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<https://www.ijedm.com>

**International Journal of  
Educational Management,  
Rivers State University.**

## **Triple Helix Innovation in Universities in Administration and Planning in the Nigerian Sphere**

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### **Abstract**

*This study examined the Triple Helix innovation system in universities in administration and planning in the Nigerian sphere. The Triple Helix partnership in education is the collaboration among academia (university), government, and industry. Thus, this study focused on the benefits and challenges of the Triple Helix partnership in educational administration and planning, providing insights for policymakers, educators, and those in charge of the industry. This partnership in educational administration and planning aims to facilitate infrastructural development, job creation, and strengthening the research-industry relationship. As a result, there will be great socio-economic benefits for the environment. The benefits can be seen in the enhancement of quality education, sustainability, and innovation advancement. Also, this partnership will further encourage social, economic, and environmental integration of sustainable development and allow room for the government to create a stable future for education in the society. Also worthy of note are the aspects of the Triple Helix, innovation, university education, administration, and planning within the sphere of the university that will be focused on. This partnership in educational administration and planning, including its aims, purposes, and the benefits that will accrue to its parties, will also be looked into and highlighted. However, problems may arise in realization of this paper's topic such as; funding and resource allocation, conflicting interests among the individuals involved, and a strong resistance to changes as new innovations and ideas emerge. Therefore, a detailed conclusion was made, with suggestions such as flexibility in structures, continuous learning, and encouragement of collaboration.*

**Keywords:** Triple Helix Innovation, Universities, Administration, Planning

### **Introduction**

The triple helix model refers to interactions made among the parties of the university, industry, and the government to foster socio-economic development in an environment. (Etzkowitz & Leydesdorf, 2000). Nigerian universities have been recognized for their conventional approach to instruction, learning, volunteer work, and information sharing. However, with the rise of innovation and technological advancements in the 21st century, these institutions are expanding their focus to embrace a knowledge-based economy driven by new ideas and forward-thinking,

in order to keep pace with digital developments and the nation's needs. Nonetheless, universities have evolved into entities that combine product and service development with business networking and knowledge transfer, contributing to a more productive society. The concept of entrepreneurial university education and the Triple Helix model are closely linked, with the latter positioning universities as key players in knowledge-based societies, particularly in technology diffusion, firm creation, and regional development. This is a significant shift from their traditional, more passive role in an industrialized nation. (Cai & Etzkowitz, 2020; Ife & Okoro, 2024). Oyelaran-Oyeyinka and Adebowale (2012), as cited in Umar and Michael (2022) emphasized that universities were set up and regulated with the express intent of carrying out well-defined tasks, such research, knowledge creation and educating while preserving a reasonable degree of independence from the general pressures occurring in national, cultural and political spheres. Conventionally, universities have focused on academic pursuits such as teaching and research while industries have marketed research outcomes and governments have provided regulatory frameworks for universities. (Megmgbeto, 2013). In today's knowledge driven society, universities are to undertake an increasingly diverse set of responsibilities, including education students, conducting high-quality research, starting collaborations and fostering civic values in the public domain (Barrioluengo, Uyarra & Kitagawa, 2016).

Notably, the triple helix model of innovation has blurred the boundaries of traditional basic roles of university, industry and government. Universities increasingly take part in commercial activity through patenting and licensing, moving beyond the production of basic research. The next step is the emergence of intermediaries between the three elements as well as the hybridization of the three entities. Each, entity retains a strong primacy in its original field of expertise: the university remains the main source of knowledge production, industry is the primary vehicle of commercialization and the government remains its regulatory role (Ife & Okoro, 2024). The Triple Helix model of innovation has further obscured the conventional boundaries between universities, industries, and governments. This is seen from the fact that universities are now more involved in monetization strategies such as intellectual property management and surpassing merely engaging in research. This model also facilitates the emergence of middlemen and the synthesis of roles among the three entities, with each maintaining its core expertise: universities as the primary source of knowledge production, industries as the main agents of commercialization, and governments as administrators (Ife & Okoro, 2024).

