

Industry Partnership as a Predictor of Innovative Sustainable Economy in Rivers State

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Abstract

The study investigated industry partnership as a predictor of innovative sustainable economy in Rivers State. Two research questions and two hypotheses guided the study. The study adopted correlation design. The population of the study was two thousand, five hundred and four Teaching staff in the three Public Universities in Rivers State. The sample size was 376 Teaching staff through proportionate sampling technique. The instruments used for data collection were University-Industry Partnership Questionnaire and Innovative Sustainable Economy Scale. The reliability of the instruments stood at 0.86 and 0.83 for University-Industry Partnership and Innovative Sustainable Economy using Cronbach Method. Research questions were answered using simple regression while hypotheses were tested using t-test associated with simple regression at 0.05 level of significance. The findings among others was initiatives of economic growth predicted innovative sustainable economy by 15.2% while it was concluded that there is need for bold, visionary partnerships between industry and university that will accelerate innovation and help deliver solutions to pressing economic and social challenges. The study recommended that university in the twenty-first century should be viewed not just as a generator of ideas but also as a source of knowledge and competence that can benefit society.

Key Words: Partnership, initiative, economy

Introduction

Innovation is increasingly becoming the foundation of the world's leading economies, economies in which long-term prosperity and development depend on technologically based intellectual products. These new products make possible the creation of companies that can foster long-term sustainable economic growth, new economic perspectives to create, harness, and leverage technology-based intellectual capital. Nigeria's potential for growth is recognized by the World Economic Forum's (2021) in terms of competitiveness. Nigeria has large and expanding consumer market, a solid telecommunications infrastructure, and abundant natural resources are being central to Nigeria's competitiveness. However, underdeveloped institutions, stifled competition, declining quality of education, underdeveloped financial markets, and low levels of business sophistication are the country's key competitive challenges. The lack of sufficient funding and a supportive environment for startups has translated into a shortage of new ventures. When building a comprehensive innovation system, Nigeria should focus on upgrading technological capabilities through higher public expenditures on Research and Development (R&D) with educational partnerships.

Universities and industry partnership (UIP) is a specific ways that primarily encompass two areas: joint research activities and development of educational programmes. Research partnerships may involve joint research projects, the provision of funding by industry for specific university research (Santoro & Betts, 2021). This partnership provides establishment of research parks and the leveraging of the research capacity of universities and industry and the provision of feedback on the practical relevance of university research. Universities and industry partnership include a wider range of activities, including developing new educational programmes, revising existing programmes, and involving employers in teaching, mentoring, supervising students and activities related to skills and competency development (Mowery et al, 2021).

Other activities that fall under the UIP umbrella include career fairs, career advisement activities, apprenticeships, internships, recruitment programmes, and investment or equipment loans (INSEAD and the World Intellectual Property Organization, 2020). Other forms of partnership or partnership include faculty consultancies, employers serving on university advisory boards, and lifelong learning activities, such as continuing education courses, skills development for employees of companies, and development of training packages for specific organizations.

Statement of the Problem

Educational sector serves as the supplier of manpower need to the industries. If our industries must function optimally, it requires university-industry partnership which will further improve or bring about growth and quality in our society. Over the years, there have been downward movement in our economy and since education sector provides man power to the industries, it could be further assumed that the partnership system in schools are poor, or that there is inadequate quality provision for the acquisition of necessary development materials for students' development. The assumed that teachers are not updated and requires upgrading to function better using latest e-technology facilities with other professional development programmes. Hence, the research is bothered on how university-industry partnership could predict innovative sustainable economy in Rivers State.

Aim and Objectives of the Study

The study investigated industry partnership as a predictor of innovative sustainable economy in Rivers State. Specifically, the objectives of the study sought to:

1. examine the extent initiatives of economic growth predict innovative sustainable economy in Rivers State.
2. assess the extent competence as ecosystem predict innovative sustainable economy in Rivers State

Research Questions

The following research questions guided the research work

1. To what extent does initiative of economic growth predict innovative sustainable economy in Rivers State?
2. To what extent does competence as ecosystem predict innovative sustainable economy in Rivers State?

Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance

1. Initiatives of economic growth do not significantly predict innovative sustainable economy in Rivers State.
2. Competence as ecosystem does not significantly predict innovative sustainable economy in Rivers State

Overview of University-Industry Partnership

Partnership with industry benefits students, faculty, education programmes, research output, and university reputation overall. Engagement with industry informs faculty and senior leadership on labour market needs, allowing them to adjust the relevance and quality of education programmes and further the strategic development of institutions. With industry, students gain work-relevant skills, develop entrepreneurialism, and create professional networks. Institutions provide modalities and evidence of the efforts towards the formulation of best practices for university-industry partnership from various perspectives in several studies (INSEAD and the World Intellectual Property Organization, 2020).

