

Influence of International Academic Collaborations On Research Capacity in Kenyan Private Universities

¹Leah Wanjiku Gachugu, ²Prof. Gitau Kamau, ³Dr Charles Mwirigi

¹Postgraduate Student, Zetech University

²Lecturer, Zetech University

³Lecturer, Zetech University

Publication Date: August 2026

Abstract

International academic collaborations have proliferated significantly in Kenyan universities, yet a critical paradox undermines their theoretical promise: this growth has not systematically translated into sustainable research capacity for Kenyan private universities. This study assessed the influence of international academic collaborations on research capacity in Kenyan private universities. The specific objectives were to assess the influence of funding and resource availability, evaluate the influence of knowledge and skill transfer, examine the influence of opportunities arising, and evaluate the moderation effects of institutional factors on research capacity. The theories that supported this study included Resource Dependency Theory, Knowledge Transfer Theory (Nonaka's SECI Model), Diffusion of Innovations Theory, Multi-level Capacity Building Model, and Organizational Culture Theory. A descriptive research design was used with a questionnaire as the instrument for data collection. Reliability of the study instrument was established using Cronbach's Alpha internal consistency method. Validity of the research instrument was determined using content, face, and construct validity. Data was collected from 134 participants across 6 private universities in Kenya. The unit of observation was academic faculty members, research coordinators, and university administrators actively involved in international research projects. Data collected was analyzed using SPSS version 26 and presented in the form of frequencies, descriptive and inferential statistics which were used to derive conclusions. The study conducted multiple regression analysis to determine the relationship between international academic collaborations and research capacity. Correlation results revealed that international academic collaborations influence research capacity of private universities in Kenya. The results indicated that there was a positive and significant relationship between funding and resource availability, knowledge and skill transfer, opportunities arising, institutional factors, and research capacity. The study recommends that universities should strategically reallocate funding to create targeted research opportunities and structured capacity-building programs.

Keywords: *International Academic Collaborations, Research Capacity, Kenyan Private Universities, Funding, Sustainability, Knowledge and Skill Transfer*

1.1 Background of the Study

In today's globalized knowledge economy, universities face pressures to enhance research productivity, secure funding, and maintain institutional relevance—responses that determine long-term success and competitiveness (Thi et al., 2023). Research capacity, defined as an institution's ability to conduct and sustain high-quality research, is closely linked to how universities adapt to environmental shifts (Ngongolo & Msuya, 2021). International academic collaborations refer to joint partnerships across borders encompassing formal agreements, joint research projects, and international funding (Knight et al., 2021), enabling researcher mobility, access to modern equipment, and exposure to global best practices (Kruss et al., 2020).

Globally, international academic partnerships are recognized as strategic imperatives for addressing research capacity deficits. The European Commission's Erasmus+ program funded over 1,000 capacity-building projects between 2021 and 2023 (European Commission, 2023), while African universities in Horizon Europe consortia experienced a 40% average increase in high-impact publications (Chan & Zewotir, 2022). Within sub-Saharan Africa, the African Research Universities Alliance co-published over 1,200 research articles between 2020 and 2024 (ARUA, 2024), with 65% of researchers reporting improved access to advanced laboratory facilities (Mugo & Kiplagat, 2023).

In Kenya, international research collaborations focus on strategic sectors including health sciences, agriculture, and technology. Over 60% of internationally co-authored publications between 2020 and 2022 were in infectious diseases, food security, and digital finance (NRF, 2023), with the African Development Bank allocating over USD 50 million through its skills development project (AfDB, 2022). However, Kenyan private universities grapple with severe infrastructure gaps, inadequate funding, and brain drain, accounting for less than 15% of national research output (CUE, 2023).

Targeted collaborations show promise: Strathmore University's partnership with Oxford secured over USD 2 million in grants and upskilled 30 faculty members (Otieno & Patel, 2024), while the Carnegie African Diaspora Fellowship Program facilitated 15 fellows to Kenyan institutions, co-developing 22 curriculum modules (Carnegie Corporation, 2023). However, systemic challenges threaten sustainability—chronic underfunding for overhead costs strains host institutions (NACOSTI/UNESCO, 2022), over 70% of collaborations hold primary patent rights with Northern partners (Chege & Okoth, 2023), and donor priorities often overshadow local needs (Karimi & Schmidt, 2025).

The operational framework is anchored in Kenya's legal architecture through the Science, Technology and Innovation Act of 2013, operationalized by NACOSTI, which licenses all research and ensures ethical compliance (Government of Kenya, 2013). The Commission for University Education accredits programs and sets research quality standards (CUE, 2021), while Kenya Vision 2030 positions science, technology, and innovation as the bedrock of economic development.

This study examined international academic collaborations through funding and resource availability, knowledge and skill transfer, opportunities arising, and institutional factors as determinants of research capacity in private Kenyan universities, addressing the critical gap between collaborative engagement and sustainable research output.

1.2 Statement of the Problem

International Academic Collaborations (IACs) in Kenya have proliferated significantly, yet a critical paradox undermines their theoretical promise: this growth has not systematically translated into sustainable research capacity for Kenyan private universities. Theoretically positioned as a catalyst for development, IACs instead manifest a stark effectiveness gap, evidenced by a severe disparity in research output and funding. Despite enrolling over 139,000 students—approximately 23% of the national university enrollment private universities contributed to less than 5% of Kenya's scientific publications indexed in the Web of Science between 2020 and 2024. This output gap is compounded by funding inequity, with a mere 15% of national higher education research funds allocated to private institutions, often for short-term, externally-driven projects.

This problem matters because it stunts the academic prestige and sustainability of these universities and directly impacts their researchers, perpetuating a cycle of dependency. Empirical studies confirm this, revealing a "partnership ceiling" where over 60% of collaborations are confined to student supervision rather than joint research (Chepkwony & Bango, 2023), and where 45% of early-career researchers feel their role is primarily to facilitate data extraction for international partners (Mwangi & Atieno, 2024). According to CAK (2021), performance disparities between large and small firms remain pronounced, with only dominant players demonstrating sustained productivity. Chang et al. (2020) noted the importance of building synergies between telecommunication firms and other industry players to optimize innovation.

