

Effective Science Education for Technological Transformation and Entrepreneurial Digitization of Nigeria

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ABSTRACT

This research paper is an empirical investigation with the specific objective of ascertaining the extent of connection between Science Education and Technological Transformation and Entrepreneurial digitization of Nigeria. Science education is the bedrock of technological transformation and entrepreneurial digitization. The study adopted Descriptive survey through the application of questionnaire for the collection of primary data from the population of 100 technopreneurs and teachers of technical schools in Delta state as well as secondary data through secondary sources of Scopus journals, Google scholar and peer review journals. The study findings showed that there is a significant relationship or connection between Science Education and Technological transformation and Entrepreneurial Digitization of Delta State. The result also confirmed that Science Education creates entrepreneurial mindset and culture through scientific methods that promotes creativity and innovation. The study discovered that any country's degree of scientific literacy determines its level of economic development. Therefore, if developing nations like Nigeria do not have the necessary scientific and technology capacity to generate more value-added goods and services, they would not be able to thrive in an increasingly competitive global economy and open trading system. Education in science and technology has been shown to be a true instrument for technological transformation. Therefore, raising the standard of science and technology education shouldn't be sacrificed. Without scientific understanding, the Transformation agenda cannot be implemented. Strengthening science instruction at all levels in schools is vital for all parties involved in education. Nigeria is still working to transform the country via the use of science and technology. The study concludes that Nigeria will experience a technological transformation when students are able to apply the scientific and technological knowledge they have learned in the classroom to real-world social and practical contexts.

KEYWORDS: Science Education, Technological transformation, Entrepreneurial digitization, Creativity and Innovation, Economic Development, Scientific literacy

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INTRODUCTION

Nations' technological transformation is being influenced by science education, and technology is beginning to influence education by changing how students interact with and comprehend scientific ideas (Kola 2013). The use of contemporary technologies in science education has given teachers and students access to state-of-the-art tools for researching, testing, and comprehending the intricacies of the natural world. The dynamic combination of science and technology not only closes earlier accessibility gaps but also provides a range of engaging experiences that cater to various learning styles. As we explore modern technology in science education, we aim to identify the digital, interactive, and virtual components impacting science education in the future (Luckin & Holmes, 2016).

The scientific and technological revolution is in charge of the 21st-century globalization agenda and the new world order (Omer 2011). Geographical barriers have been transcended and man's horizons have been broadened in this age of globalization. Many nations around the world are putting in consistent effort to industrialize, raise their standard of living, and catch up to wealthy nations in terms of technological advancement. Therefore, in order to meet the problems of today's complex life, citizens must

possess scientific and technological abilities. Since it is well recognized that the degree of technology developed and used in a society closely correlates with its level of development, Nigeria is not excluded from this conflict. Okah-Avae (2003) said that technical applications might include things like shelter, military equipment, agricultural tools, communication, mobility, and transportation methods, among many other things. In fact, man is now completely dependent on modern technology due to its efficiency and supremacy.

Nigeria has thus realized that technological transformation is the driving force behind the modern world. Uza (2013) posit that science and technology led to industrialization by fostering economic expansion and the long-term social development of countries. In order to promote technological transformation, which is widely seen as a driver for national growth, numerous projects are being established. The main tactic intended to support the nation's development is the transformation agenda of the current administration. However, it is important to remember that the world's technologically sophisticated nations have attained their position of prominence by perseverance and a strong foundation in science education. Therefore, it is imperative that science and technology education be prioritized in Nigeria.

Technology is the knowledge and creative process that may use tools, resources, and systems to solve issues, better control over the natural and man-made environment, and work to improve human conditions, according to UNESCO (1994). Okah-Avac (2003) defines it as the methodical investigation and advancement of methods for creating and performing. Olagunju (2014) defines technology broadly as the process by which people create tools and devices to enhance their control and comprehension of the material world and raise their level of living. Technology can be defined as the body of knowledge and tools that allow man to control his surroundings. It is the practical application of scientific knowledge, particularly in the development of new machinery and equipment. Therefore, it might be defined as the practical application of science in a limited way. While technology is a human invention and thus focused on society, science is universal. To put it simply, technology is essentially indigenous. As a result, some developing nations' calls for technology transfer have not produced many results. According to Ali (2013), indigenous technology can be defined as having local origins, meeting local requirements, resolving local issues, and being readily accepted and familiar to the locals who create it. He emphasized that local specialists and/or local talents should be used in the conception, development, and development of such technology, which is achieved by utilizing local raw materials and natural resources. This is the reason why many have criticized Nigeria's use of foreign technology, both in terms of quantity and quality. There is evidence that some international technology-based businesses that were established in Nigeria failed soon after they were founded. One example is Ajaokute steel meal. No country has ever been known to have advanced without the use of technology. It is essential to political stability, economic growth, industrial progress, and the ensuing rise in living standards.

