EXCELLENCIA
INTERNATIONAL MULTI-DISCIPLINARY JOURNAL OF EDUCATION
Volume 4, Issue 7, 2026 ISSN (E): 2994-9521

Institutional Barriers to Implementing Triple Helix Initiatives in Higher Education: A Case Study of State and Private Universities in Cameroon

Emile Monono Mbua, PhD
Associate Professor
emilemonono@yahoo.com
Head of Division for Teaching and Teaching Staff, Office of Academic Affairs, University of Buea

Ngweamaw Isabelle Mensiii, PhD
Guidance Counselor, Government Bilingual High School, Buea
isabellengweamaw@gmail.com

Abstract:

Despite recent policy reforms including the Law on the Orientation of Higher Education in June 2023, the integration of the Triple Helix innovation model (university-industry-government) is dangerously delayed in Cameroon. This study looked at the deep institutional impediments to commercializing university research and to formalizing relationships with industry. The study used an explanatory sequential mixed-methods design, and data from 342 students, 128 academic faculty, and 18 university administrators in selected state and private universities were collected. The results show a fractured "knowledge triad" that operates as a disjointed double helix. Napoleonic bureaucracy and centralized treasury routing administratively hobble state institutions, creating a 6-to-9-month "MoU Chokepoint" that alienates dynamic private-sector partners. On the infrastructure front, 78% of students have entrepreneurial intent, but innovation is stifled by underfunded "paper incubators" without physical prototyping labs and industry-experienced mentors, resulting in a "capital flight" of student talent to unregulated private tech clusters. The study highlights a cultural "IP Brain Drain" fueled by the regional CAMES regulatory system, which logically incentivizes professors to give up valuable local IP for promotion in foreign theoretical journals and actively discourages

commercialization. The study concluded that for the Triple Helix to be a viable economic engine in Cameroon, the state should aggressively decentralize university governance, earmark venture funding to remove nominal incubators, and implement a dual-track tenure system rewarding local patenting on par with international publishing.

Keywords: Triple Helix Model, Higher Education, Cameroon, Bureaucratic Inertia, Entrepreneurial University, CAMES, Innovation Hubs.

Introduction and Background of the Study

The Triple Helix model of dynamic interactions among academia, business, and government is one of the main engines for innovation and economic development in the global knowledge economy[1]. The "entrepreneurial university" model[2][3] has been the paradigm that developed countries have used to build successful environments where universities are not only places of teaching and traditional research but also active agents of economic growth through technology transfer, incubation, and commercialization.

However, this paradigm faces enormous structural challenges in the African context, especially in Cameroon. The Cameroonian government is aware that the realization of the objective of an emergent economy by 2035 is a precondition to the integration of universities into the national innovation system, but institutional insularity is a historical occurrence[4][5]. Earlier, it was reported that institutional ties between Cameroonian higher education institutions (HEIs) and the industrial sector were inadequate and fragmented[6].

Now, this separation is necessarily a continental and national priority. The African Development Bank's Skills for Employability and Productivity in Africa (SEPA) Action Plan (2022-2025)[7] highlights the application of the Triple Helix concept to address the significant gap between university curricula and the requirements of the business sector. There have also been regional initiatives such as the Africa Higher Education Centers of Excellence (ACE Impact projects) that have helped in institutionalizing university-industry ties to address high graduate unemployment and boost commercialization[8]. The Triple Helix theoretical framework is extensively used in policy documents across the African continent, but its execution is hampered by inadequate coordination, the absence of mediating institutions, and weak commercialization infrastructure[9].

Some private institutions, such as the Catholic University Institute of Buea (CUIB), are starting to integrate entrepreneurial education into their educational systems, and public programs, like the TAGDev program at the University of Bamenda, are making significant efforts to connect with industry. However, these initiatives are not well-coordinated. But systemic, infrastructural, and cultural problems plague Cameroon's government and commercial colleges. However, the dearth of well-established technology transfer offices and the persistence of old modes of academic governance have not yet allowed the complete functioning of the triple helix model. The "knowledge triad"[10] is so substantially underdeveloped.

Statement of the Problem

There is an urgent need for policies that promote innovation-driven economic development in Cameroon. However, institutional constraints strongly bind the higher education sector, hindering the successful implementation of Triple Helix projects. Although the "entrepreneurial university" language is currently prevalent in national discourse, the reality is a continual divide between academia and industry with systematic structural and cultural rigidities[11].

