

# Innovative Entrepreneurship and Economic Sustainability in the Selected Private Universities in Nigeria: The Pre and Post COVID-19 Comparative Analysis

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## ABSTRACT

Extant studies have found that entrepreneurship remains immune from business uncertainties to achieve economic Sustainability. Although fewer studies show that innovative entrepreneurship is more than creating an enterprise, a destructive process is an impetus in achieving economic Sustainability amid business uncertainties. To this end, this study empirically examines the impact of innovative entrepreneurship on economic Sustainability in the selected private universities in Nigeria during the Pre and Post COVID-19 era. Five private universities in Nigeria were selected from the four phases of private universities in Nigeria since the deregulation of university education in 1999. In addition, descriptive statistics results from the last five Universities Webometrics rankings found that Covenant University only had a persistent economic sustainable trend between 2016 to 2019, while all the selected private universities except Covenant University were not remarkable in economic Sustainability amid the post-COVID-19 era between 2019 and 2020 in this study. To this end, the study concluded that before COVID-19, most selected private universities failed to display innovative entrepreneurship vis-à-vis lecturers to students teaching ratio, routine teaching methods, stagnated learning techniques, limited sectoral competitions, presence rank, impact rank, openness rank, excellence rank, and among others. Therefore, establishing a university is entrepreneurship but will not guarantee economic Sustainability if not driven by evolutionary innovation amid the post-COVID-19 and beyond uncertainties. Thus, the study recommends all stakeholders, including the University management, staff members, and the government, to be evolutionary in their mindset to achieving economic Sustainability amid COVID-19 and beyond among Nigerian private universities.

**Keywords:** Entrepreneurship, Innovative Entrepreneurship, Evolutionary Growth Theory, COVID-19

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## INTRODUCTION

Since the industrial revolution in the 18<sup>th</sup> century, the need for changes in production processes from manual to technology, as an engine for economic progress and economic Sustainability for all economic units, including households, business firms, and governments, cannot be overemphasized. This gave birth to innovative entrepreneurship in developed economies and fast adapted in developing economies.

Unlike other types of entrepreneurship, innovative entrepreneurship is widely evidenced as a cutting-edge enterprise that perceives any form of crisis and economic problems such as pre, COVID-19, Covid-19, and beyond uncertainty challenges as a new market opportunity to be exploited. Like Schumpeter (1934), innovative entrepreneurship is more than creating an enterprise, but a destructive process is paramount to controlling new challenges and maintaining competitive advantage. Although, the significant contributions of innovative enterprises in the developed countries in terms of bringing new products, opening markets, new processes, and commercializing new knowledge have had a more critical economic progress and Sustainability when compared with the enterprises in developing countries. For instance, the first email discovery was product entrepreneurship known as a mailbox in MIT computer in 1965 had continually witnessed several innovative entrepreneurship such as Echo mail, Yahoo mail, Hotmail, Gmail, and others. Surprisingly, Yahoo mail, as of January 2020, has had over 225 million users, far above the pioneer internet email, Echomail, with 2.4 million users. Also, Gmail was launched less than 15 years has over 1.5 billion active users worldwide as of 2018. This evidence supports that innovative entrepreneurship is a dynamic destructive action that guarantees economic Sustainability in developed economies; however, few or no studies have investigated the impact of creative entrepreneurship on the economic Sustainability of SMEs in developing countries like Nigeria.

Notably, the advent of the COVID-19 pandemic has caused the most considerable disruption of education at all levels, ranging from pre-primary to Universities in history. All education levels were closed to reduce this infectious outbreak, affecting about 1.6 billion learners in more than 190 countries on seven continents. Remarkably, tertiary education institutions, including polytechnic, colleges of education, and universities, swiftly changed from campus to distance-based operations through online technologies. However, despite the innovative entrepreneurship prompt actions, the COVID-19 lockdown adversely impacted all economic actors, including the management of tertiary institutions, students, lecturers, campus ventures, and government-related agencies. Unfortunately, fewer studies have considered the innovative entrepreneurship impact on economic Sustainability in the tertiary institutions during the pre and post-COVID-19 in developed and developing economies. Following the gap in the literature, this study is motivated to empirically investigate the impact of innovative entrepreneurship on economic Sustainability in the selected private universities within Pre and Post COVID-19 eras in Nigeria.