Statement of Problem and the justification of study

Research is required to modernize out-of-date curricula, increase student participation, and close gender gaps. Inadequate infrastructure (poorly equipped laboratories, lack of ICT facilities), teacher quality (shortage of qualified staff, poor pedagogical skills), and systemic issues like overcrowding and underfunding are the main challenges facing Nigerian science education that call for immediate research. Nigeria is still performing poorly in comparison to its wealth of human capital, notwithstanding some advancement in science and technology. In Nigeria, education—the cornerstone of a country's economic, technological, and scientific development—faces numerous obstacles. Because of the system's degradation, students are no longer able to graduate with the skills they need to be inventive or employable in a world that is always changing. The fact that the majority of graduates receive retraining to be competitive in the job market indicates that there are problems with Nigeria's current educational system. Students, teachers/school, and government/infrastructure factors are the three categories into which the numerous issues opposing science education in particular can be divided. These above problems are the justifications for this research.

The objective of this study is to ascertain through an empirical investigation the extent of connection between Science Education and Technological Transformation and Entrepreneurial digitization of Nigeria.

LITERATURE REVIEW

The Concept of Science Education and Technological Transformation

The systematic learning and instruction of scientific methods, observation, experimentation, and analysis is known as science education. It is crucial for developing technical proficiency, critical thinking, and inventiveness. In addition, science education is essential for solving global issues. The significance of scientific challenges such as pandemics, climate change, and technological developments is growing, making it crucial to give students a strong foundation in scientific principles (National Academies of Sciences, Engineering, and Medicine, 2019). Good science education enables people to become knowledgeable, responsible citizens who can actively engage in scientific debates and make contributions to society. A 2009 study by Nadelson and Sinatra found that science education is key to the development of critical thinking abilities, which are necessary for success in the information-driven culture of today. In a similar vein, a 2012 National Research Council report asserts that innovation and technical breakthroughs, which propel economic growth, depend on a workforce highly skilled in science.

Science education helps people become knowledgeable citizens who can make logical, fact-based judgments and provide a solid basis for future scientific employment. Both topic knowledge and the development of scientific inquiry skills are components of an effective science education. It entails observation, data analysis, practical experimentation, and sharing of scientific discoveries. Students gain problem-solving abilities and learn how to think like scientists by participating in scientific activities. There are many advantages to including pupils in science education. It encourages curiosity, helps pupils cultivate a growth mentality, and advances a deeper grasp of the natural world. Additionally, it fosters abilities that are useful in a variety of employment fields, including critical thinking, creativity, communication, and teamwork (Fischer et al 2020).

While technology is revolutionizing education through virtual labs, artificial intelligence, and digital tools, it also propels technical innovation by empowering people to tackle difficult societal issues. Science education can be compared as a bridge that connects different domains of knowledge. It promotes an interdisciplinary approach, fostering cooperation and idea integration. Students gain a comprehensive viewpoint that equips them to address difficult global issues like resource depletion, climate change, and public health emergencies by studying disciplines including physics, chemistry, biology, and environmental science (Mishra, 2017).