For this reason, Abreu and Grinerich (2013), as cited in Nwogu and Adieme (2018), suggested that through the harmonization of the Triple Helix, universities can adopt an entrepreneurial approach which will equip students with innovative insights and business acumen which are essential for revitalization and workforce expansion in a society that increasingly requires such contributions. Consequently, this paper aimed to illustrate the role that Nigerian universities are playing in promoting industrial development within Nigeria and West Africa while utilizing the Triple Helix model. The strengthening of connections between universities and industries is anticipated to create a dynamic industrial sector in West Africa, one that can stimulate growth in productive areas, reduce economic vulnerability, and align better with industry needs. (Tsauni, 2024)

The “Triple Helix Innovation model” refers to a collaborative framework that integrates universities, industries, and governments to foster economic and social development through innovation. This model, developed by Etzkowitz and Leydesdorff, emphasizes the interdependence and co-evolution of these three sectors to promote a knowledge-based economy. Universities play a key role by generating knowledge, while industries transform that knowledge into commercial applications, and governments create conducive policies to support innovation and development. The synergy between these entities accelerates technological advancement, regional development, and economic growth (Etzkowitz & Leydesdorff, 2000).

In the context of modern economies, the Triple Helix model is increasingly recognized as an essential approach to fostering innovation ecosystems, particularly in knowledge-intensive sectors. By facilitating a flow of knowledge and resources between academic research, entrepreneurial activities, and public policy, the model helps bridge the gap between theory and practice. Governments act as regulators and facilitators, enabling industries to capitalize on academic research while addressing societal needs, ultimately driving sustainable development (Cai, 2020). This collaboration leads to dynamic innovations that not only enhance competitiveness but also contribute to addressing global challenges like climate change and economic inequality.

The model integrating the trio of main players which explains the organisational development in knowledge-based economics is recognized as the “triple helix model” (Leydesdorff, 2018). This model is comprised of the industry, the government and the university. Traditionally, the industry was regarded as “wealth generator”, the university “novelty producer” while the government which is sandwiched between the two was viewed as “public controller” (Omer,

Emily, & Lynette 2015). As such, Cai and Lattu (2021) opined that it is vital to understand the strong points and weaknesses of the triple helix model (as well as the quadruple model) in order to appreciate the innovation network that embodies the ideals for a future society. Also, triple helix academics have continuously been developing the notional foundations of the triple helix model with efforts to realize the dynamics of sustainable growth in the present-day society (Cai & Etzkowitz, 2020).

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## **Universities**

University education is education one receives after passing through the primary and secondary levels of education. Notably, universities are part of higher education and are thought to be constructed on the level of capability, knowledge and skills ordinarily attained through secondary education. (Anyanwu, 2020) as cited in Ofor-Douglas, 2021a). Universities also have a significant impact on social change and community development. By housing science parks, incubators, and innovation hubs, they establish ecosystems that support regional growth and entrepreneurship. By modifying educational programs to satisfy changing industry expectations and guaranteeing that skills are in line with labour market demands, they also aid in workforce development. Because they spearhead multidisciplinary research projects and public awareness campaigns, universities are crucial to accomplishing the Sustainable Development Goals (SDGs), according to recent studies (Bennewort, Pinheiro, & Karlsen, 2020). Thus, universities are not just centres of learning but active agents of innovation, societal advancement, and economic resilience in an increasingly complex world.

Moreover, Ofor-Douglas (2023b) highlighted the following as benefit of university education which includes:

1. Individuals who have gone through university education would be able to contend with their peers internationally.
2. Individuals with university degrees would be well-versed and would be able to make sound contributions on things that mark on their society.

The “Triple Helix Innovation model” places universities at the core of the innovation process, recognizing them as key drivers of knowledge creation and dissemination in modern economies. Universities, in this model, have shifted beyond their traditional roles of education and research to become active participants in fostering innovation ecosystems. By collaborating with industries and governments, universities contribute to technological advancements and regional development. According to Cai and Lattu (2019), universities are increasingly seen as

"entrepreneurial actors" capable of generating not only intellectual capital but also contributing to social and economic innovation through technology transfer, patents, and the formation of start-ups. This expanded role reflects their centrality in knowledge-based economies, where the ability to innovate is critical to maintaining competitive advantages.