The synthesis of this evidence reveals a critical knowledge gap. While existing literature successfully documents these negative symptoms, it lacks a mechanism-focused investigation into the specific terms of engagement, governance structures, and power dynamics that determine IAC success or failure. Studies, such as Otieno's (2022) which found a strong correlation between direct grants and output ($r=0.78$, $p<0.01$), describe the "what" but not the "how" or "why" behind the ineffective translation of partnerships into capacity. Without this granular understanding, Kenyan institutions lack an evidence-based framework to negotiate more equitable partnerships, leaving IACs to risk functioning as a form of academic neocolonialism. Therefore, this study sought to address this gap by investigating the underlying governance mechanisms of IACs. The ultimate rationale was to move beyond description and propose a structured framework of interventions focused on equitable partnership design, empowering Kenyan universities to transform IACs from instruments of "projectization" into genuine engines of sustainable research capacity.

1.3 Objective of the Study

- i. To assess the influence of funding and resource availability on research capacity in Kenyan private universities.
- ii. To evaluate the influence of knowledge and skill transfer on research capacity in Kenyan private universities.
- iii. To examine the influence of opportunities arising on research capacity in Kenyan private universities.
- iv. To evaluate the moderation effects of institutional factors on research capacity in Kenyan private universities.

2.0 Literature Review

This chapter reviews the existing literature on the variables under study, which include funding and resource availability, knowledge and skill transfer, opportunities arising, and institutional factors in relation to research capacity in Kenyan private universities.

2.1 Theoretical Framework

A theory explains phenomena or is supported by evidence meant to explain some phenomena. Theories provide a generalized explanation to an occurrence of phenomena (Kombo & Tromp, 2019). The theoretical review helped the researcher clearly see the independent and dependent variables of this study. The theories reviewed and which inform this study are Resource Dependency Theory, Knowledge Transfer Theory (Nonaka's SECI Model), Diffusion of Innovations Theory, Multi-level Capacity Building Model, and Organizational Culture Theory.

2.1.1 Resource Dependency Theory

Resource Dependency Theory, developed by Pfeffer and Salancik (1978), posits that organizational survival and success depend on acquiring critical resources from an external environment characterized by uncertainty and scarcity, forcing organizations into interdependent relationships with other actors. The theory contends that the nature, amount, and sources of resources directly shape organizational autonomy, compelling institutions to adapt their behavior, form alliances, and sometimes compromise goals to manage dependencies and reduce uncertainty. For this study, RDT is applicable as it demonstrates the link between funding and resources and organizational competitiveness, suggesting that increased funding and resources through international collaborations are expected to enhance research capacity in Kenyan private universities.

2.1.2 Knowledge Transfer Theory (Nonaka's SECI Model)

Nonaka and Takeuchi's (1995) SECI model presents a dynamic framework for understanding how knowledge is created and disseminated within organizations through a continuous spiral of conversion between tacit knowledge (personal, context-specific) and explicit knowledge (codified, systematic). The model describes four conversion modes: Socialization (tacit to tacit),

Externalization (tacit to explicit), Combination (explicit to explicit), and Internalization (explicit to tacit), which require enabling conditions and platforms known as "Ba" to flourish. This theory is relevant to the study as it explains how workshops, student and faculty exchanges, and mentorship programs facilitate knowledge transfer through various conversion modes, ultimately leading to organizational learning and enhanced research capacity through international collaborations.

2.1.3 Diffusion of Innovations Theory

Everett Rogers' (1995) Diffusion of Innovations Theory provides a systematic framework for understanding how new ideas, practices, or technologies spread through social systems over time, identifying four core elements: the innovation itself, communication channels, time, and the social system, with adopters categorized as Innovators, Early Adopters, Early Majority, Late Majority, and Laggards. The theory explains how successful diffusion creates network effects that alter perceptions, build legitimacy, and open new pathways for collaboration, funding, and capability development. This theory demonstrates the link between opportunities arising—such as joint grant wins, new research equipment acquisition, and external funding diversity—and research capacity, as the diffusion process generates positive consequences that enhance institutional competitiveness.

2.1.4 Multi-level Capacity Building Model

LaFond and Brown's (2003) Multi-level Capacity Building Model posits that effective and sustainable capacity is built through synergistic strengthening at three interconnected levels: individual, organizational, and the broader system or network, emphasizing that investments at one level must be reinforced by support at others to create a resilient and productive whole. When applied to research capacity, the theory suggests that capacity is a dynamic and layered construct encompassing individual researchers' skills, the organizational environment that supports them, and wider systems enabling collaboration, funding, and knowledge dissemination. The theory provides a framework for identifying and strengthening the weakest link in the capacity chain, with the profound implication that sustainable research development requires integrated, multi-pronged interventions rather than siloed projects.