The process of educating and learning about scientific ideas, concepts, procedures, and applications is known as science education. It seeks to increase students' enthusiasm in science, scientific literacy, and critical thinking abilities. Traditional teaching approaches have been revolutionized by the use of technology in science education, encouraging inquiry-based learning and active student participation. It has been demonstrated that a variety of digital tools, such as computers, digital microscopes, and interactive whiteboards, improve scientific investigation by facilitating interactive simulations, real-time data processing, and the visualization of difficult concepts (Fischer et al., 2020). These technological developments are consistent with well-known learning theories, such as Vygotsky's (1978) social learning theory, which emphasizes the role of collaborative learning in knowledge acquisition, and Piaget's (1954) constructivist approach, which stresses knowledge construction through experience. Technology's increasing impact on education has changed how students interact with scientific ideas (National Research Council, 2012). Although useful, traditional classroom instruction frequently lacks the immersive and engaging components required to maintain students' attention (Anderson, 2002). With the help of interactive experiences that foster a deeper comprehension of science, digital learning technologies give a chance to make science more interesting (Dede, 2009). According to studies, interactive platforms, simulations, and virtual labs can help students better relate to and comprehend abstract scientific topics (Bransford et al., 2000).

Nigeria's technological and economic advancement is significantly influenced by science education. Numerous scientific subjects, including biology, chemistry, physics, and mathematics, are taught and learned there (Nigerian Educational Research and Development Council NERDC 2018). In Nigeria, science education is very important for a number of reasons. It supports the growth of critical thinking, problem-solving, and innovative capabilities. A trained workforce that can support the nation's economic growth and development depends on science education (Isiksal & Sahbaz, 2014). Additionally, it gives pupils scientific literacy, which empowers them to comprehend and tackle current health, agricultural, energy, and environmental challenges.

Nigeria's Technological Transformation Efforts

In order to achieve technological transformation, resources must be mobilized and modern and old technologies must be harmoniously integrated into workable projects with a specific goal in mind (Afolabi 2009). According to Osisioma (2012), transformation is a fundamental change in a person's, an organization's, or a society's inner orientation that allows for fresh perspectives on the world as well as previously unattainable behaviors and outcomes. It is an order for the basic, structural, and radial reorganization of the country's building blocks. In light of this, Nigeria is not an exception to the global trend of nations aiming to undergo significant change through the use of contemporary technologies. But over the years, Nigeria's development initiatives have been beset by a lack of long-term vision, continuity, consistency, and dedication to agreed-upon policies, plans, and projects. This has led to a high rate of unemployment and poverty as well as a poor improvement in the general welfare of Nigerians. She now understands that improved institutions for science, technology, and innovation are necessary for long-term progress in eradicating poverty and associated issues. Nigeria must undergo a comprehensive change, which calls for a plan that prioritizes the growth of the key industries.

In order to strengthen the impacts and provide the government a sense of direction, the federal government consequently developed a program known as the Transformation Agenda 2011-2015. The agenda is built around a number of core policies and programs that, if put into action, will revolutionize the Nigerian economy to fulfill both the requirements of the country's future citizens and international standards. Agriculture, water resources, solid minerals, manufacturing, oil and gas, trade and commerce, culture, and tourism are the seven industries that were found to be the primary growth drivers between 2011 and 2015.

Unfortunately, Nigeria has not had a successful industrial technical revolution despite more than four years of policy reforms. Low productivity, low private sector investment, inadequate funding, low investment in research, poor value chain development and low value addition, poor quality of goods and services, poor physical infrastructure, policy instability and discontinuity, high

productivity costs, a lack of skilled labor, and low technological paucity are some of the factors that have limited the sectors' performance and suggest that Nigeria's educational system is unsuitable. For example, Okonjo-Iweala (2012) noted that productivity in Nigeria's agricultural sector, which employs over half of the workforce and generates roughly 40% of the country's GDP, is still poor. The yield per hectare is 20–50% of what is produced in comparable developing nations. Inadequate plant variety, tools, and ineffective storage systems are all present. However, experience from throughout the world demonstrates that output may increase swiftly with the correct investment in science and technology education.

It is concerning that despite Nigeria's establishment of numerous universities and other postsecondary educational establishments that can serve as the foundation for the advancement of science and technology at various levels and support the onset and continuation of technological transformation, much remains unfulfilled. Among other things, technological change is supposed to address unemployment, but given Nigeria's unrelenting rise in unemployment, this is unlikely. A workforce capable of using technology as a tool to boost knowledge, productivity, and creativity is required by modern society. Only through efficient science and technology education will this be possible in Nigeria.