Moreover, universities serve as hubs for interdisciplinary collaboration and innovation in the Triple Helix model, providing expertise and resources that can be applied to real-world problems. By partnering with industries, they help translate theoretical research into practical solutions, while governments support these initiatives through funding and policy frameworks. Benner and Sörlin (2020) argued that the interplay between these three sectors fosters a fertile environment for innovation, as universities also engage in joint research and development projects, training, and incubating new technologies. This shift towards an innovation-oriented approach positions universities as essential nodes in the knowledge economy, catalyzing growth and addressing societal challenges through collaborative efforts.

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### **Administration**

In the context of the "Triple Helix Innovation model," administration plays a critical role in coordinating and facilitating interactions between universities, industries, and governments. Effective administrative structures are necessary to manage the complex partnerships that emerge from these collaborations. According to Ranga and Etzkowitz (2018), administration within the Triple Helix framework involves the creation of policies, regulations, and institutional frameworks that promote innovation and ensure efficient communication and resource-sharing among the three sectors. Administrative bodies in universities, government agencies, and industrial organizations need to work together to establish governance mechanisms, monitor progress, and evaluate the impact of innovation projects. This process often requires transparency, flexibility, and adaptability to address the dynamic needs of innovation ecosystems.

Furthermore, administrative functions within the Triple Helix model are essential for securing funding, managing intellectual property, and ensuring compliance with legal and ethical standards. Cai, Pugh and Liu (2020) emphasize the role of administration in coordinating research activities, providing logistical support, and fostering networks that encourage collaborative projects. Administrative entities act as mediators, ensuring that the diverse goals of universities, industries, and governments are aligned to maximize the potential for innovation. By streamlining processes such as technology transfer, patent management, and

regulatory approval, administration supports the efficient commercialization of academic research, contributing to economic growth and societal advancement.

The term administration otherwise known as management denotes a class of personnel whose responsibility is to direct and regulate (wholly or partially) an organization's process. (Bowtes, 2022) as cited in Ofor-Douglas, 2023b). Likewise, Arowosegbe (2021) pointed it out clearly that administration is a societal process that deals with recognising, preserving, inspiring, directing and merging formally and informally systematized human and material resources inside a cohesive system intended precisely to accomplish fixed purposes. Similarly, Campbell (2017) reasoned that educational administration is a device for good governance because the means by which administrators make verdicts and take steps to realize educational aims and purposes. Likewise, educational administration is fundamentally an activity or instrument through which the central aims of the educational process may be copiously realised. In the same vein, Orji (2015) indicated that educational administration consists of the activities of preparation, establishing, coordinating, regulating, appraising, recruitment and motivation of staff, students and others towards the fulfilment of the overall objectives of the university. Consequently, it is these qualified individuals who develop the critical thinking skills that drive local financial backing, impart knowledge to children, lead efficient governments and make vital decisions which touch the whole society (Bwambale, Mulegi & Bulhan, 2024).

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## **Planning**

In the realm of administration, effective planning is crucial to ensure that the goals of an organization or institution are met efficiently and align with long-term strategic objectives. In particular, within the Triple Helix Innovation model, planning involves aligning the efforts of universities, industries, and governments to foster collaborative innovation. According to Cavallini, Soldi, Friedl and Volpe (2019), planning in this context requires administrators to develop strategies that integrate resources, manage timelines, and anticipate challenges that may arise from coordinating multiple stakeholders. This involves setting clear goals, determining necessary resources, and creating a roadmap for successful collaboration. By doing so, administrators can better manage partnerships and promote innovation in a structured and organized way

Moreover, planning in administration goes beyond merely organizing current projects. It includes forecasting future needs, assessing emerging trends, and preparing the institution for potential shifts in the economic or policy environment. Di Nauta, Merola, Caputo & Evangelista

(2018) note that planning is critical in managing innovation ecosystems because it helps align the diverse interests of universities, industries, and governments while ensuring that resources are used effectively. Long-term planning also allows institutions to adapt to technological advancements and shifts in regulatory frameworks, helping them stay competitive and relevant in the global knowledge economy. Therefore, planning serves as the backbone of administrative efforts to drive innovation and foster sustainable growth within the Triple Helix framework.