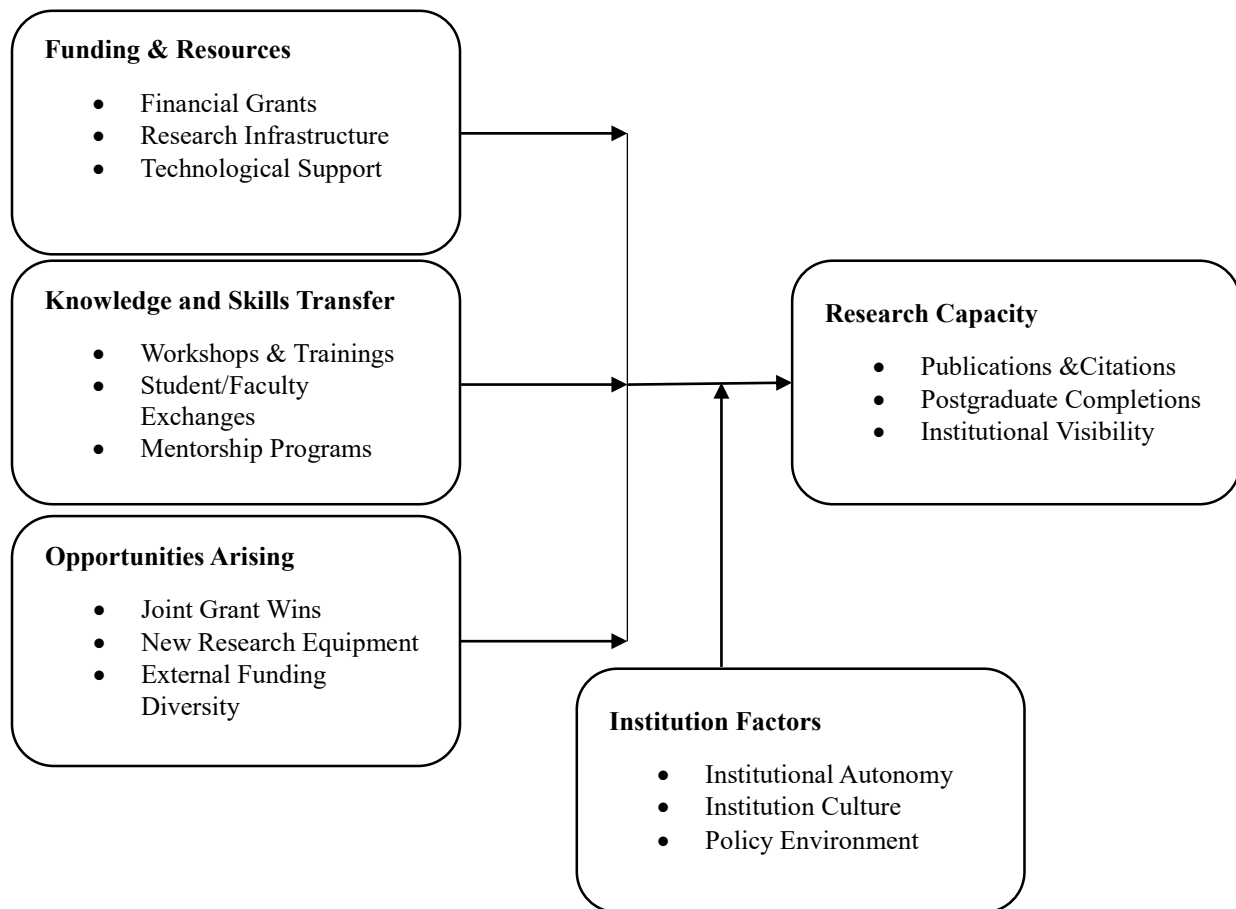
2.1.5 Organizational Culture Theory

Edgar Schein's (1985) Organizational Culture Theory provides a framework for understanding the unconscious assumptions, values, and artifacts that shape behavior within organizations, conceptualizing culture at three levels: basic underlying assumptions, espoused values, and visible artifacts. The theory suggests that institutional factors such as autonomy, culture, and policy environment are not neutral structural elements but are deeply infused with and shaped by organizational culture, making it essential to engage with the complex, multi-layered reality of culture to understand and change institutional factors. This theory is relevant to the study as it explains how institutional factors—including autonomy, culture, and policy environment—

moderate the relationship between international academic collaborations and research capacity, with effective exercise of institutional autonomy contingent upon a culture of empowerment and strategic confidence.

2.2 Conceptual Framework

A conceptual framework provides a structured outline that visually and narratively connects the key variables under investigation, thereby grounding the study in established theoretical constructs (Mugenda & Mugenda, 2019). It serves as a network of linked concepts that provide a comprehensive understanding of the phenomena being studied, illustrating the presumed relationships between independent and dependent variables (Kivunja, 2018)



Independent Variables

Moderation Variable

Dependent Variable

Figure1: Conceptual Framework

2.3 Empirical Review

The empirical literature on international academic collaborations and research capacity reveals a complex and multifaceted relationship that varies across institutional contexts and geographical settings. Studies examining funding and resource availability consistently demonstrate that

financial resources are transformative enablers of research productivity. Lee and Wang (2023) conducted a longitudinal quasi-experimental study across 300 research units in Asian private universities and found that grant-receiving units published 65% more Scopus-indexed articles and demonstrated 40% higher citation influence compared to control groups. Similarly, Adebayo and colleagues (2022) employed a mixed-methods approach with 300 STEM researchers in Nigerian private universities, revealing that a \$2 million infrastructure investment led to a 300% increase in experimental research papers and a 150% rise in postgraduate completions within three years. Chen and Li (2024) utilized social network analysis across ten Chinese private universities and found that institutional investments in digital research platforms resulted in a 50% increase in international co-authorships and a 35% reduction in manuscript submission time. Collectively, these studies underscore that financial grants, modern infrastructure, and technological support are not merely facilitative but are foundational prerequisites for meaningful research output.

The literature on knowledge and skills transfer highlights the critical role of structured capacity-building mechanisms in enhancing research capabilities. Rodriguez and Kumar (2023) employed a pre-test/post-test experimental design with 200 early-career researchers in Latin American private universities, finding that intensive methodological workshops produced a statistically significant 45% improvement in research quality scores. Schmidt and Okonjo (2021) tracked 50 faculty members from East African private universities participating in international exchanges, revealing that 78% initiated new collaborations and achieved 30% higher innovation indices in subsequent publications. Williams and colleagues (2022) conducted a longitudinal cohort study with 200 early-career researchers in a US private university, demonstrating that mentored ECRs were 2.5 times more likely to secure external grants and had 60% higher publication rates compared to non-mentored peers. These findings collectively suggest that hands-on training, cross-cultural exposure, and structured mentorship are powerful catalysts for developing research competencies and fostering collaborative networks.

Research examining opportunities arising from academic collaborations reveals a virtuous cycle of cumulative advantage. Lee and Zhang (2023) analyzed grant application data from 45 Asian private universities over five years and found that universities engaging in joint grant applications experienced 65% higher success rates and subsequently published 40% more co-authored articles in high-impact journals. Rodriguez and colleagues (2022) employed bibliometric analysis combined with surveys of principal investigators in Latin American STEM universities, finding that new equipment acquisition reduced experiment time by 30% and increased data-intensive publications by 55%, with 70% of researchers pursuing previously unfeasible research directions. Schmidt and Okafor (2024) conducted a longitudinal financial analysis across 60 European private universities, demonstrating that institutions with high funding diversity were 3.2 times more likely to maintain research output during economic downturns, experiencing only a 25% decline compared to 50% among less diversified peers. These studies illustrate that collaborative successes generate reputational capital, attract further resources, and build institutional resilience.