There is an emphasis on universities' actions at the administrative level to overcome the barriers related to university-industry partnership and improve their potential for collaboration. In order to achieve successful university-industry partnerships, academic administrators must ensure that an environment is sustained which is conducive to achieving the academic missions of teaching, research and service, preserves the financial and academic integrity, allows engaging in technology transfer with security of the public interest and ensures objectivity and balance in supporting the programmes related to the university's mission. An indication towards an extended role to be played by universities through engaging with other stakeholders, primarily government, in policy formulation is also evident (Hicks & Hamilton, 2019). One of the main ideas to overcome the obstacles related to intellectual property rights is establishing an intermediary. Several researchers extol the worth of an 'agent' in ensuring the actual knowledge transfer during a collaborative research project. The agent performs monitoring, management and administration of the project.

Innovative Sustainable Economy

Fostering collaborative university-industry partnerships to enhance commercialization efforts has emerged as a critical imperative to sustaining global competition. Innovation and business competitiveness are greatly enhanced through the activities of research universities. Nigeria universities through their research and the products of their research can assume a vital role in growing vibrant economies (Colyvas et al, 2021). The competence of high-technology regional clusters in Nigeria such as MTN, GLOBACOM, AIRTEL etc have connected a large number of individual, companies and universities in Nigeria. There is need for renewed efforts to commercialize technologies developed in Nigeria universities. To build a knowledge-based economy, Nigeria needs to similarly integrate business elements into its education system, with the plan being to drive innovation by strengthening links between higher education, research, and business practices. As a long-term strategy, higher education has to become a strategic asset that

links with industry to strengthen the national economy by enhancing technology-transfer initiatives. In this term paper I propose for the establishment of stronger ties between education and industry when Nigeria universities create what are known as Centers of Competence. These centers can be used to promote innovation and business competitiveness in the Nigerian economy.

World-class research universities are at the forefront of creating such partnerships (Making Industry-University Partnerships Work 2021), and it is these partnerships that result in a broad range of beneficial activities that provide regional and national economic outcomes. As partners, educational institutions and industry can invest in technological advancement, plan strategically, and greatly affect the competitiveness of local and regional economies. Therefore, Nigerian universities should go beyond the traditional funding of discrete academic research projects and establish long-term strategic partnerships with industry to improve innovation in Nigeria. Competence will link innovative technologies developed by research universities with industry partners in an effort to target relevant market needs. Government agencies will also be a key component of these endeavors with supportive policy, as for example grants, reduced taxes, etc. Coupled with government support and outside investment these partnerships can help to solve pressing social and economic challenges. The competence will be a hub for leaders in science, education, business, and government where projects will be transformed into marketable high-tech products and services. The competence will help create regional/national innovation clusters and eventually lead to the advancement of the country's competitive position and economic growth.

Initiatives of economic growth and innovative sustainable economy

Positive notable changes to Nigeria's innovation policy in recent years have been at the center of the government's agenda. Innovative Nigeria should foresee large increases in funding for research, commercialization, and innovation infrastructure. The strategy implies an increase of the share of innovatively active companies from the current 9.3% to 40–50% by 2022, as well as growth of Nigeria's share of the global high-technologies market from the current 0.3% to 2%. Under these plans, by 2023 the number of patents registered by Nigerian companies in the ECOWAS, is expected to reach about three thousand (Colyvas et al, 2021). However, on a global scale, these numbers are still low. In 2021, the United States, China, Japan, and Europe (excluding Nigeria) for about 80% of the total \$1.6 trillion invested around the world. For instance, in 2021, the amount that Nigeria spent on investment as a percentage of GDP was a mere 1.5%; the percentage of total exports that were innovative products, works, and services was 3.8%; and only 9% of Nigerian organizations were involved in innovative activities. Despite the existing potential in the sphere of human capital and research activities, the level of innovation in Nigeria is very low.

The United States remains the world's largest investor with a projected spending of \$465 billion in 2014. At the same time in 2021, for the first time, China to be the largest number of patents filed throughout the world. In April 2020 the government adopted a list of innovative territorial clusters that would receive public support until 2024. The first establishment of an innovation cluster is noteworthy: Lagos State, which is an innovation hub provide researchers, entrepreneurs, and investors with a platform to focus efforts on IT, energy efficiency, and biomedicine (Cohen et al, 2019). However, unfortunately, these initiatives so far have had only a limited impact on enabling

sustainable economic growth in the country. Respondents who participated in Ernst and Young (2021), suggested that a shift to a more collaborative approach would help to improve Nigeria's innovation and technological capacity. Their top recommendations are as follows: Facilitate partnerships between foreign and local companies. A number of these partnerships have been forged in the recent past. Nigeria has large telecommunication technology corporations' deployment of advanced long-term evolution or 4G mobile services, new network systems, and groundbreaking transmission technologies and strengthen links between universities and industry. Encouraging partnership between industry and academia would help to improve Nigeria's innovation climate. This would strengthen the foundation of entrepreneurship and innovation.