## LITERATURE REVIEW

### Conceptual Review

#### *Concept of Innovative Entrepreneurship*

Innovative entrepreneurship is a concept emanated from the Schumpeterian entrepreneur as an innovator and a key to accelerating economic development in his theory of Economic growth in 1911 (Crudu, 2019). Therefore, innovative entrepreneurship is described as the

transformation of ideas into high-demand, marketable products, services, or technologies resulting in innovative incomes. According to Schumpeter (1934), innovative entrepreneurship is simply defined as "creative destruction." This implies that when an entrepreneur introduces on the market a new product or service driven by technology or knowledge to pull out existing market or product, for a more competitive environment leading to higher productivity and economic progress of such an entity (Crudu, 2019).

Notably, innovative entrepreneurship is often assessed from the two measures, input and output contribution to the enterprise. For instance, the input measures include R & D expenditure, technology advancement, and staff training. At the same time, the output measures include revenue, market size, product or quality, and other competitive advantages.

The endogenous growth scholars have recently extensively measured the innovative entrepreneurship concept from different endogenous growth theories. For instance, pedagogical innovations, active learning and learning by doing (Romer, 1986); human capital (Lucas, 1988); Research and Development (R & D) (innovative in goods, services, or processes (Romer, 1990; Aghion & Howitt, 1992); and public infrastructure (Barro, 1990). These endogenous growth models acknowledged the role of innovative entrepreneurship on economic progress (growth), but fewer studies examine the nexus between creative entrepreneurship and economic Sustainability in the literature (Acs & Armington, 2003). However, their economic sustainability metrics are diverse, of gains in employment growth and GDP growth, resulting in mixed empirical studies. Put differently; economic Sustainability is the act of indefinitely achieving long-term economic growth/progress. In sum, economic Sustainability is equated with economic growth that is considered sustainable in the long run (Courtneil, 2019).

### ***Concept of Economic Sustainability***

The term economic sustainability has been misconceptualized as economic development in the literature. Though the two concepts are synonymous concerning long-term desirability but differ on the tripod of sustainable development, which emphasizes meeting current desirability without compromising the future desirability needs of an entity (Markulev & Long, 2013). Technically, economic Sustainability is one of the three pillars of sustainable development developed during the Brunt land commission in 1987 (Babasanya et al., 2017). Generally, the term economic sustainability refers to organizational practices that support steady growth in business economic indicators without negatively impacting economic actors' social, environmental, and cultural aspects. Put differently; economic Sustainability is the act of indefinitely achieving long-term economic growth/progress. In sum, economic Sustainability is equated with economic growth that is considered sustainable in the long run (Courtneil, 2019).

### **Theoretical Review**

Innovative entrepreneurship and economic Sustainability are drawn from two theories, endogenous growth theory, and evolutionary growth theory.

#### ***Endogenous Growth Theory***

The endogenous growth theory laid the foundation of innovative entrepreneurship and economic Sustainability by emphasizing investment in knowledge that increased returns. The endogenous growth theories are synonymous with the new growth theories (Jones, 2019), and postulated that productivity is a function of factor inputs (labor and capital) as

well as the endogeneity technological changes, which are spillovers for long-run economic growth in any nation, unlike neoclassical Solow growth theory of economic growth that did not consider entrepreneurship from the technological innovation perspective (Crudu, 2019).

Several endogenous growth theories discussed the nexus between innovation entrepreneurship and economic growth in different studies. For instance, Romer (1986) developed active learning and learning by doing as an impetus to economic development on increasing returns. Second, Lucas (1988) also recognizes the role of human capital in innovative entrepreneurship. Third, Romer (1990) and Aghion & Hormitt (1992) used to research and Development (R & D) as an impetus for innovative goods, services, or processes. Fourth, fourth, and the last theory of endogenous growth, Barro (1990) recognizes the importance of public infrastructure as an external determinant of creative entrepreneurship and economic Sustainability; however, past endogenous theories emphasized internal entity determinants. Although the endogenous growth models acknowledge the role of innovative entrepreneurship as an impetus for economic growth, none of these theories consider the nexus between creative entrepreneurship and economic Sustainability; hence, the evolutionary growth theory becomes necessary to assess the steady improvement in economic growth due to persistent innovative entrepreneurial practices (Crudu, 2019).