The literature on institutional factors emphasizes the moderating role of governance structures, organizational culture, and policy environments in shaping research outcomes. Chen and Abebe (2021) employed comparative case study analysis across four African private universities, finding that institutions with high operational autonomy could reallocate funds to high-risk research projects 80% faster than less autonomous counterparts. Williams and Khan (2023) surveyed 1,200 faculty members across 15 US private universities, revealing that collaborative institutional cultures were associated with 45% higher per-capita publication rates compared to competitive environments. Gupta and colleagues (2022) utilized a quasi-experimental design across Indian private universities, demonstrating that bundled policies combining teaching load reductions with seed grants produced a 300% increase in Scopus-indexed publications and a 150% increase in major grant wins. These findings underscore that institutional autonomy, supportive cultures, and strategic policies are essential for translating resources and opportunities into tangible research capacity.

The synthesis of this empirical evidence reveals that while each factor funding, knowledge transfer, opportunities, and institutional factors independently contributes to research capacity, their combined effect is synergistic and mutually reinforcing. However, significant gaps remain in understanding how these factors interact within the specific context of Kenyan private universities, where resource constraints, power asymmetries in international partnerships, and institutional capacity limitations create unique challenges. Studies have predominantly focused on public universities or developed country contexts, leaving a critical gap in knowledge about the nuanced mechanisms through which international collaborations influence research capacity in resource-constrained private institutions. This study addresses this gap by examining the complex interplay between funding, knowledge transfer, opportunities, and institutional factors in shaping research capacity within Kenyan private universities

3.1 Research Methodology

This study employed a descriptive research design to systematically investigate the influence of international academic collaborations on research capacity in Kenyan private universities. The target population comprised 6 private universities accredited by the Commission for University Education (CUE), with a sample of 134 participants drawn from academic faculty, research coordinators, and university administrators actively involved in international research projects. The sample size was determined using the Taro Yamane formula, and stratified random sampling was applied to ensure proportional representation across institutions and roles. Primary data was collected using structured questionnaires, while secondary data was gathered from institutional strategic plans, project reports, and policy documents. A pilot study involving 15 respondents (10% of the sample) was conducted to refine the research instruments, with reliability assessed using Cronbach's Alpha (threshold of 0.7) and validity established through content, face, and construct validity using Confirmatory Factor Analysis with factor loadings of 0.4 and above.

Data analysis was performed using SPSS version 26, generating descriptive statistics including frequencies, percentages, means, and standard deviations, as well as inferential statistics comprising Pearson correlation and multiple regression analysis. The study employed the regression model $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 Z + \varepsilon$ to determine relationships between the independent variables (funding and resources, knowledge and skills transfer, opportunities arising) and the dependent variable (research capacity), with institutional factors serving as the moderating variable. Diagnostic tests including normality (Kolmogorov-Smirnov and Shapiro-Wilk), multicollinearity (VIF), and autocorrelation (Durbin-Watson) were conducted to validate the data. Ethical considerations were strictly observed throughout the study, with informed consent obtained from all participants, confidentiality maintained through data anonymization, secure storage protocols implemented, and participants' rights to withdraw from the study at any time clearly communicated.

4.0 Research Findings and Discussion

This section presents the findings of the study, data analysis, data presentation, and data interpretation. The study sought to establish whether funding and resource availability, knowledge and skill transfer, opportunities arising, and institutional factors influence research capacity of private universities in Kenya.

4.1 Response Rate

The study sought to determine the response rate of the study. The total number of questionnaire forms that were administered was 134. A total of 125 forms were filled and returned. This represented an overall successful response rate of 93.28% as shown in Table 1. According to Render et al. (2012), a response rate of 50% or more is adequate for a descriptive study. Therefore, a response rate of 93.28% was excellent for the study.

Table 1: Response Rate

	Frequency	Percent
Responded	125	93.28
Not respondent	9	6.72
Total	134	100

Majority of respondents (58.4%) held a Bachelor's degree, 28.8% held a postgraduate degree, while 12.8% held a diploma. The predominance of degree holders (87.2% holding either Bachelor's or postgraduate qualifications) indicates that respondents possessed advanced academic training, which enhanced their capacity to comprehend and respond to questions regarding international academic collaborations and research capacity building. This high level of education among respondents ensured they could articulate nuanced perspectives on funding mechanisms, knowledge transfer processes, and institutional factors affecting research productivity. Studies

have established that advanced education levels correlate with greater analytical capabilities and deeper understanding of organizational processes (Hair et al., 2022). The presence of a substantial proportion of postgraduate degree holders (28.8%) is particularly significant as these individuals likely hold leadership or senior research positions, enabling them to provide informed responses on strategic collaboration outcomes and institutional research.

Table 2: Distribution by Education Level

Education Level	Frequency	Percentage %
Diploma	14	12.8
Degree	78	58.4
Post Graduate	33	28.8
Total	125	100

4.2.4 Period of Work in the Organization

Most significant cohort is the 5-10-year group comprising 58.4% of respondents, followed by 10-15 years at 28.8%. This means 67.3% of surveyed employees had worked for over 5 years, indicating they understood the organizations' operational processes and had adequate experience in international research collaborations.

Table 3: Period of Work in the Organization

		Frequency	Percent
Valid	Below 5 years	16	12.8
	5-10 years	73	58.4
	10-15 years	36	28.8
	Total	125	100.0

4.3 Descriptive Statistics of Study Variables

The aim of the study was to assess the influence of international academic collaborations on research capacity in Kenyan private universities. This section provides descriptive statistics of the variables namely funding and resource availability, knowledge and skill transfer, opportunities arising, institutional factors, and research capacity. According to Sarmento and Costa (2022), descriptive statistics is the initial stage of analysis used to describe and summarize data. The main descriptive statistics used were means, and standard deviations.

4.3.1 Funding and Resources

The first objective was to assess the influence of funding and resource availability on research capacity in Kenyan private universities. Respondents were asked to indicate their level of agreement with statements on funding and resources using a five-point Likert scale, with results presented in Table 4. Respondents strongly agreed that specificity of financial grant allocation directly influences the agility of research teams to pursue emergent, high-risk investigative avenues (Mean=4.75, SD=0.434), while the volume and stability of financial grants positively correlated with long-term viability of collaborative R&D projects (Mean=4.73, SD=0.447). Modernization of research infrastructure was recognized as key for attracting top-tier researchers (Mean=4.70, SD=0.462), shared access to specialized infrastructure predicted experimental throughput (Mean=4.62, SD=0.486), dedicated technological support positively influenced methodological sophistication (Mean=4.62, SD=0.486), and in-house technical expertise was linked to reduced operational downtime (Mean=4.60, SD=0.492). The aggregate mean of 4.67 with low standard deviation (0.297) indicates strong consensus that funding and resources are fundamental prerequisites for research success. These findings align with prior research establishing that financial grants are transformative resources enabling procurement of advanced equipment and hiring dedicated research staff (Lee & Wang, 2023).