Competence as Ecosystem and Innovative Sustainable Economy

The competence will become a tool for integrating knowledge, expertise, and supporting entrepreneurial activity. Designed as a flexible system, and managed to ensure competitive growth, the competence will assist with the implementation of innovative strategies for creating competitive companies in Nigeria. The competence will help to pool the following components within an integrated management system for innovation development: business, government, academia, professional associations, and the local community, within the competence a flow of qualified specialists, active entrepreneurs, creative youth, and government agencies, together with science and education, will define the innovative development of economic sectors (National Research University-Higher School of Economics, 2020).

The Competence will link industry and the university as well as assess public/private resources for mutually beneficial needs e.g., facilitate tech transfer and startups; administer industry contracts and out-reach efforts; provide innovation services to internal and external researchers/organizations; utilize industry retirees to promote innovation and entrepreneurship; increase research funding and seed capital opportunities; train and mentor start-ups and small businesses; and facilitate partnership between large companies and recognized researchers. These efforts should intensify technology transfer and commercialization, and attract venture capital and other private investment resources, leading to the creation of a vibrant technology and innovation-driven ecosystem in Nigeria.

The objective of the partnership as the core of communication between these different elements is ensuring the integration of knowledge and processes, and stimulating the emergence of an innovative culture. The partnership will help companies in Nigeria strengthen their competitive edge, build dedicated teams of specialists with new comprehensive competencies, and drive the shift to an innovative management model. The suggestions below provide examples of how we might better position partnership to achieve the goals stated above.

1. Create an executive advisory board to advance the reputation and capabilities of university centers. Work with the advisory board to identify potential cooperation with enterprises and to establish partnerships with those entities.
2. Motivate faculty members to lead research in the area of their expertise with connections to market needs.
3. Pursue funding through the local and federal governments to sponsor research initiatives of faculty and graduate students.

4. Organize business plan competitions for university students to build entrepreneurial skills and develop an innovative culture. Create cross-disciplinary teams to compete such as engineering, science, information systems, etc., in which interdisciplinary student teams will be required to write business plans focused on new technologies.
5. Develop a focused strategy that includes leading areas of expertise for the university such as mechatronics, nanotechnologies, aerospace, energy, and information systems technology.

Long-term partnerships will give rise to new technologies helping to transform industries while modernizing the role of the university. However, partnership is not going to be easy. As a rule, for most universities, partnering with industry does not come naturally. Most Nigerian academics are not engaged at all in partnerships with industry. When Nigerian universities do form partnerships with industry, too often the potential for synergy is thwarted by communication failures. The most productive partnerships are strategic and long-term; they are built around a shared research vision and may continue for a decade or beyond, establishing deep professional ties, trust, and shared benefits that work to bridge the cultural divide between academia and industry.

The partnership requires strong university leadership, faculty who understand business, academics who have worked in industry and making industry university partnerships a clear priority. The key recommendations for universities to foster partnership (Cohen et al, 2019) with industry are the following:

1. Make industry-university partnerships a strategic priority and communicate the message regularly to the entire academic community.
2. Create an advisory board of executives from selected industry sectors and the highest level from the university who will develop an understanding of the key scientific and technological questions companies are seeking to answer. As a first step, a joint steering group including senior academics and company executives should be formed.
3. Assess the core academic strengths of the university and the core research competence of local companies to identify promising opportunities for partnership.
4. Design incentives for university faculty and provide resources to manage a cultural shift that puts a clear priority on engaging with industry for mutual benefits.
5. Encourage industry involvement. The university must utilize people capable of building and managing partnerships. Partnerships only work well when they are managed by people who cross boundaries easily and who have a deep understanding of the two cultures they need to bridge.
6. Create opportunities for academics, company researchers, and executives with shared interests to come together and develop a dialogue. For example, informal exchanges over lectures or seminars can bring both sides together to spark conversations and lead to new relationships.
7. When a partnership has been launched, have an executive board meet regularly to encourage strong two-way communications between academics and senior company officials. The chair should follow up regularly with members to keep the dialogue flowing and encourage impromptu feedback on the project from both sides at any time.

8. Develop two-way exchanges to build a substrate of academics who understand industry. The university should encourage professors to get internships in industry and invite industry researchers to teach.
9. Create long-term strategic partnerships that focus the university's creativity and talent on future innovations that can be taken to market by industry and deliver economic benefits within five to ten years.
10. Encourage diversity. Innovation works when there is diversity. Invite to the projects individuals from different disciplines to contribute to the whole process. Partnership of ideas, people, and places should be systematic. Redefine the role of the research university as a source of competence and problem solving for society.