### *Evolutionary Growth Theory*

Unlike the neoclassical and endogenous theories that presume a steady state of equilibrium and non-specific innovative technological progress, the evolutionary growth theory considers a set of evolutionary economic paradigm not only to catch up with advanced economic competitors but dominate and leads through consistent evolutionary changes and transformation. Recently, Nelson and Winter (1982) theorized the evolutionary growth theory in their book: "An Evolutionary Theory of Economic Change." In their theory, they advocated that innovative entrepreneurship and economic Sustainability largely depend on three evolutionary economic changes:

- The microeconomic evolutionary theory of consumers, firms, and organizations relates to cognitive psychology, business, and organizational studies.
- Sectoral studies on the historical evolution of particular industries to analyze the industrial and sectoral dynamic systems of innovation.
- Understanding the formal models of economic growth.

In summary, the evolutionary growth theory concluded that innovative entrepreneurship and economic Sustainability are driven by the interactions between heterogeneity, selection, and innovation processes, unlike the endogenous growth theories that were caused by technological innovation only, which accounted for the failure of many enterprises despite the imitation and adaptation of the technical advantages or innovations from advanced economies or competitors in the field of operation (Fulvio, 2006).

## **OVERVIEW OF PRIVATE UNIVERSITIES IN NIGERIA**

The need for the establishment of privately owned universities in Nigeria was first recognized under the second democratic republic of President Shehu Shagari Administration between 1979-1983 due to a shortage of funds for running and expanding universities in 19 states of the federation of Nigeria and thus, further necessitated the

constitution amendment on university education from the exclusive list to the concurrent list of the government, implying that both federal and States governments can own, finance, and control the university established independently.

Unfortunately, in December 1983, the new military regime headed by General Mohammadu Buhari truncated the democratically elected government through Coup-de-ta. Consequently, the military power immediately withdrew the operation licenses from the 26 established privately owned universities in Nigeria and, after that, placed a ban on the private universities established due to shallow guided academics, among others (Ajadi, 2010).

Not until the elected democratic government of President Olusegun Obasanjo in 1999 that the establishment of the private-owned universities was approved by the National University Commission (NUC) in Nigeria. In specific, 3 out of 40 private universities applications received and were successfully granted operations licenses after the NUC requirements were met duly. Between April-October 1999, the first three pioneer and approved private universities in Nigeria were Babcock university, Ilisan Remo, Ogun state, Igbinedion University, Okada, Edo State, and Madonna University, Okija, Anambra State (Ajadi, 2010).

Remarkably, the first phase of private-owned universities has resulted in additional three steps of private universities establishment and approval by the NUC in Nigeria. Table 1 shows the number of private universities in Nigeria from 1999 to October 2020 in this study.

Table 1: Trend in Phases of Accredited Private Universities in Nigeria

Phase	No of Accredited Private Universities
1 <sup>st</sup> phase (1999)	3
2 <sup>nd</sup> phase (2000-2009)	31
3 <sup>rd</sup> phase (2010-2015)	30
4 <sup>th</sup> phase (2016- Oct 2020)	19
Total	79

Source: Authors' Compilation, 2020

As shown in Table 1, there is no doubt that there had been a significant increase in the number of private universities in Nigeria between 1999 and 2020. However, it is worrisome that Nigeria's personal universities growth rate is recently on sharp nose-diving. Thus, it rekindles questions about the absence of innovative entrepreneurship and economic Sustainability among the existing private-owned universities in Nigeria.