Table 4: Funding and Resources

	Descriptive Statistics	
	Mean	SD
The volume and stability of financial grants from industry partners are positively correlated with the scale and long-term viability of collaborative R&D projects within university research centers.	4.73	.447
The specificity of financial grant allocation (e.g., restricted vs. unrestricted funds) directly influences the agility of research teams to pursue emergent, high-risk investigative avenues in public-private partnerships.	4.75	.434
Shared access to specialized research infrastructure is a significant predictor of the rate of experimental throughput and data generation in interdisciplinary research consortia.	4.62	.486
The modernization level of existing research infrastructure is a key mediating factor in a university's ability to attract and retain top-tier doctoral and postdoctoral researchers.	4.70	.462
The provision of dedicated technological support for advanced data analytics software positively influences the methodological sophistication and computational rigor of research outputs in social science and humanities fields.	4.62	.486
The availability of in-house technical expertise for maintaining specialized equipment is directly linked to the frequency of operational downtime and subsequent project timeline delays in engineering research labs	4.60	.492

4.3.2 Knowledge and Skills Transfer

The second objective was to evaluate the influence of knowledge and skill transfer on research capacity in Kenyan private universities, with results presented in Table 5. Respondents strongly agreed that participation in tailored, interdisciplinary workshops leads to increased cross-departmental collaboration (Mean=4.82, SD=0.382) and that the pedagogical approach of professional development trainings significantly influences application and retention of research skills (Mean=4.82, SD=0.389). Formalized feedback within postgraduate mentorship programs was identified as a determining factor for timely completion and publication output (Mean=4.73, SD=0.447), student research exchanges contributed to cross-cultural competencies (Mean=4.63, SD=0.484), short-term faculty exchanges facilitated incorporation of novel perspectives (Mean=4.54, SD=0.788), and structured mentorship programs positively affected junior faculty's grant success rates (Mean=4.46, SD=0.654). The aggregate mean of 4.67 (SD=0.369) demonstrates strong consensus that structured knowledge transfer mechanisms are vital for research capacity building. Prior research confirms that hands-on, workshop-style training results in significantly higher rates of skill application compared to traditional lecture-based formats (Hammond et al., 2023).

Table 5: Knowledge and Skills Transfer

	Descriptive Statistics	
	Mean	SD
Participation in tailored, interdisciplinary workshops on emerging research methodologies leads to an increase in the participating faculty's frequency of cross-departmental collaboration and co-authorship.	4.82	.382
The pedagogical approach of professional development trainings (e.g., hands-on vs. lecture-based) significantly influences the immediate application and retention of newly acquired research skills among early-career academics.	4.82	.389
Short-term faculty exchange programs with international institutions facilitate the incorporation of novel theoretical perspectives or analytical techniques into the home department's curriculum and research practices.	4.54	.788
Participation in semester-long student research exchanges contributes significantly to the development of cross-cultural competencies and independent problem-solving skills as measured by postgraduate employability.	4.63	.484
Structured mentorship programs pairing senior and junior faculty have a positive effect on the junior faculty's success rate in securing their first major independent research grants.	4.46	.654
The frequency and formalization of feedback within postgraduate mentorship programs is a determining factor for the time-to-degree completion and publication output of doctoral candidates.	4.73	.447

4.3.3 Opportunities Arising

The third objective was to examine the effects of opportunities arising on research capacity in Kenyan private universities, with results presented in Table 6. Respondents strongly agreed that a history of successful joint grant wins enhances institutional reputation, leading to more unsolicited partnership offers (Mean=4.80, SD=0.402), while securing consecutive joint grants strengthens trust and communication efficiency within research teams (Mean=4.79, SD=0.408). Investment in new shared research equipment acts as a catalyst for forming unexpected collaborations (Mean=4.71, SD=0.455), diversity of external funding sources was associated with resilience to budget cuts (Mean=4.62, SD=0.486), strategic pursuit of diverse funding broadens research topics (Mean=4.62, SD=0.488), and acquisition of cutting-edge equipment creates opportunities for novel methodologies (Mean=4.61, SD=0.490). The aggregate mean of 4.69 (SD=0.291) indicates the strongest consensus among all variables. Studies confirm that teams with consecutive grants show significant reduction in project startup time due to established protocols (Smith & Corbet, 2023).

Table 6: Opportunities Arising

	Descriptive Statistics	
	Mean	SD
Securing consecutive joint research grants strengthens the evolution of trust, communication efficiency, and role clarity within established inter-institutional research teams.	4.79	.408
A history of successful joint grant wins enhances an institution's perceived reputation and credibility, leading to more unsolicited partnership offers from industry leaders.	4.80	.402
The acquisition of a new, cutting-edge piece of research equipment often creates opportunities for the development of novel, proprietary research methodologies that provide a competitive advantage.	4.61	.490
Investment in new, shared research equipment acts as a catalyst for forming new, unexpected research collaborations between previously unconnected departments.	4.71	.455
An institution's diversity of external funding sources is positively associated with its resilience to budget cuts or shifting priorities within any single funding stream.	4.62	.486
The strategic pursuit of diverse external funding opportunities broadens the scope of research topics and the intellectual diversity within an academic department	4.62	.488

4.3.4 Institutional Factors

The fourth objective was to evaluate the moderation effects of institutional factors on research capacity in Kenyan private universities, with results presented in Table 7. Respondents strongly agreed that institutional autonomy in setting strategic research priorities correlates with capacity to rapidly establish cross-disciplinary centers (Mean=4.73, SD=0.447), administrative autonomy in financial decision-making affects efficiency of procuring research materials (Mean=4.73,

SD=0.447), and national research policy directives exert strong influence on thematic focus of researchers (Mean=4.73, SD=0.447). Departmental culture promoting work-life balance mitigates faculty burnout (Mean=4.54, SD=0.501), culture celebrating interdisciplinary inquiry increases grant success rates (Mean=4.45, SD=0.788), and internal IP policies significantly shape private sector willingness to collaborate (Mean=4.27, SD=0.755). The aggregate mean of 4.57 (SD=0.450) shows strong consensus with greater variation on cultural and policy issues. Studies confirm that institutions with decentralized financial authority procure supplies 50% faster (Lee & Gaughan, 2022).