First, the obstacle of excessive administrative complexity and a highly centralized system of administration confronts the formalization of permanent industrial partnerships between public and private Cameroonian institutions. Private sector firms require nimble and time-sensitive problem-solving approaches, and the often slow process of navigating the legal and administrative hurdles

required for Memorandums of Understanding (MoUs), joint research ventures, or technology transfer agreements is a discouragement. This bureaucratic sloth breeds an environment where relationships are ad hoc, not institutionalized.

Secondly, there are massive infrastructural deficiencies actively stymying the development of student-led innovation. Students are largely denied the necessary physical and financial environments, such as functional campus incubators, science and technology parks, and seed funding mechanisms, needed for converting theoretical knowledge to practical, commercializable prototypes. Therefore, students' entrepreneurial ambition typically fizzles out before reaching the market due to the lack of structural support and mentorship facilities[12].

The pervasive academic culture among teachers, deeply ingrained, adds to these administrative and architectural obstacles. Systems of promotion and tenure are predominantly based on traditional peer-reviewed publications ("publish or perish") rather than on applied research, intellectual property production, or patenting, particularly when associated with regional regulatory bodies like the Conseil Africain et Malgache pour l'Enseignement Supérieur (CAMES). The reward system produces a culture gap, with teachers sensibly gravitating towards theoretical research rather than embarking on high-risk, financially viable innovation ventures with business partners.

This study was fundamentally intended to objectively identify and address the particular bureaucratic, physical, and cultural barriers that lead Cameroonian universities to operate in isolated silos, thereby failing in their purpose to be catalysts of national economic transformation.

Research Objectives

General Objective: To explore the institutional obstacles to the successful implementation of Triple Helix projects in state and private colleges in Cameroon.

Specific Objectives:

- To investigate the administrative and bureaucratic impediments in Cameroon's higher education that delay or inhibit the formalization of university-industry relationships.
- To determine the extent to which infrastructure shortcomings (e.g., lack of functional incubators and technology transfer offices) limit the amount of creativity and entrepreneurship among students.
- The goal is to evaluate the cultural divide between academic faculty who prioritize traditional research publications over commercializable intellectual property and patents.

Research questions

- Which administrative and bureaucratic barriers were responsible for the non-establishment of formal cooperation between companies and universities (state and private) in Cameroon?
- What was the impact of infrastructural deficiencies, such as the absence of functional incubators, on the university students' ability to create, prototype, and market their ideas?
- How did the existing academic reward and promotion structure shape the faculty's cultural preference for traditional publishing over applied research and patenting?

Importance of the Study

The study is of great theoretical and practical significance:

- For Policymakers and Government: It supplied the empirical evidence to alter higher education policy, reduce bureaucracy, and redefine academic advancement criteria to promote innovation.
- For university administrators: It stressed the importance of investment in entrepreneurial infrastructure such as campus incubators and technology-transfer offices.
- For Industry Stakeholders: It revealed the obstacles in university-industry relationships and provided a

blueprint for more successful and less bureaucratic partnerships.

- Academic Contribution: It contributed to the scarce literature on the Triple Helix model in Central Africa, giving an intriguing comparative analysis between governmental and private institutions.

Scope of the Study

The survey was conducted among a purposive sample of key state universities (e.g., University of Yaoundé I, University of Buea) and leading private universities (e.g., Catholic University of Central Africa, ICT University) in Cameroon. The three main target groups were university administrators, academic faculty, and final-year/postgraduate students.

This study's literature assessment consolidated current discourse across four major subject areas, situating the empirical research within established theoretical frameworks and fairly recent (2023–2025) African policy and academic case studies. The theoretical framework of this study was the Triple Helix of university-industry-government connections. The early research has paid much attention to the model's smooth implementation in industrialized economies of knowledge where intellectual property rights and venture capital are mature, but a newer study has critically assessed its application in underdeveloped environments. The literature review was heavily based on African-centric assessments by Kruss and Dzisah & Etzkowitz, who argue that the African "knowledge triad" is often fractured by weak intermediary institutions, such as underfunded technology transfer offices and a lack of local angel investors. The examination included the latest institutional demands for the sake of utter contemporaneity. Specifically, it assessed the African Development Bank's Skills for Employability and Productivity in Africa (SEPA) Action Plan (2022–2025) and recent World Bank appraisals of the Africa Higher Education Centers of Excellence (ACE) Impact projects, which depict the Triple Helix aggressively not only as an academic theory but as a macroeconomic panacea to the continent's dire graduate unemployment crisis.