## METHODOLOGY OF THE STUDY

Five private-owned universities were selected from the four phases of private-owned universities in Nigeria as a sample for this study. In specific, the first two private universities, Igbinedion University and Babcock University were randomly selected from the first phase, and further, one private university was randomly chosen from the last three phases, including Covenant University, Ota; Mountain Top University, Magoro, and Anchor Universities Ayobo, Lagos State respectively. Secondary data were employed from the university's websites and the Webometrics World ranking website. Specifically, five-year Webometrics World rankings were used to proxy economic Sustainability. Similarly, the relevant universities' website information was also used for innovative proxy entrepreneurship within operation periods among the selected private universities in Nigeria. Lastly, the study specifically employed charts and graphs to measure the creative entrepreneurship and economic Sustainability within the pre and post-COVID-19 study.

## RESULTS AND DISCUSSION

Table 2A. Innovative Entrepreneurship in Private Universities: Comparative Analysis

<b>Innovative Entrepreneurship Indicators</b>	<b>Babcock University</b>	<b>Igbenidion University</b>	<b>Covenant University</b>	<b>Mountain Top University</b>	<b>Anchor University</b>
Location	illsan Remo, Ogun State	Okada, Edo State	Ota, Ogun State	Prayer City, Ogun State	Ayobo Ipaja, Lagos State
Established	1959	1989	2000	2010	2014
Government Approved	April 20, 1999	April 20, 1999	Feb. 12, 2002	Feb. 25, 2015	Nov. 2, 2016
Years of Operations as at Oct. 2020	21	21	18	5	4
No of Faculties/Colleges as of Oct. 2020	2	7	4	2	3
No. of Academic Programs as at Oct. 2020	43	26	30	13	29
Existence of Postgraduate Studies	YES	YES	YES	NO	NO
No of Vice Chancellor since inception	2	3	6	1	1
Vice Chancellor Maximum Tenure	10	12	7	5	4
Vice Chancellor Minimum Tenure	6	9 Months	4 Months	-	-
No. of Campuses	2	1	1	1	1
Existence of Distance/Online Learning Program	NO	NO	NO	NO	NO
No. of Distance/Online Learning Programs	0	0	0	0	0

Source: Authors' compilation, 2020

Table 2B: Innovative Entrepreneurship in Private Universities: Descriptive Analysis

<b>Variables</b>	<b>Metrics</b>	<b>BU</b>	<b>IU</b>	<b>CU</b>	<b>MTU</b>	<b>AUL</b>
<b>Innovative Entrepreneurship</b>	Range	4	11	7	0	0
	Rank	2	4	3	1	1
<b>Stability Innovative Entrepreneurship Efficiency</b>	Efficiency	2.05:1	1.23:1	1.67:1	2.6:1	7.25:1
	Rank	3	5	4	2	1

Source: Authors' compilation, 2020

Note: The abbreviations BU, IU, CU, MTU, and ALU represent Babcock University, Igbenidion University, Covenant University, Mountain Top University, and Anchor University Lagos.

Tables 2A and 2B displayed the innovative entrepreneurship descriptive summary of the selected five private Universities in Nigeria. Specifically, Table 2A revealed that all the selected five private Universities in Nigeria have similar entrepreneurial traits, except fewer innovative entrepreneurship attributes in terms of several accredited academic programs, functional postgraduate studies, multi-campus, and the vice-chancellor (VC) tenure. Importantly, this result found that this study's five selected private universities have common different innovative entrepreneurship traits.

Table 2B, unlike table 2A, describes innovative entrepreneurship using the range, efficiency ratio, and ranks in this study. As shown in table 2B, the range values measured the creative entrepreneurship stability, showing the difference between the maximum and minimum Vice Chancellor tenure in a University. Specifically, the range values found that Mountain Top University (MTU) and Anchor University Lagos (AUL) have the lowest deviation in innovative entrepreneurship stability. In this study, Babcock University and the farther range values were Covenant and Igbinedion universities. This result suggested that there is perfect innovative entrepreneurship stability in MTU and AUL, unlike other selected private universities that exhibited a degree of creative entrepreneurship instability. In addition, the results found that Igbinedion University has the highest degree of innovative entrepreneurship instability, followed by Covenant University, and the last rank is Babcock University in this study.