The Strategic role of science education in technological transformation of Nigeria

According to Olagunju (2014), science education is the methodical study of everything that can be investigated, tested, and confirmed. It is a process of instruction or training, particularly in schools, to enhance one's understanding of the surroundings and to cultivate one's capacity for methodical inquiry. People who receive a science education are equipped with the knowledge and abilities necessary to address social, political, economic, and environmental challenges. Among the fundamental abilities that science education instills in people are the following: communication, measurement, experimentation, recording, control of variables, prediction, questioning, relationships, comprehension of space and time, inference, data analysis, model formulation, and many more (Cirfat, Zumyil, and Metshak 2007), (Ofonime 2007).

Important attitudes are also instilled in the student, such as respect for others' viewpoints, critical thinking, skepticism, open-mindedness, love of accuracy and truth, teamwork, and diligence. Therefore, the main objective of science education is to instill in pupils the knowledge, procedures, abilities, and attitudes that are essential for successfully preparing them for the industrialized economy of the twenty-first century. The National Policy on Education in Nigeria specifically outlines the objectives of science education as being:

- i. Develop an inquisitive, knowledgeable, and logical mind for living a decent life and upholding democracy.
- ii. Develop scientists for technical advancement, national development, and
Educate people about the intricacy of the physical world, its forms, and human behavior.

According to the strategy, one of the main objectives of science education in Nigeria has been to develop a populace that can compete in a scientifically and technologically advanced, globally interconnected world. Effective science education is the cornerstone for reaching the objectives. It has long been known that science education plays a part in the advancement of technology. Therefore, through training, capacity building, and motivation, the federal government's education transformation program aims to improve the effectiveness, resourcefulness, and competency of educators.

However, Nigeria continues to have low educational attainment. Ali (2013) noted that several African nations, such as Nigeria, produce science graduates that lack scientific literacy. This suggests that in order to maximize the value of science education in technological transition, more work has to be done by education stakeholders. Any human society's degree of technological change is strongly correlated with the amount of science and technology education that is acquired, developed, and used in that society (Mogbo 2002). For society to function well, a greater level of scientific literacy is required due to the increasingly complex nature of civilization and the sophisticated technology products that go along with it.

According to Garuba, Agwede, and Abumere (2012), without science-based technology, no country could advance significantly in this era of information technology, especially in terms of economic transformation. Effective science education is the only way to gain scientific knowledge and skills. Therefore, making investments in the development of human capital is essential to accomplishing national transformation. Since people are the ones who will use other resources, human resources are the most crucial component that makes any kind of change successful (Florida 2002 and Sawyer 2006). The Nigerian government has established a ratio of 60:40 for science and technology-related courses in conventional universities, 80:20 in universities of technology, and 70:30 in polytechnics because it recognizes the importance of science education in technological transformation (Ogunlaye 1999). The available data on student enrollment, however, appears to indicate that these ratios are not achieved; rather, more students are enrolling in non-science courses at Nigeria's various postsecondary educational institutions. When Nigerian schools produce the necessary number of highly qualified scientists, the nature of science and the ensuing technological applications will take on greater significance.

Utilizing science education to bring about technological transformation in some crucial Nigerian sectors

Only a workforce with scientific training, which comes from good science education, can bring about technological progress. Without the necessary scientific and technical ability to address the obstacles, Nigeria's transformation agenda of attaining progress in strategic areas cannot be realized. According to Adikwu (2012), there needs to be a significant push for scientific advancement in any country that wants to see economic prosperity. Effective science education is the only way to accomplish this. A science education gives students the information and abilities they need to carry out admirable tasks that raise socioeconomic standards. It makes it possible for countries to investigate prospects for scientific and technical innovation. Therefore, significant advancements in the transformation agenda can only be made when the government's and people's efforts are accompanied by efficient and pertinent education. After then, science education might be utilized to bring about technological change in the following crucial areas:

Industrialization and research

Research has demonstrated that advancement, which leads to industrialization and civilization, depends heavily on science and technology (Olagunju 2014). The direct application of scientific knowledge and abilities results in industrialization, which is the outcome of technological transformation. Students would be introduced to the world of research and discoveries through creative teaching techniques including inquiry, discovery, projects, and many more if they were properly explained and supported by the instructor. A generation of young, talented scientists who would create a solid foundation for industrial takeoff and national transformation can also be produced by the scientific abilities and attitudes of ingenuity, love for accuracy and truth, open-mindedness, curiosity, reporting, experimentation, empirical studies, collaboration, and many more that science offers. In Nigeria, collaboration between the public and educational institutions in the areas of research, resource exploitation, and resource persons will greatly accelerate technological transformation.