Pertuze et al (2020), in their best Practices for Industry-University Partnership propose a set of seven guidelines that companies should follow to get the most out of their research partnerships with universities. The guidelines partly correlate with the key recommendations for universities stated above: longer-term projects, continuing relationships, assigning project managers who make the contract feel like a partnership, and enabling these managers to invest the time and effort to generate effective knowledge flows between the university and the company.

Methodology

This study adopted correlation design. The population for the study was two thousand, five hundred and four (2504) Teaching staff in the three Public Universities in Rivers State, Nigeria. The sample size used for the study was 376 Teaching staff through proportionate sampling technique. The instruments used for data collection were University-Industry Partnership Questionnaire (UIPQ) and Innovative Sustainable Economy Scale (ISES) and were responded on a modified four-point likert scale of Very High Extent (VHE) 4 points, High Extent (HE) 3 points, Low Extent (LE) 2 points and Very Low Extent (VLE) 1 point respectively. The reliability of the instruments stood at 0.86 and 0.83 for University-Industry Partnership and Innovative Sustainable Economy, initiatives of economic growth is 0.81 and competence as ecosystem is 0.80 using Cronbach Method. Research questions were answered using simple regression while hypotheses were tested using t-test associated with simple regression at 0.05 level of significance.

Results

Research Question 1: To what extent do initiatives of economic growth predict innovative sustainable economy in Rivers State?

Table: 1: Simple regression analysis on the extent initiatives of economic growth predict innovative sustainable economy in Rivers State

Model	R	R Square	Adjusted R Square	Remarks
1	.391 ^a	.152	.154	15.2% contribution

Table 1 revealed that the regression coefficient R was calculated to be .391 while the regression squared value was computed to be .152. This shows that there is a high prediction between initiatives of economic growth and innovative sustainable economy in Rivers State. Judging by the coefficient of determinism, it shows that initiatives of economic growth predicted innovative sustainable economy by 15.2% while the remaining 84.8% was accounted by other variables.

Research Question 2: To what extent does competence as ecosystem predict innovative sustainable economy in Rivers State?

Table 2: Simple regression analysis on the extent competence as ecosystem predict innovative sustainable economy in Rivers State

Model	R	R Square	Adjusted R Square	Remark
1	.422 ^a	.178	.082	17.8% contribution

Table 2 revealed that the regression coefficient R was calculated to be .422 while the regression squared value was computed to be .178. This shows that there is a high prediction between competence as ecosystem and innovative sustainable economy in Rivers State. Judging by the coefficient of determinism, it shows that competence as ecosystem predicted innovative sustainable economy by 17.8% while the remaining 82.2% was accounted by other variables.

Hypothesis 1: Initiatives of economic growth do not significantly predict innovative sustainable economy in Rivers State.

Table 3: t-test associated with simple regression on extent initiatives of economic growth predict innovative sustainable economy in Rivers State

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	34.262	.231		131.213	.000
	Initiatives of economic growth	.422	.007	.391	2.21	.014

Table 3 revealed that initiatives of economic growth predicted innovative sustainable economy by .391. The t-test value 2.21 associated with simple regression was statistically significant at .05 when subjected to 0.05 alpha level of significance. By implication, there is a significant prediction between initiatives of economic growth and innovative sustainable economy in Rivers State.

Hypothesis 2: Competence as ecosystem does not significantly predict innovative sustainable economy in Rivers State.

Table 4: t-test associated with simple regression on the extent competence as ecosystem predict innovative sustainable economy in Rivers State.

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	T	
1 (Constant)	22.214	1.422		17.312	.000
Competence as ecosystem	.303	.037	.422	1.22	.000

Table 4 revealed that competence as ecosystem predicted innovative sustainable economy by .422. The t-test value of 1.22 associated with simple regression was statistically significant when subjected to 0.05 alpha level of significance. By implication, there is a significant prediction between competence as ecosystem and innovative sustainable economy in Rivers State.

Summary of Findings

The findings of this study are summarized as shown below:

1. Initiatives of economic growth predicted innovative sustainable economy by 15.2% while the remaining 84.8% was accounted by other variables.
2. Competence as ecosystem predicted innovative sustainable economy by 17.8% while the remaining 82.2% was accounted by other variables.
3. Initiatives of economic growth significantly predicted innovative sustainable economy in Rivers State.
4. Competence as ecosystem significantly predicted innovative sustainable economy in Rivers State.

Conclusion

In conclusion, there is need for bold, visionary partnerships between industry and university that will accelerate innovation and help deliver solutions to pressing economic and social challenges. The study has shown that university-industry partnership has a positive predictor of innovative sustainable economy in Rivers State.

Recommendations

1. The role of the research University should be redefined to reflect initiatives of economic growth.
2. The university in the twenty-first century should partner with industries to show competence as ecosystem.

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