Ololube (2019) averred that “planning is the selecting and relating of facts, making and using of assumption regarding the future in the visualization and formulation of purposed activities believed necessary to achieve desired results”.

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## **Organizing**

In the context of “administration”, organizing refers to structuring and coordinating resources, tasks, and personnel to achieve set objectives efficiently. Within the Triple Helix Innovation model, organizing plays a critical role in managing the collaborations between universities, industries, and governments. Effective organizing requires administrators to establish clear frameworks for communication, decision-making, and resource allocation across these sectors. According to Leydesdorff and Ivanova (2021), organizing in this context ensures that all stakeholders have defined roles, responsibilities, and reporting mechanisms to streamline operations and maintain a coherent structure. This organizational alignment allows for smoother collaboration, reducing redundancies and improving the efficiency of joint innovation efforts.

Furthermore, organizing within administration entails creating networks and platforms that facilitate knowledge sharing and cooperation. Gnaiger, Kravcenko, & Holocher-Ertl, (2020) emphasized the importance of administrative bodies in organizing interdisciplinary teams, cross-sector partnerships, and innovation networks that bring together academic expertise, industrial resources, and governmental support. By establishing organizational frameworks such as innovation hubs, research consortia, and public-private partnerships, administrators can enhance the collaborative capacity of institutions and accelerate the translation of research into marketable products and solutions. This level of organization is vital for fostering sustainable innovation ecosystems, as it ensures that the dynamic interactions between universities, industries, and governments are systematically managed and strategically directed.

## **Staffing**

Staffing in administration refers to the process of recruiting, training, and managing personnel to ensure that an organization has the human resources needed to achieve its objectives. In the context of the Triple Helix Innovation model, staffing is crucial as it directly impacts the efficiency and effectiveness of collaboration between universities, industries, and governments. Ensuring the right mix of skills, expertise, and leadership is essential for successful innovation management. As noted by Benneworth, Pinheiro and Karlsen, (2019) staffing in Triple Helix collaborations involves not only filling technical and administrative roles but also recruiting individuals who can bridge the gap between academia, industry, and government sectors. These individuals, often referred to as "boundary spanners," play a key role in facilitating communication, building trust, and managing the complex interactions that are necessary for innovation. Moreover, staffing in the Triple Helix model requires continuous development and training to adapt to rapidly changing technological and economic environments. Adequate staffing means ensuring that personnel are not only qualified but also equipped with the knowledge and skills to manage interdisciplinary teams and navigate the diverse interests of different stakeholders. García-Teruel et al. (2020) highlight the importance of leadership in this context, stressing that leaders who understand both the academic and business worlds can guide innovation processes effectively. Staffing decisions should thus focus on fostering talent that can work across sectors, promote knowledge transfer, and lead collaborative innovation projects in line with institutional and societal goals.

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## **Controlling**

Controlling in administration refers to the process of monitoring, evaluating, and ensuring that an organization's activities are aligned with its strategic objectives. In the context of the "Triple Helix Innovation model", controlling is essential for managing the complex interactions between universities, industries, and governments. Effective control mechanisms help administrators track the progress of collaborative innovation efforts, ensuring that resources are used efficiently and goals are met within the established timelines. According to Cunningham and O'Reilly (2018), controlling in Triple Helix partnerships involves setting clear performance indicators and regularly assessing project outcomes to ensure that innovation processes are yielding the desired results. This oversight is vital for identifying bottlenecks, mitigating risks, and making necessary adjustments to stay on track.

In addition, controlling within the Triple Helix model involves maintaining accountability and transparency among the collaborating sectors. Since these partnerships often involve public funding and private investments, there must be mechanisms in place to ensure financial accountability and ethical conduct. Zomer and Benneworth (2021) highlight the importance of governance structures in ensuring that all stakeholders adhere to agreed-upon regulations and policies. Administrative bodies are responsible for developing control systems that enforce compliance, monitor the use of intellectual property, and ensure that innovation outcomes contribute to broader societal goals. By establishing robust controlling processes, administrators can create an environment that promotes sustainable innovation, fosters trust among partners, and maximizes the impact of collaborative efforts.