Oil and gas, solid minerals, and water resources

Students are introduced to the realm of exploration and discovery while they are in school when science is taught as inquiry. One effective way to foster science literacy and a significant technological shift in the nation is to connect science education in schools to real-world situations. Using creative teaching techniques to teach science courses like geography, biology, physics, and chemistry will help students internalize ideas and abilities, making real-world application much simpler. The necessity of switching from the antiquated traditional rote learning approach to inquiry and discovery approaches is emphasized. Many more applicants will enroll in scientific-based courses at postsecondary institutions if they have a solid foundation in science at the elementary and secondary educational levels. In order to achieve the objectives of education in Nigeria, the teacher is consequently essential. Therefore, there is a need for science education to produce dependable scientists and engineers who can use natural resources to provide the energy required for technological advancement.

Agriculture

To achieve the intended change, teaching agricultural science in schools is insufficient. A solid strategy to provide the groundwork for increasing the nation's food production is for the school, and especially the instructors, to create a favorable environment, adequate human and material resources for practical learning, and practical education on soil, farm implements, and animal and plant life. There is a disconnect between education and daily living in Nigeria, as evidenced by the current initiative to retrain and encourage recent graduates to pursue farming. After all, interest takes time to develop and is best fostered at a young age.

Scientific skills and knowledge acquired in school and subsequently used in real-world situations can contribute to technological advancement and modernization in agriculture in the following areas: food processing, crop yield and resistance to pests and diseases, maturity time, crop production, storage and preservation, and tolerance to unfavorable climate conditions. Using better hybrid kinds of crops like maize, rice, groundnuts, cotton, cassava, guinea corn, and millet has boosted crop yields in Nigeria to some degree. Applications and scientific research have led to the advancements made possible by the ministry of agriculture's efforts.

Business/trade and tourism

According to Okonjo-Iweala (2012), developing nations cannot expect to thrive in an increasingly competitive global economy and open trade system if they do not develop the necessary science and technology ability to generate more value-added goods and services. Important abilities including measurement, calculation, data collecting and analysis, reporting, prediction, and many more are taught in mathematics, statistics, computer science, and other related science courses. By acquiring these abilities, students are ready for significant shifts in the financial industry, international trade, insurance, and stock exchange. The tourism industry will benefit from similarly good training in the ecology of plants, animals, and how to manage them, as well as climatic conditions and changes.

One surefire path to technological progress is science education. Therefore, agreement on content standards for science education is essential to reviving Nigeria's overall production systems. As a result, the instructor is crucial to the success of science

education. Teachers are responsible for imparting scientific knowledge, techniques, and facts to their students. Thus, he ought to stress the value of originality, ingenuity, and creativity. Nigeria will experience technological transformation when students are able to use the scientific and technology information taught in the classroom in real-world social and practical contexts. Despite all of the government's and other agencies' efforts, science education in Nigeria has not yet yielded noticeable benefits. It is concerning how many Nigerian scientific graduates are unemployed. The indication is that science education has not been able to provide the creative experts and competent human capital required for technological revolution.

workforce

In order to improve the nation's economic standing, science programs aim to develop competent scientists who make significant contributions to society's academic excellence. Science provides knowledge and skills that can support responsible citizens, a robust economy, a healthy environment, and a more promising future for Nigeria. Sawyer (2006) noted that the transition from an industrial to a knowledge economy has happened quickly in many nations. The production and distribution of knowledge and information, as opposed to goods, is the foundation of the knowledge economy. Human resources have been found to be the most crucial element in the success of any transition (Florida 2002). A generation of people who are more equipped for any vocation and who can contribute more to the country's technological change can be produced by the capabilities that science offers. For example, pupils who have developed critical thinking skills and a healthy dose of skepticism are better able to make decisions, which can eventually result in a workforce that is productive and alter the nation.