Research Methodology

Research Design

This study employed an Explanatory Sequential Mixed-Methods Design contained within a Comparative Multiple Case Study. The quantitative phase analyzed the extent and severity of infrastructural and cultural impediments, followed by a qualitative phase to explain why these barriers exist, particularly bureaucratic bottlenecks. A comparative methodology was needed to compare the governance agility and infrastructural capital of state-funded public universities with autonomous private institutions in Cameroon.

Target Population and Sampling Strategy

The survey was conducted among three different university populations in chosen state universities (e.g., University of Yaoundé I, University of Buea) and private universities (e.g., Catholic University of Central Africa).

- University Administrators and Technology Transfer Officers (Objective 1): A purposeful sample technique was utilized to pick 18 high-level decision makers (Vice-Chancellors, Deans and Heads of industry liaison offices). They were selected because they were directly involved in negotiating MoUs and dealing with university bureaucracy.
- Students (Objective 2) A stratified random sample of 342 final-year undergraduate and postgraduate students was chosen. The strata were primarily focused on the STEM (Science, Technology, Engineering, and Mathematics) and business faculties, as these cohorts were the main target of incubators and entrepreneurial infrastructure.
- Academic academics (Objective 3): A random sample of 128 academics were surveyed to analyze the cultural "publish or perish" divide. Criterion sampling (targeting those who had tried to patent or commercialize research) was used to choose a subset of 14 academic members from this pool for in-

depth follow-up interviews.

Data Collection Instruments

The triangulation was done with three primary instruments:

- Structured questionnaires, which are quantitative in nature, were administered to both students and teachers. The student questionnaire measured satisfaction with university amenities, availability of seed funds, and perceived barriers to establishing firms using 5-point Likert scales. The faculty survey asked about pressure to publish versus incentive to patent under CAMES rules.
- Semi-Structured In-Depth Interviews (IDIs) (Qualitative) IDI with administrators and certain professors. The interview guide consisted of open-ended questions to follow the entire administrative life cycle of an industry cooperation, finding the exact "choke points" where bureaucratic reluctance hinders the formalization process.
- Qualitative document analysis: A systematic review of secondary sources were conducted including:
- University Strategic Plans and the Higher Education Law requirements of June 2023;
- Materials for faculty promotion criteria (especially CAMES evaluations)
- Existing MoUs between universities and industry as samples to examine their legal rigidities.

Data analysis

- Quantitative Analysis (SPSS/STATA) Descriptive statistics (means, standard deviations) were used to describe students' infrastructural discontent and instructor publication preferences. Inferential techniques (Independent Samples T-tests and ANOVA) were utilized to investigate if there was a statistically significant difference in institutional impediments encountered by state versus private colleges.
- Qualitative Analysis (NVivo)Thematic analysis was performed on interview transcripts and institutional documentation using NVivo. The data was coded deductively and inductively using the three goals (Administrative Bureaucracy, Infrastructural Deficits, Cultural Gap) to identify sub-themes that emerged (e.g., specific legal hurdles or lack of access to global databases).

Ethical Considerations

The promotion criteria for professors are sensitive, and the evaluation of the bureaucracy of public universities is political. Thus, the study maintained anonymity and confidentiality. Informed consent was obtained from all individuals. Finally, the institutional identities were pseudonymized for the final qualitative vignettes in order to avoid any administrative reply generated by professional fines.

Results and Findings

Data were acquired from 342 students, 128 academic faculty members, and 18 university administrators from selected state and private universities in Cameroon after the execution of the explanatory sequential mixed-method design. The results pointed out deep institutional impediments that broke the Triple Helix paradigm.

Administrative and Bureaucratic Bottlenecks (Objective 1)

Qualitative analysis of the 18 In-Depth Interviews (IDIs) with university administrators and technology transfer officials revealed a significant institutional rigidity, primarily within state-supported institutions.