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### **Directing**

Directing in administration refers to guiding and overseeing activities to ensure that an organization's objectives are achieved. In the context of the Triple Helix Innovation model, directing involves ensuring that universities, industries, and governments work together effectively toward common innovation goals. Effective directing within these collaborations requires strong leadership that can align the diverse interests of the three sectors. Administrators play a key role in setting the strategic vision, facilitating communication, and coordinating efforts across the Triple Helix actors. According to Carvalho and Santos (2018), directing entails providing clear guidance on innovation priorities, delegating responsibilities, and motivating stakeholders to contribute to the collective goals of the partnership. This leadership ensures that innovation initiatives are well-coordinated and progress smoothly toward the desired outcomes. Additionally, directing within the Triple Helix framework involves fostering a culture of innovation and ensuring that all partners are engaged in the collaborative process. Successful directing requires administrators to not only oversee day-to-day operations but also inspire creativity and collaboration. As highlighted by Cai et al. (2020), leadership in Triple Helix partnerships must focus on building trust and promoting interdisciplinary collaboration, as this is essential for effective knowledge transfer and innovation. By setting clear directions, providing feedback, and addressing any emerging conflicts, administrative leaders can ensure that the collaboration remains productive and aligned with both short-term goals and long-term societal impacts.

## **Evaluation/ Feed Back**

Evaluation and feedback are critical components of effective administration, particularly within the framework of the Triple Helix Innovation model. Evaluation involves systematically assessing the outcomes of collaborative initiatives among universities, industries, and governments to determine their effectiveness and impact. In this context, administrators must establish metrics and indicators that accurately reflect the performance of innovation projects. According to Fischer, Hatzichronoglou, and van der Waal (2020), conducting evaluations allows stakeholders to identify strengths, weaknesses, and areas for improvement within their collaborative efforts. By employing both qualitative and quantitative assessment methods, administrators can gather comprehensive insights into how well the partnership is functioning and whether it is meeting its strategic objectives. This evaluative process is essential for fostering accountability and transparency among partners, ensuring that all stakeholders are aligned with the goals of the innovation ecosystem.

Feedback is a vital aspect of the evaluation process, as it provides the necessary information for continuous improvement. Within the Triple Helix model, effective feedback mechanisms help facilitate open communication among partners, enabling them to share experiences, lessons learned, and best practices. As emphasized by Evers et al. (2021), timely and constructive feedback promotes adaptive learning and encourages stakeholders to make informed adjustments to their strategies and operations. This iterative process of evaluation and feedback not only enhances the effectiveness of individual projects but also strengthens the overall innovation ecosystem by fostering a culture of collaboration and mutual support. Ultimately, robust evaluation and feedback processes empower administrators to guide their organizations more effectively, drive innovation, and respond proactively to emerging challenges and opportunities.

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## **Issues**

The “Triple Helix Innovation model” presents a robust framework for fostering collaboration among universities, industries, and governments. However, several issues can arise that may hinder its effectiveness. Here are five notable challenges:

1. **Misalignment of Goals:** One significant issue in Triple Helix collaborations is the misalignment of goals among the three sectors. Universities often prioritize academic research and knowledge dissemination, industries focus on profit and marketability, while governments aim for policy compliance and public welfare. This divergence can lead to conflicts and

inefficiencies in collaborative projects. As noted by Ranga and Etzkowitz (2018), ensuring that all partners share a common vision and objectives is crucial for the success of these collaborations.

2. **Communication Barriers:** Effective communication is essential for collaboration, yet communication barriers often exist between the sectors. Differences in language, culture, and operational practices can lead to misunderstandings and hinder collaboration. As highlighted by Gnaiger, Kravcenko and Holocher-Ertl (2020), administrators must establish clear communication channels and foster a culture of openness to facilitate knowledge sharing and ensure all stakeholders are informed and engaged.