In the second row, the innovative entrepreneurship efficiency measures the extent to which University management and staff timely create or float a program at a specific time. In this study, the efficiency ratio is calculated as the number of academic programs divided by the number of government operations/approval years. Expressly, the highest efficiency ratio of 7:25:1 indicated that Anchor University (AU), since inception, has developed approximately seven academic programs per session/year; followed by MTU with an efficiency ratio of 2.6:1, implying that since its takeoff, MTU has created about three educational programs per session/year, and the last three efficiency ratios of 2:0:5:1, 1:67:1 and 1:23:1 indicated that Babcock University, Covenant University, and Igbinedion University respectively had also approximately developed 2, 2 and 1 academic programs per session/year since inceptions in this study. This result revealed that Anchor University has the most innovative entrepreneurship efficiency in educational program development compared with other selected private universities in Nigeria in this study.

**Economic Sustainability in the Pre and Post COVID-19: The Trend Analysis**

Table 3: Trend in Economic Sustainability in private Universities in Nigeria: The Pre-COVID 19

Years	Webometric Ranking	Babcock University	Igbinedion University	Covenant University	Mountain Top University	Anchor University Lagos
2018	Nigeria	68	34	2	N/A	N/A
2017	Nigeria	57	30	2	N/A	N/A
2016	Nigeria	N/A	N/A	4	N/A	N/A

Source: Authors' compilation, 2020

The economic Sustainability in the pre and post-COVID-19 among the selected five private universities is demonstrated in tables 3 and 4 as well as figures 1 and 2 in this study. Specifically, table 3 and figure 1 exhibited the economic Sustainability trend in selected private universities in Nigeria during the pre-COVID-19 between 2016 - 2018. The table results revealed that Covenant University only recorded an increasing webometric rank

from the fourth position in 2016 to the second in 2017 and 2018, implying increasing economic Sustainability during the pre –covid-19 periods. In contrast, Babcock and Igbinedion universities recorded a decreasing webometric rank from 57<sup>th</sup> and 30<sup>th</sup> in 2017 to 68<sup>th</sup> and 34<sup>th</sup> in 2018. This suggested that Babcock and Igbinedion Universities decreased economic Sustainability during the pre-COVID-19 era. Unfortunately, Table 3 displayed the non-availability of rank positions data for MTU and AUI in this study. In the same vein, figure 1 also exhibited a decreasing bar trend for covenant University indicating an increasing economic sustainability performance. At the same time, the increasing bar trend for Babcock and Igbinedion Universities also implied decreasing economic sustainability performance in the pre-COVID-19 periods in Nigeria.