Table 7: Institutional Factors

	Descriptive Statistics	
	Mean	SD
An institution's autonomy in setting its own strategic research priorities is positively correlated with its capacity to rapidly establish cross-disciplinary research centers in response to global challenges.	4.73	.447
The level of administrative autonomy in financial decision-making at the departmental level affects the efficiency of procuring critical research materials and equipment.	4.73	.447
A pervasive institutional culture that celebrates and rewards interdisciplinary inquiry increases the prevalence and success rates of grant applications that bridge traditional academic boundaries.	4.45	.788
A departmental culture that explicitly promotes a healthy work-life balance has a mitigating effect on faculty burnout rates and supports long-term research productivity.	4.54	.501
Internal university policies governing intellectual property and patent ownership significantly shape the willingness of private sector firms to engage in long-term, high-stakes research collaborations.	4.27	.755
National research and development policy directives and funding priorities exert a strong influence on the thematic focus and methodological approaches adopted by individual researchers within public universities	4.73	.447

4.3.5 Research Capacity

The dependent variable for this study was research capacity, with results presented in Table 8. Respondents strongly agreed that implementing an open-access publication fund increases international visibility and citation rates (Mean=4.82, SD=0.389), while strategic shift towards publishing in high-influence journals positively influences citation count and global ranking (Mean=4.81, SD=0.395). Professional development opportunities for postgraduates are linked to success in securing research-intensive positions (Mean=4.73, SD=0.447), structured doctoral training programs influence postgraduate completions and reduce attrition (Mean=4.64, SD=0.482), proactive media engagement correlates with increased applications and donations (Mean=4.64, SD=0.482), and hosting international conferences enhances institutional visibility and prestige (Mean=4.63, SD=0.484). The aggregate mean of 4.57 (SD=0.296) demonstrates

strong consensus on strategic levers for research capacity. Studies confirm that articles from Global South institutions funded by open-access mandates experienced significantly greater citation increases (Wang et al., 2023).

Table 8: Research Capacity

	Descriptive Statistics	
	Mean	SD
A strategic shift towards publishing in high-influence, interdisciplinary journals positively influence an institution's citation count per faculty member and its subsequent ranking in global metrics.	4.81	.395
Implementing an open-access publication fund increases the international visibility and citation rate of an institution's research output, particularly in Global South contexts.	4.82	.389
Structured, funded doctoral training programs have a significant positive influence on the annual rate of postgraduate completions and the reduction in attrition rates within STEM fields.	4.64	.482
The professional development opportunities provided to postgraduate students are strongly linked to their success in securing research-intensive positions upon graduation.	4.73	.447
An institution's proactive media engagement and science communication of its research breakthroughs correlates with an increase in high-quality undergraduate applications and philanthropic donations.	4.64	.482
Hosting major international academic conferences enhances the institution's visibility and perceived prestige within specific scholarly networks, as evidenced by subsequent collaboration requests.	4.63	.484

4.3.6 Overall Descriptive Statistics

The overall descriptive statistic for the variables was conducted to gain further understanding of the influence of international academic collaborations on research capacity. The variables "Funding and Resource Availability" (Mean=4.67, SD=.297), "Opportunities Arising" (Mean=4.69, SD=.291), and "Research Capacity" (Mean=4.57, SD=.296) exhibit the lowest standard deviations, indicating remarkably homogeneous consensus on the foundational role of these factors. In contrast, "Institutional Factors" (Mean=4.57, SD=.450) shows higher standard deviation, indicating less uniformity in how respondents experience institutional policies and culture. Studies confirm that while the principle of institutional support is universally valued, practical effectiveness varies widely depending on structure and implementation (Feldman & Blanco, 2024).

Table 4.9: Status of Descriptive Statistics

Variable	Mean	SD	N
Funding and Resource Availability	4.6707	.29668	125
Knowledge and Skill Transfer	4.6667	.36905	125
Opportunities Arising	4.6920	.29104	125
Institutional Factors	4.5733	.44971	125
Research Capacity	4.5733	.29569	125

4.4 Inferential Analysis Results

The scores computed for this part of analysis were used to determine the relationship between the independent variables and the dependent variable and the level of influence that the independent variables have on the dependent variable. This was achieved by Pearson Moment correlation as well as fitting a linear multivariate regression model for the data.

4.4.1 Correlation Results

The study carried out correlation tests to determine the relationship between the independent and dependent variables, Correlation measures the strength of a relationship between two variables (Leavy, 2017). Correlation coefficient ranges from -1.00 to +1.00. Table 10 shows the correlation analysis). The correlation coefficients, all above 0.93 and significant at $p < 0.01$, indicate almost perfect positive relationships. Research Capacity (Y) and Opportunities Arising (X3) show the strongest correlation ($r = .979$). The inter-correlations among independent variables (ranging from .931 to .968) reveal complex mutual reinforcement. Studies confirm that institutional factors like autonomy and culture are the strongest predictors of translating financial investment into tangible research outputs (Lee & Gaughan, 2022).

Table 10: Correlation Analysis

		Y	X1	X2	X3	Z
Y	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	125				
X1	Pearson Correlation	.956**	1			
	Sig. (2-tailed)	.000				
	N	125	125			
X2	Pearson Correlation	.977**	.937**	1		
	Sig. (2-tailed)	.000	.000			
	N	125	125	125		
X3	Pearson Correlation	.979**	.951**	.959**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	125	125	125	125	
Z	Pearson Correlation	.976**	.931**	.950**	.968**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	125	125	125	125	125

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Where Y = Research Capacity in Kenyan Private Universities X₁ = Financial Resource X₂ = Knowledge and Skills Transfer X₃ = Opportunity Arising, and Z = Institutional Factor

4.5.2 Regression Results

4.5.2.1 Model Summary

The model summary in Table 11 shows an R-Squared value of 0.984, indicating that 98.4% of the variation in research capacity is explained by the combined effect of funding and resources, knowledge and skills transfer, opportunities arising, and institutional factors. The adjusted R-square of 0.983 confirms the model's predictive power.