- "MoU Chokepoint": The thematic analysis highlighted the bureaucratic life cycle of Memorandums of Understanding (MoUs) as the main impediment. State university respondents noted that formalizing a collaboration with a private enterprise takes on average 6 to 9 months and up to four hierarchical approvals (Department Head, Dean, Vice-Chancellery and sometimes the Ministry of Higher

Education). "*The private sector moves at the speed of the market; by the time our legal department approves an MoU for a joint incubator, the company has already lost interest or moved to a private hub,"* one public university Dean said.

- Financial Strangulation: Another concern that arose was the absence of financial independence. Private sector funding for state university projects must be channeled through the central state treasury, according to industry liaison officers. This meant delays in the distribution of several months, which effectively strangled time-sensitive innovative ventures.
- Decentralized Agility at Private HEIs: Private institutions, on the other hand, had a much shorter MoU approval lifecycle (averaging 4 to 6 weeks) owing to their decentralized, localized decision-making boards. They could take industry money and spend it directly, making them much more attractive partners for nimble digital companies.

Infrastructural Deficiencies and Student Innovation (Objective 2)

The empirical evidence of the absence of physical entrepreneurial environments was apparent from the quantitative data collected from 342 STEM and Business students.

- The "Paper Incubator" Phenomenon: 78% of students strongly wanted to be entrepreneurs, yet just 12% successfully proceeded beyond the ideation stage. The survey results showed significant unhappiness with the university incubators, with 84% of the state university respondents strongly agreeing that campus incubators did not have basic physical equipment, high-speed internet, and access to seed funds.
- The Mentorship Gap: Not just physical infrastructure, but 85% of students in public colleges claimed that they had no access to mentors with real industry or startup expertise since their instructors only had theoretical knowledge.
- Statistical Disparities: An Independent Samples T-test demonstrated a statistically significant difference ($p < 0.01$) in infrastructural satisfaction between students of private institutions ($M = 3.4$, $SD = 1.1$) and public universities ($M = 1.8$, $SD = 0.9$). Students often articulated that although the 2023 Higher Education Law called for "student entrepreneurs," the universities lacked financing instruments to develop prototypes. The statistics revealed a considerable "capital flight" as a result, with the university's best student talent leaving to fund organic, private innovation clusters such as Silicon Mountain.

The Cultural Gap and the CAMES Paradigm (Objective 3)

The mixed-methods data provided the most significant insights about faculty behavior, showing how the "publish or perish" mentality actively discourages the development of local intellectual property.

- Considered Non-Commercialization: 128 faculty surveys indicated that 89% would prefer to publish in international peer-reviewed journals than apply for patents or engage in commercializable applied research.
- The Regulatory Disincentive (CAMES): Follow-up interviews with 14 faculty members explained the legitimate economic justification for such behavior. Interviewees uniformly mentioned the African and Malagasy Council for Higher Education (CAMES) advancement standards. "*To patent an innovation is to enter into years of legal wrangling and get almost zero points on my CAMES promotion dossier,"* said a senior academic. But three theoretical works in a European journal will secure my promotion to Associate Professor. "Why should I risk my career on commercialization?
- The IP Brain Drain: This reward structure created a perverse incentive: faculty admitted to giving away valuable, locally relevant intellectual property to European or American journals (often behind paywalls) simply to secure promotion credits, rather than attempting the financially unrewarding process of local commercialization.

Synthesis: The Fractured Knowledge Triad

The empirical data showed that serious obstacles confronted the Triple Helix approach in Cameroon. On its own, it operated as a "double helix." The government sector had modernized its language (e.g., 2023 Law), but the university sphere was unable to implement these directives due to suffocating administrative delays, non-functional “paper incubators,” and a regulatory framework (CAMES) that actively penalized applied, commercial research. Consequently, the industrial sector was extremely suspicious of and distinct from the intellectual resources of the country’s academic system and chose to rely on private innovation clusters instead.

Discussion of Findings

The findings of this study gave a critical re-evaluation of the way the Triple Helix model works or does not operate in the context of a developing country like Cameroon. The triangulation of qualitative administrative data with quantitative student and faculty data has multiple profound implications for directly addressing the main research subjects.