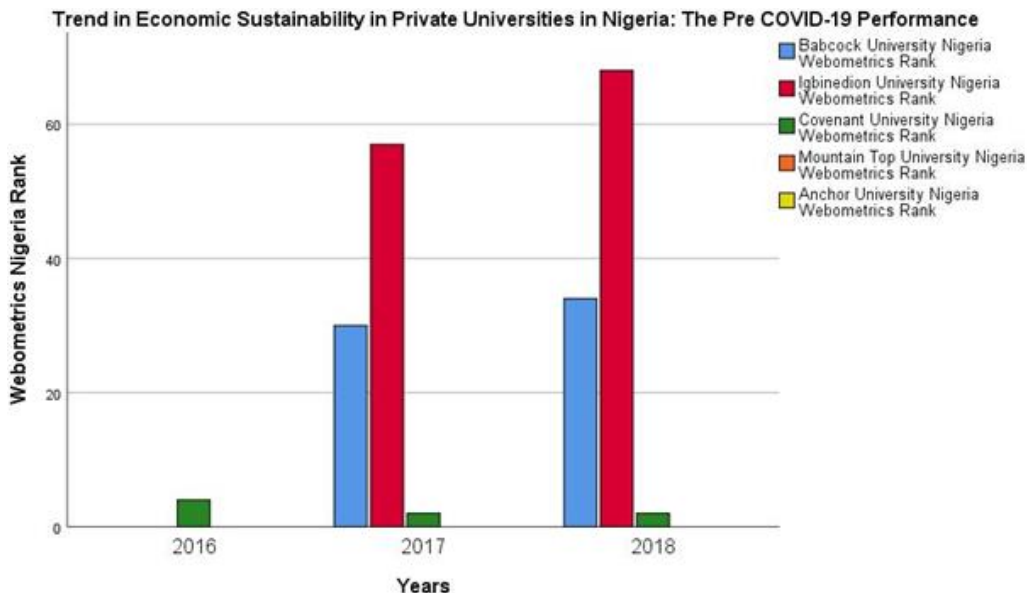


Figure 1: The trend in Economic Sustainability in Private Universities in Nigeria: The Pre-COVID-19 Performance (Source: Authors’ Chart, 2020)

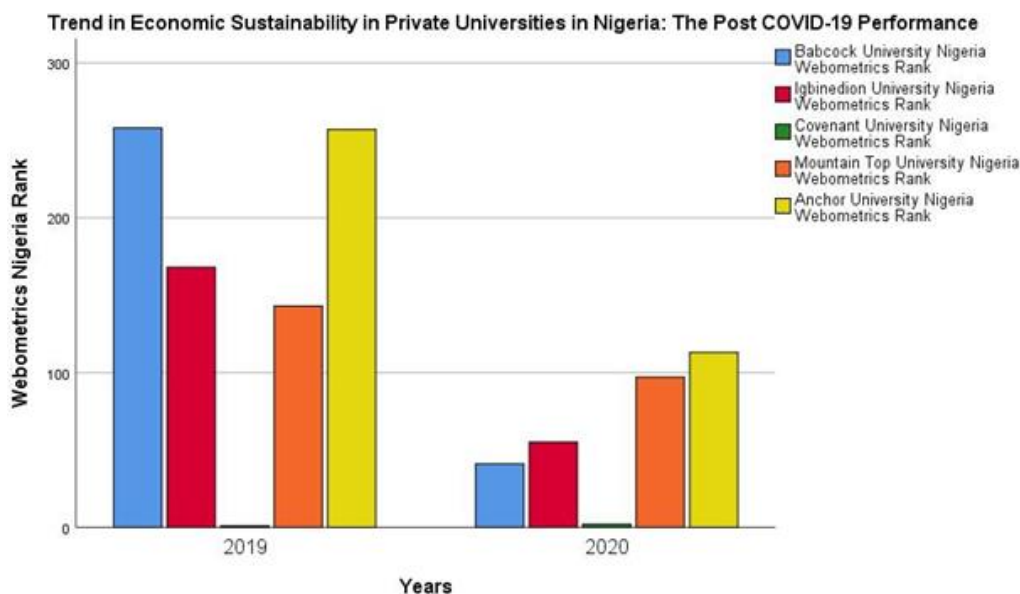
Table 4: Trend in Economic Sustainability in Private Universities in Nigeria: The Post COVID-19 Performance

Year	Universities	Webometrics Nigeria Rank	Webometrics World Rank	Specific Webometrics Ranking Indicators			
				Presence Rank	Impact Rank	Openness Rank	Excellence Rank
2020	Igbinedion	55	9023	10,726	9,470	5,108	6626
	Babcock	41	6394	2891	9745	1787	6626
	Covenant	2	1374	832	3297	1176	1386
	Mountain Top	97	14,651	13159	16276	5182	6626
	Anchor	113	15,861	7752	15855	5819	6626
2019	Igbinedion	168	9023	10,726	9470	5108	6626
	Babcock	258	6394	2891	9745	1787	6626
	Covenant	1	1,374	832	3297	1176	1386
	Mountain Top	143	14,338	13159	16276	5812	6626
	Anchor	257	15,861	7752	15855	5819	6626

Source: Authors’ compilation, 2020



Figure 2: Trend in Economic Sustainability in Private Universities in Nigeria: The Post COVID-19 Performance



Source: Authors' Chart, 2020

On the other hand, the economic Sustainability among the selected five private universities post-COVID-19, as shown in table 4, revealed a significant rise in the webometrics ranking for all the selected private universities between 2019 and 2020 in this study. This suggested that all selected private universities witnessed economic Sustainability despite COVID-19 and the Post COVID-19 looks more promising if all stakeholders continue practicing innovative entrepreneurship in this study. Further, Figure 2 continued the decline in all the bars from 2019 to 2020, implying increasing economic Sustainability in the Post COVID-19 among the selected private universities in Nigeria.