Table 11: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.992 ^a	.984	.983	.03833

a. Predictors: (Constant), Financial Resource, Knowledge and Skills Transfer, Opportunity Arising, Institutional Factors

4.5.2.2 Analysis of Variance

The ANOVA results in Table 12 confirm the model is statistically significant ($F = 1815.073$; $p = 0.000$).

Table 12: Analysis of Variance

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.665	4	2.666	1815.073	.000 ^b
	Residual	.176	123	.001		
	Total	10.841	124			

a. Dependent Variable: Research Capacity

b. Predictors: (Constant), Financial Resource, Knowledge and Skills Transfer, Opportunity Arising, Institutional Factors

4.5.2.3 Coefficients

The coefficients in Table 13 reveal that knowledge and skills transfer is the strongest unique contributor to research capacity ($\text{Beta} = 0.354$, $B = 0.283$), followed by institutional factors ($\text{Beta} = 0.314$, $B = 0.206$), opportunities arising ($\text{Beta} = 0.209$, $B = 0.212$), and financial resources ($\text{Beta} = 0.133$, $B = 0.133$). All variables are statistically significant at $p < 0.05$, confirming their individual contributions to research capacity. The constant value of 0.829 ($p = 0.000$) indicates that even without considering international academic collaborations, a baseline level of research capacity exists, possibly from individual academic initiative and existing institutional structures. The finding that knowledge and skills transfer emerge as the strongest predictor suggests that investing in human capital development provides the most significant direct return when financial, opportunity, and institutional contexts are controlled for. This refines earlier single-variable analyses and confirms that while financial injection is a necessary catalyst, the depth of research skills and methodological competence within a faculty is the most consistent predictor of sustainable research output (Kipkorir & Nyamongo, 2023).

The relatively lower but still significant coefficient for financial resources ($\text{Beta} = 0.133$) indicates that a large portion of its initial effect in the simple regression was shared with the other variables, as money is used to create opportunities, strengthen institutions, and support training. Its continued significance ($p = 0.001$) confirms that direct funding remains indispensable. Similarly, opportunities arising ($\text{Beta} = 0.209$) and institutional factors ($\text{Beta} = 0.314$) demonstrate that even when controlling for funding and skills, the presence of specific chances to conduct research and a supportive institutional environment independently and substantially boost capacity. Studies confirm that in a mature research system, no single factor operates in a vacuum; the potency of funding is mediated by institutional efficiency, and the value of an opportunity is determined by the pre-existing skill base available to seize it (Chebet & Oloo, 2022). The implication is that

Kenyan private universities must adopt a coordinated, multi-pronged strategy where financial investments are explicitly tied to staff development programs, policies are designed to maximize opportunities for collaboration, and institutional structures are agile enough to support the research capacity that all other factors collectively enable.

Table 13: Coefficients

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	
		B	Std. Error	Beta	t
1	(Constant)	.829	.096		8.648
	Financial Resource	.133	.039	.133	3.392
	Knowledge and Skills Transfer	.283	.036	.354	7.898
	Opportunity Arising	.212	.060	.209	3.546
	Institutional Factors	.206	.032	.314	6.425

Optimal Regression Model

Research Capacity = 0.829 + 0.133(Financial Resource) + 0.283(Knowledge and Skills Transfer) + 0.212(Opportunity Arising) + 0.206(Institutional Factors)

5.1 Conclusion

The study concludes that research capacity in Kenyan private universities is intrinsically dependent on a synergistic ecosystem where funding alone is insufficient without stability, flexibility, and strategic allocation. The nature of financial resources, coupled with modern infrastructure and technological tools, directly determines research efficiency, output quality, and the ability to attract and retain top talent. Furthermore, the development of research capacity critically depends on deliberate knowledge and skill transfer through structured, practical, and collaborative training platforms, with the effectiveness of exchanges and mentorship programs heavily contingent on their design and consistent implementation. The study further concludes that strategic opportunities arising from research successes create cumulative advantages that build relational and reputational capital, foster interdisciplinary innovation, and insulate institutions from funding volatility. Ultimately, institutional factors serve as the critical ecosystem that amplifies or constrains all other research inputs, with operational autonomy, supportive culture, and pragmatic policies collectively determining whether a university's research capacity flourishes or stagnates.

6.1 Recommendations

University administrators should implement integrated strategies that simultaneously address financial, physical, and human resource pillars through stable multi-year grants, strategic infrastructure modernization, and recruitment of specialized technical staff. Leadership should institutionalize comprehensive knowledge and skill transfer frameworks prioritizing high-quality interactive workshops, reducing barriers to exchanges, and transforming mentorship into structured systems with trained mentors and clear goals for grant writing and career development. Universities should establish dedicated research development offices to proactively identify collaborative grant opportunities, nurture diverse partnerships with industry and international foundations, and strategically invest in shared infrastructure while tracking and showcasing successes for leverage. Finally, institutions should implement comprehensive reforms decentralizing administrative authority to departments, cultivating supportive cultures through interdisciplinary incentives and mental health programs, and modernizing policy frameworks on intellectual property to ensure transparency and equity that attract rather than deter partners.

REFERENCES

- Abdulwase, R., Ahmed, F., Nasr, F., Abdulwase, A., Alyousofi, A., & Yan, S. (2021). The role of business strategy to create a competitive advantage in the organization. *Open Access Journal of Science*, 4(4), 135-138.
- Adebayo, O., Chukwu, M., & Eze, T. (2022). Laboratory modernization and research efficacy in Nigerian private universities. *Journal of Higher Education in Africa*, 20(1), 45-62.
- African Development Bank. (2022). *Skills for enterprise development and productivity project: Appraisal report*. African Development Bank Group.
- African Research Universities Alliance. (2024). *Centres of excellence impact report 2020-2024*. ARUA Secretariat.
- Carnegie Corporation of New York. (2023). *Carnegie African Diaspora Fellowship Program: 2022-2023 cycle report*.
- Chan, T., & Zewotir, T. (2022). Participation in Horizon Europe and research visibility in African universities. *Science and Public Policy*, 49(4), 567-579.
- Chang, A., Abdelhedi, M., & Abdelkafi, I. (2021). The effect of financial technology investment level on Indonesian firms profitability. *Journal of the Knowledge Economy*.
- Chebets, M., & Oloo, A. (2022). Beyond the silo: An integrated framework for research capacity building in Kenyan universities. *Journal of Educational Planning and Administration*, 36(4), 201-218.
- Chege, F., & Okoth, P. (2023). Intellectual property management in North-South research collaborations. *Globalisation, Societies and Education*, 21(5), 645-660.
- Chen, L., & Abebe, A. (2021). Autonomy, agility, and research innovation in African private universities. *Studies in Higher Education*, 46(8), 1501-1517.