Bureaucracy vs. Agility (Objective 1 addressed)

The disclosure of the “MoU Chokepoint” and sharp constraint on funds in state institutions substantially resonates with the body of work on bureaucratic inertia[20] in the pursuit of Objective 1 (to diagnose administrative and bureaucratic bottlenecks). The results reveal a substantial “policy-practice decoupling”. Although the Law on the Orientation of Higher Education of June 2023 strongly advocates the idea of the “university-enterprise”, qualitative data shows that state institutions lack institutional autonomy to implement this legal provision. Private institutions can approve industry partnerships much more quickly. The actual issue is that the Napoleonic governance structure is outdated and geared toward achieving state procedural rules rather than reacting swiftly to market dynamics.

The Entrepreneurial Infrastructure Myth (Addressing Objective 2)

The quantitative results on the “Paper Incubator” phenomenon provide empirical support for the recent critiques of the shallow implementation of entrepreneurial ecosystems in Africa for Objective 2 (evaluation of the extent to which infrastructural deficiencies inhibit student innovation). The discussion points out that the name of an incubator alone, without any concrete seed fund backing or mentors with industry experience, is hurting the Triple Helix. It creates a false sense of institutional support that ultimately drives the best student talent out of the university system entirely. This ‘capital flight’ by student innovators to unregulated private tech clusters is a clear failure of the institution to act as the central engine of the knowledge economy, contrary to the aims of the World Bank’s higher education initiative.

CAMES and the Rationality of the IP Brain Drain (Responses to Objective 3)

The study contributes the most to the literature in the area of Objective 3 (to measure the cultural gap among academic faculty). The results imply that the “publish or perish” approach is a sound business decision, not a lack of entrepreneurial spirit. The talk concerns the role of the Council for Higher Education of the African and Malagasy Council for Higher Education (CAMES). The study demonstrates that professors voluntarily give up valuable local intellectual property to foreign journals to meet outdated promotion standards. The regional regulatory framework is indeed antithetical to the economic demands of the continent. For the Triple Helix to function, the institutional reward system must not penalize the commercialization of applied research.

Redefining the African Triple Helix (Conclusion)

In summary, the global synthesis of the three objectives showed that the traditional and balanced Triple Helix model of university-industry-government relations does not exist in Cameroon today. Kruss claim that the African “knowledge triad” is broken. In Cameroon the ecosystem is a disconnected “Double Helix” where the government gives top-down legal mandates to institutions, although both

are structurally separated from the fast-moving realities of the industrial sector. The Triple Helix will work only if the state university is profoundly deregulated, given financial liberty to handle its venture funds, functional infrastructure, and a CAMES promotion system that assigns as much weight to local patents as to international articles.

Conclusion and Recommendations

This study presents strong evidence of deep institutional impediments that are essentially obstructing the adoption of the Triple Helix innovation model in the Cameroonian higher education system. The state government has made several impressive gains in theoretical policy language, not least the June 2023 law that redefined universities as entrepreneurial enterprises. On the ground, however, the reality is very different. The results confirm that the Cameroonian "knowledge triad" is split along three axes. Centralized treasury routing strangles time-sensitive innovation, and centralized, Napoleonic bureaucracy administratively paralyzes state-funded colleges to drastically impede business cooperation. At the infrastructure level, "paper incubators" exist to satisfy legal mandates but lack real physical resources and experienced mentorship, undermining the push for student entrepreneurship and diverting top student talent into unregulated private innovation clusters. The final, and most sinister, barrier is cultural: the regional CAMES regulatory framework rationally incentivizes academic faculty to give up valuable local intellectual property to foreign journals to gain promotion, actively penalizing the high-risk, time-consuming process of commercializing applied research. In the absence of structural changes, the Triple Helix will just be a theoretical model and not an economic engine of Cameroon. This study offers the following strong and actionable recommendations to the particular actors of the ecosystem to resolve the broken "knowledge triad" and to create a functional Triple Helix environment: To the Ministry of Higher Education (MINESUP) & the State Government: Decentralize University Governance: The government must give real financial and administrative authority to state universities. University Vice-Chancellors and localized governance boards need the legal power to sign MOUs and accept private sector venture financing directly without the severe delays of channeling cash through the central state treasury.

References

[1] H. Etzkowitz and L. Leydesdorff, "The dynamics of innovation: From national systems and 'Mode 2' to a triple helix of university–industry–government relations," *Research Policy*, vol. 29, no. 2, pp. 109–123, 2000.