## CONCLUSION

Given the aforementioned relevant theories of innovative entrepreneurship and the empirical findings, the study concluded that creative entrepreneurship positively impacts economic Sustainability among the five selected private Universities in Nigeria within the study periods. Notably, the study concluded that innovative entrepreneurship impacts on economic Sustainability were positively remarkable during the post-COVID-19 than the Pre-COVID-19 in the selected private Universities in Nigeria.

Nonetheless, the study recommends that the University management and other stakeholders should be intensive in their evolutionary innovative entrepreneurship path to consistently achieve economic Sustainability in the Post Covid-19 and beyond business uncertainties in the Nigerian tertiary institution environment. In addition, the study alluded to the importance of government in the provision of fundamental infrastructural that will positively reduce the innovative entrepreneurship actions of the University management and relevant stakeholders in continually achieving positive economic Sustainability in the tertiary institutions as experienced by sisters universities in the developed economies such as Harvard University, Oxford University but to mention a few in this study.

## REFERENCES

- Acs, Z. J. & Armington, C. (2003). Endogenous growth and entrepreneurial activity in cities. Centre for Economic Studies (CES). <https://EconPapers.repec.org/RePEc:cen:wpaper:03-02>
- Aghion, P. & Howitt, P. (1992). A model of growth creative destruction. *Econometrica* 60(2), 323-351.
- Ajadi, T. O. (2010). Private Universities in Nigeria-The Challenge Ahead. *American Journal of Scientific Research*, 7, 15–24. <https://core.ac.uk/download/pdf/190320409.pdf>
- Babasanya, A. O., Ogunleye, A. G. and Ogunyomi, O. O (2017). Human Capital development as a catalyst for Environmental Sustainable development in Nigeria; A VECM approach. *Journal of Economics and Policy Analysis*, 2(2), 200-219. <http://jepa.unilag.edu.ng/article/view/785>
- Barro, R. J. (1990). Economic growth in a Gross Section of Countries. *The Quarterly Journal of Economics*, 106(2), 407–443. <https://doi.org/10.2307/2937943>
- Courtneil, J. (2019). *Economic Sustainability for Success: What is it and How to implement it.* <https://www.process.st/economic-sustainability/>
- Crudu, R. (2019). The role of innovative entrepreneurship in the Economic Development of EU member Counties. *Journal of Entrepreneurship, Management and Innovations*, 15(1), 35–60. <https://doi.org/10.7341/20191512>
- Fulvio, C. (2006). Evolutionary and New Growth Theories: are they convergely? *MPRA Paper No. 27602*, 1-72. <https://mpra.ub.uni-muenchen.de/27602>
- Jones, C. I. (2019). Paul Romer: Ideas, Nonrivalry, and Endogenous Growth. *The Scandinavian Journal of Economics*, 121(3), 859–883. <https://doi.org/10.1111/sjoe.12370>
- Lucas, R. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, 22(1), 3–42. [https://doi.org/10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7)
- Markulev, A. & Long, A. (2013). *On Sustainability: an economic approach.* Staff Research Note, Productivity Commission: Australian Government <https://www.pc.gov.au/research/supporting/sustainability>
- Nelson, R. & Winter, S. (1982). *An evolutionary theory of economic change.* Harvard University Press. <https://www.hup.harvard.edu/catalog.php?isbn=9780674272286>
- Romer, P. (1990). Endogenous technological change. *Journal of Political Economy*, 98(5), S71-S102. <https://doi.org/10.1086/261725>
- Romer, P. M. (1986). Increasing Returns and Long-Run Growth. *Journal of Political Economy*, 94(5), 1002–1037. <http://www.jstor.org/stable/1833190>
- Schumpeter, J. A. (1934). *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle.* Harvard University Press. <https://www.hup.harvard.edu/catalog.php?isbn=9780674879904>