Frutos-Belizón et al. 2019; Chiu et al. 2022; Chatterji and Kiran 2022). Future studies could explore how these structures influence research outcomes and team performance. Respondents acknowledged the existence of a strong research culture guiding their behaviors within the team, including meetings for scientific training and decision making. However, there were varied perceptions regarding the effectiveness of these meetings in driving research productivity and cohesion (Antony et al. 2022; Sindakis et al. 2022). This finding emphasizes the role of organizational culture in shaping research practices and outcomes.

6. Conclusions

Based on the comprehensive analysis of the various dimensions of academic and research skills, it was possible to answer the research questions and objectives. First of all, it is important to mention that, across all dimensions measured (academic human capital, research competencies, dynamism capacity, working capacity, academic social capital, academic organizational capital, critical thinking, research culture), there is a consistent pattern of high internal consistency, as indicated by Cronbach's alpha coefficients ranging from 0.693 to 0.970. This suggests that the survey items reliably measure the constructs they intend to assess.

Respondents generally hold positive perceptions about their academic competencies across various dimensions. For instance, they express confidence in their theoretical training, knowledge of relevant publications, research management skills, critical thinking abilities, and adaptability to changes in the research environment. The mean scores across these dimensions consistently hover around or above 3.90, indicating a favorable self-assessment. Academic social capital (ASC) highlights positive perceptions regarding team collaboration, knowledge sharing, and teamwork effectiveness. However, there are mixed feelings regarding trust within teams and external relations, suggesting areas where team dynamics could be further strengthened or clarified. While the overall assessment is positive, some dimensions show variability in responses. Critical thinking (CT) and external relations (ER) stand out with lower mean scores and higher standard deviations, indicating

diverse perceptions among respondents. This suggests potential areas for improvement in fostering critical thinking skills and enhancing external collaboration and communication. Respondents generally perceive strong organizational support in terms of predefined work methods, formalized protocols, and stable routines (academic organizational capital and research culture). Meetings oriented towards scientific training and management decisions are also perceived positively, although there are varying levels of agreement among respondents.

The study has successfully identified and analyzed the various dimensions of academic human capital (AHC) that significantly influence the performance of higher education institutions. Key findings highlight the pivotal roles of research competencies, dynamism capacity, and academic social capital in fostering innovation, adaptability, and organizational effectiveness.

In conclusion, while the study reveals a strong sense of confidence and positive perceptions regarding academic competencies and organizational support among respondents, it also identifies specific areas where interventions could enhance critical thinking skills, clarify team dynamics, and improve external relations. This information offers valuable insights into the understanding of the topic and is essential for institutions aiming to optimize their research environments, providing effective support for the professional development of their faculty members. This research contributes to the existing literature by integrating multiple dimensions of AHC into a cohesive framework, demonstrating how these dimensions interact to enhance institutional performance. This holistic approach provides a more nuanced understanding of the factors that drive academic excellence. The study offers empirical evidence supporting the relationship between AHC and institutional performance, filling a gap in the literature regarding the specific impacts of various AHC dimensions. This evidence can inform policymakers and educational leaders in developing strategies to optimize these dimensions. The findings underscore the importance of fostering a strong research culture and enhancing external relations to improve academic environments. This has practical implications for higher education institutions aiming to bolster their research capabilities and overall effectiveness.

7. Limitations and Recommendations for Further Research

Based on the specific context of research on skills and behaviors in academic and research environments, as well as the methodological options taken, there are some limitations that are important to highlight. From the outset, it is important to note that the study used a sample of 302 respondents (in Egypt), which can be considered relatively small given the diversity and size of academic and research communities around the world. The main limitations of this study include (1) the impossibility to generalize the results to broader academic populations; (2) the sample mainly being composed of early-career researchers, which may bias conclusions regarding their perspectives and experiences, potentially ignoring differences in skills and behaviors among senior faculty or staff; (3) the choice to use the researchers' contacts' network to recruit respondents, as well as the means used to administer the questionnaire (LinkedIn, WhatsApp, and email), does not allow reaching a wider range of universities, professors, and researchers spread across different countries. The data were based on respondents' self-reported assessments of their skills and behaviors, which introduces risks of social desirability bias, where respondents may exaggerate positive behaviors or skills considered favorable in academic settings. Finally, the study focused mainly on competencies related to research, collaboration, and communication skills. Other important skills relevant to academic success, such as teaching effectiveness, leadership, or grant writing, have not been comprehensively explored. Future research could benefit from a broader scope of skills to provide a more holistic understand-

ing of academic and research roles. The scope of this work was limited to Egyptian higher education institutions, and no comparison was made with any other country, as we could not find a similar study.

The study did not allow for the collection of more detailed information about the respondents (area of training, area of activity or research, type of university, etc.), so it was not possible to assess whether there are differences between disciplinary areas (humanities and technical sciences), profile of the academicians (teaching or research), and the type of university (public or private).

Likewise, given the focus and objectives of the research, the literature review did not consider the historical context of trends in academic human capital in Egypt and did not analyze the influence and impact of educational reforms and policies on academia and teachers.

In this sense, considering in future work a set of broader variables in the educational ecosystem, especially in Egypt, will help to enrich the analysis, knowledge, and discussion about the complexity of this object of study.

Future research could deepen understanding of how these perceived competencies translate into actual research and productivity outcomes. Longitudinal studies could also investigate the development of these skills over time and their impact on career trajectories in academic and research environments. On the other hand, it would be relevant to include other variables that can influence research and scientific investigation (for example, leadership, scholarships) and carry out comparative studies between regions and/or nations. Additionally, exploring the interplay between AHC dimensions and other variables, such as institutional policies and external funding, could yield valuable insights into optimizing academic performance. Such studies would be more interesting if a comparison between two or more countries in similar economies could be made.

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