[2] B. R. Clark, *Creating Entrepreneurial Universities: Organizational Pathways of Transformation*. Oxford, U.K.: Pergamon, 1998.

[3] H. Etzkowitz, *The Triple Helix: University–Industry–Government Innovation in Action*. London, U.K.: Routledge, 2008.

[4] E. G. Fonkeng, *The History of Education in Cameroon, 1844–2004*. Bamenda, Cameroon: Maryland Printers, 2007.

[5] D. L. Njeuma, H. N. Endeley, F. F. Mbuntum, and J. N. Ngu, *Reforming a National System of Higher Education: The Case of Cameroon*. ADEA Working Group on Higher Education Case Study, 1999.

[6] G. Kruss, J. Adeoti, and D. Nabudere, "Universities and knowledge-based development in sub-Saharan Africa: Comparing university–industry linkages," *The Journal of Development Studies*, vol. 51, no. 8, pp. 987–1004, 2015.

[7] African Development Bank, *Skills for Employability and Productivity in Africa (SEPA) Action Plan, 2022–2025*. Abidjan, Côte d'Ivoire: African Development Bank, 2022. [Online]. Available:

https://www.afdb.org/sites/default/files/documents/strategy-documents/sepa_-_action_plan_2022-2025.pdf

[8] World Bank, *Evaluation of the Africa Higher Education Centers of Excellence (ACE) Impact Project*. Washington, DC, USA: World Bank Group, 2023. [Online]. Available: https://www.worldbank.org

[9] A. Abdulai, "Entrepreneurial ecosystem, innovation and entrepreneurship development: Evidence from Africa," unpublished Ph.D. dissertation, 2023.

[10] J. Dzisah and H. Etzkowitz, "Triple helix circulation: The heart of innovation and development," *International Journal of Technology Management & Sustainable Development*, vol. 10, no. 1, pp. 101–115, 2011.

[11] V.-D. Rusu and A. Roman, "Assessing the role of access to finance for young potential entrepreneurs: The case of Romania," *KnE Social Sciences*, vol. 4, no. 1, 2020, doi: 10.18502/kss.v4i1.5996.

[12] C. Lee, G. Cottle, S. Simmons, and J. Wiklund, "Fear not, want not: Untangling the effects of social cost of failure on high-growth entrepreneurship," *Small Business Economics*, 2021, doi: 10.1007/s11187-020-00324-0.

[13] D. Teferra, "African flagship universities: Their neglected contributions," *Higher Education*, 2015, doi: 10.1007/s10734-015-9939-x.

[14] Rosmiati, "A systemic mapping: Is entrepreneurship education research truly needed? By bibliometric analysis," *Multidisciplinary Science Journal*, vol. 8, Art. no. 2026071, 2025, doi: 10.31893/multiscience.2026071.

[15] F. Shan, N. M. B. M. Ariffin, and N. B. M. A. Hanafiah, "The economic benefits of inclusive entrepreneurship education: A systematic review of entrepreneurial competence development for students with disabilities," *International Journal of Accounting and Economics Studies*, vol. 12, no. 7, pp. 440–450, 2025, doi: 10.14419/xnncwf37.

[16] A. Jimenez and Y. Zheng, "Tech hubs, innovation and development," *Information Technology for Development*, vol. 24, pp. 1–24, 2017, doi: 10.1080/02681102.2017.1335282.

[17] A. Maritz, Q. Nguyen, and S. Ivanov, "Student entrepreneurship ecosystems at Australian higher education institutions," *Journal of Small Business and Enterprise Development*, vol. 29, no. 6, pp. 940–957, 2022, doi: 10.1108/JSBED-11-2021-0466.

[18] J. Colpaert, "The 'publish and perish' syndrome," *Computer Assisted Language Learning*, vol. 25, no. 5, pp. 383–391, 2012, doi: 10.1080/09588221.2012.735101.

[19] I. A. Moosa, *Publish or Perish: Perceived Benefits Versus Unintended Consequences*, 2nd ed. Cheltenham, U.K.: Edward Elgar Publishing, 2024, doi: 10.4337/9781035307807.

[20] A. Abdulai and N. R. Hussein, "Innovation capacity and entrepreneurship development in Africa: Bi-causality analysis," *Remittance Review*, 2023.