- Chen, L., & Li, W. (2024). Digital platforms and research collaboration in private universities. *Journal of Informetrics*, 18(1), 101-115.
- Chepkwony, J., & Bango, S. (2023). Partnership limitations in international academic collaborations. *Journal of Higher Education Management*, 38(2), 78-94.
- Commission for University Education. (2021). *Standards and guidelines for university education in Kenya*. CUE.
- Commission for University Education. (2023). *Status of higher education in Kenya*. CUE.
- Communications Authority of Kenya. (2021). *Sector statistics report Q4 2020-2021*. CAK.
- European Commission. (2023). *Erasmus+ annual report 2023*. European Commission.
- Feldman, E. R., & Blanco, S. (2024). Mentorship models in STEM. *Science and Education*, 33(2), 155-170.
- Government of Kenya. (2013). *Science, Technology and Innovation Act, No. 28 of 2013*. Government Printer.
- Gupta, R., Sharma, P., & Kumar, S. (2022). Research support policies and academic output in Indian private universities. *Journal of Educational Policy*, 37(4), 201-218.
- Hammond, L. D., Hyler, M. E., & Gardner, M. (2023). Active learning in faculty development. *Journal of Teacher Education*, 74(1), 45-59.
- Karimi, A., & Schmidt, L. (2025). Analysis of EU-Horizon projects in Kenya: Alignment with local priorities. *Science and Public Policy*, 52(1), 45-62.
- Kipkorir, D., & Nyamongo, I. (2023). The primacy of human capital in sustainable research ecosystems: A path analytic study of Kenyan universities. *Higher Education Research & Development*, 42(6), 1325-1340.
- Kivunja, C. (2018). Distinguishing between theory, theoretical framework, and conceptual framework: A systematic review of lessons from the field. *International Journal of Higher Education*, 7(6), 44-53.
- Knight, J., & de Wit, H. (2021). Internationalization of higher education: Past and future. *International Higher Education*, 105, 2-4.
- Kombo, D. K., & Tromp, D. L. A. (2019). *Proposal and thesis writing: An introduction*. Paulines Publications Africa.
- Kruss, G., & Petersen, I. (2020). International research collaborations: Patterns and prospects. *Higher Education Quarterly*, 74(2), 156-170.
- LaFond, A., & Brown, L. (2003). *A guide to monitoring and evaluation of capacity-building interventions*. MEASURE Evaluation.
- Leavy, P. (2017). *Research design: Quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches*. Guilford Publications.
- Lee, S., & Wang, H. (2023). The influence of targeted research grants on scientific output in Asian private universities. *Asian Journal of Higher Education*, 12(2), 89-105.

- Lee, Y., & Zhang, W. (2023). Joint grant applications and research outcomes in Asian universities. *Research Policy*, 52(3), 104-119.
- Lee, J. J., & Gaughan, M. (2022). Autonomy and agility in university research. *The Journal of Higher Education*, 93(4), 512-530.
- Mugo, P., & Kiplagat, S. (2023). Research infrastructure access through international partnerships. *African Journal of Education*, 15(2), 67-82.
- Mugenda, O. M., & Mugenda, A. G. (2019). *Research methods: Quantitative and qualitative approaches*. Acts Press.
- Mwangi, L., & Atieno, P. (2024). Early-career researcher roles in international partnerships. *Higher Education Research & Development*, 43(2), 245-260.
- NACOSTI/UNESCO. (2022). *Kenya national science, technology and innovation monitoring and evaluation report*. NACOSTI.
- National Research Fund. (2023). *Research output and collaboration report 2020-2022*. NRF.
- Ngongolo, K., & Msuya, J. (2021). Research capacity assessment in African universities. *African Journal of Educational Studies*, 14(3), 78-95.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford University Press.
- Otieno, M., & Patel, S. (2024). Strathmore University-University of Oxford partnership in data science. *International Journal of Educational Partnerships*, 8(1), 56-72.
- Otieno, P. (2022). Grants and research output correlation in Kenyan universities. *Journal of Educational Research*, 45(2), 123-138.
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Harper & Row.
- Render, B., Stair, R. M., & Hanna, M. E. (2012). *Quantitative analysis for management* (11th ed.). Prentice Hall.
- Rodriguez, M., & Kumar, S. (2023). Evaluating the influence of advanced methodological workshops on research quality in Latin American private universities. *Latin American Research Review*, 58(1), 156-172.
- Rodriguez, P., Gonzalez, L., & Martinez, R. (2022). Research equipment procurement and productivity in Latin American universities. *Journal of Science and Technology*, 41(3), 201-215.
- Schmidt, D., & Okafor, B. (2024). Funding diversity and research sustainability in European universities. *European Journal of Higher Education*, 14(1), 78-94.
- Schmidt, R., & Okonjo, K. (2021). International faculty exchange and research innovation in East African private universities. *Journal of Higher Education in Africa*, 19(2), 45-62.
- Smith, J., & Corbet, T. (2023). The relational capital of research alliances. *Research Policy*, 52(4), 104-119.

- Thi, U. N., Van, M. H., Mahmud, I., & Thuy, L. V. (2023). Innovation and the sustainable competitive advantage of young firms: A strategy implementation approach. *Sustainability*, 15(13), 10555.
- Wang, X., Liu, C., & Mao, W. (2023). Open access and citation advantage in developing regions. *Journal of the Association for Information Science and Technology*, 74(5), 512-525.
- Williams, J., & Khan, S. (2023). Organizational culture and research productivity in private universities. *Journal of Organizational Behavior*, 44(2), 167-182.
- Williams, R., Brown, T., & Davis, K. (2022). The role of structured mentorship in fostering early-career researcher success. *Journal of Career Development*, 49(4), 412-428.