3. **Resource Allocation:** The allocation of resources can be contentious in Triple Helix partnerships, as each sector has its own priorities and constraints. Disparities in funding, access to technology, and human resources can create imbalances in collaboration. Fischer et al. (2020) pointed out that effective resource management and equitable distribution are necessary to support the sustainability of innovation projects and maintain stakeholder engagement.

4. **Intellectual Property Issues:** Intellectual property (IP) management is a critical concern in Triple Helix collaborations, as the sharing of knowledge and technology can raise legal and ethical questions. Disagreements over ownership and commercialization rights can lead to conflicts and inhibit cooperation. According to Zomer and Benneworth (2021), establishing clear IP agreements and frameworks is essential for fostering trust and encouraging open collaboration among partners.

5. **Evaluation Challenges:** Assessing the outcomes of Triple Helix collaborations poses significant challenges, as traditional evaluation metrics may not adequately capture the complexity of these partnerships. Measuring the impact of collaborative innovation requires comprehensive and flexible evaluation frameworks that account for various qualitative and quantitative factors. Evers, Karlsen and Klitkou (2021) emphasized the need for adaptive evaluation processes that can effectively assess performance, provide feedback, and inform future strategies.

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## Conclusion

Applying the triple helix model into the administration of Nigerian universities is a viable strategy to ensure the financial and sustainable development of the nation. Thus, encouraging the collaboration of universities, industries and the government is necessary as this approach

can address some issues plaguing Nigeria's education system such as lack of funding, graduate skills gaps, security of campuses etc. This approach can also ensure there are more practical learning sessions in contrast to majorly theoretical sessions. This can only be possible with supplies, facilities, space and qualified staff - a sure provision if the triple helix model is utilized. As such, potential stakeholders and university administrators need to take the first leap to secure partnerships and collaboration with industries and the government by actively communicating and strategizing with them to ensure alignment of decisions to address the needs of universities nationwide. Moreover, when integrated effectively, the triple helix model can improve Nigeria's standing internationally by promoting the image of an innovative and forward-thinking nation.

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### **Suggestions**

To address the issues associated with the "Triple Helix Innovation model", several strategic suggestions can be implemented to enhance collaboration among universities, industries, and governments. Here are four key suggestions:

1. **Establish Common Goals and Objectives:** To mitigate the issue of misalignment among stakeholders, it is crucial to develop a shared vision and clear objectives for collaborative projects. This can be achieved through facilitated workshops and joint planning sessions where representatives from each sector can express their priorities and expectations.
2. **Enhance Communication and Knowledge Sharing:** Overcoming communication barriers requires the establishment of formal and informal channels for dialogue among partners. Regular meetings, collaborative platforms, and networking events can facilitate knowledge exchange and foster trust among stakeholders.
3. **Resource Allocation:** For effective implementation of Triple Helix innovations in universities, strategic resource allocation is crucial. Universities should prioritize investing in research and development (R&D) infrastructure, fostering collaborations between academia, industry, and government. This involves allocating funds for advanced laboratories, incubators, and interdisciplinary research centres that encourage innovation. Additionally, universities must invest in professional development programs for faculty and students to enhance their innovation capacities. Equally important is the allocation of resources for knowledge transfer mechanisms, such as technology transfer offices, intellectual property management, and entrepreneurship programs. By ensuring an equitable and strategic distribution of resources,

universities can drive sustainable innovation and contribute significantly to economic and societal growth.

**4. Develop Clear Intellectual Property Agreements:** To address intellectual property concerns, it is essential to establish transparent IP management frameworks that clearly outline ownership, rights, and responsibilities from the outset of a collaboration. Legal agreements should be collaboratively developed to ensure that all parties are informed and in agreement regarding IP issues.

**5. Implement Flexible Evaluation Frameworks:** To effectively assess the outcomes of Triple Helix collaborations, it is important to adopt flexible evaluation frameworks that encompass both quantitative and qualitative metrics. This approach should account for the diverse nature of collaborative projects and the various impacts they may have on stakeholders.

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