entrepreneurial digitization in nigeria through science education

A new national curriculum emphasizing digital literacy, artificial intelligence (AI), and entrepreneurship has been introduced for the 2025–2026 academic year, marking a significant shift in Nigerian entrepreneurial digitization through science education (Chukwka and Igweh 2024). Through practical, technology-driven skills that promote self-employment and lower young unemployment, this effort seeks to shift the educational system away from rote memorization. Important Elements of Entrepreneurial Digitization via Science Education include: **New Curriculum (2025–2026):** To better prepare students for the contemporary digital economy, the federal government is incorporating disciplines like coding, robotics, and artificial intelligence (AI) into the junior and senior secondary school curricula.

STEM-Driven Entrepreneurship: By fostering the critical thinking, creativity, and technical abilities required for launching enterprises, STEM coursework is transforming graduates from job searchers into job creators (Chukwuka and Abude 2024).

Digital Tools and Pedagogy: In order to facilitate experiential learning, science education is moving toward digital platforms like as Edapp, Arlo, and 360learning. This includes teaching students in specialized fields through the use of simulation software and virtual labs.

Particular Sectors of Focus: Science education is being used to support horticulture, aquaculture, and agribusiness, allowing students to develop technical solutions for agricultural problems.

Opportunities and Effects of Entrepreneurial Digitization:

Decreased Unemployment: It is anticipated that focused entrepreneurial science education will contribute to a 30% decrease in youth unemployment.

Enhanced Innovation: Pilot studies have demonstrated that activity-based, digital-centric learning increases innovative solutions by 45%, motivating students to create new technologies.

Job Creation: Students are prepared to launch businesses in digital marketing, software development, and technical services by incorporating entrepreneurship into technical fields.

Nigeria's entrepreneurial scene is still changing as a result of its ongoing digital transformation. Digital transformation has enormous potential for Nigerian business endeavors. Nigeria is now a digital powerhouse in Africa's Fourth Industrial Revolution thanks to the usage of digital tools, which have allowed companies to reduce operating costs, reach new markets, and develop innovative business models. Consolidating these advantages, resolving enduring obstacles, and making sure that digital transformation provides inclusive and sustainable growth for entrepreneurs are the challenges facing the country as it approaches 2025 and beyond (Chukwuka and Igweh 2025).

METHODOLOGY

This study adopted descriptive survey in gathering primary data for the study. The researcher embarks on the descriptive research design which is most suitable in ascertain through an empirical investigation the extent of connection between Science Education and Technological Transformation and Entrepreneurial digitization of Nigeria. The population of the study covers male and female genders in Asaba which were selected for the study. A total of 120 respondents were selected from the various science education teachers in Technical schools and Technopreneurs in Asaba, Delta State. The researcher used random sampling method in the selection of respondents for the study. Data was sourced and collected from both the primary and secondary sources through

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questionnaire a method which is the primary sources, while the secondary source entails the use of many relevant Google Scholar, Scopus and other peer review journals. The questionnaire was designed using 4-point liker scale format to elicit information that borders on the objectives of the study. The 4 points ratings scale used are: Strongly Agree (SA) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 point, Strongly Disagree (SD) = 1 point respectively.

Out of the 100 questionnaires sent out, the same numbers were retrieved from the respondents which represent 100% of the actual number administered. The collected data was analyzed using descriptive and inferential statistical techniques. Descriptive statistics such as frequencies, means, and standard deviations will be used to summarize and present the data. Inferential statistics such as correlation analysis and regression analysis was conducted to determine.

RESULTS AND DISCUSSION

Research Question One: What is the extent of connection between Science Education and Technological Transformation and Entrepreneurial digitization of Delta state, Nigeria?

Table 4.0: Mean and Standard Deviation scores of Responses' Opinions on the extent of connection between Science Education and Technological Transformation and Entrepreneurial digitization of Delta state, Nigeria

No.	Statements/Items	SA	A	D	SD	Mean	STD
1.	The role of science education is significant to Entrepreneurial digitization.	40 15.00%	20 20.00%	15 40.00%	25 25.00%	2.25	1.487
2.	Science Education is significantly connected to Technological transformation of Delta state , Nigeria	40 40.00%	35 35.00%	15 15.00%	10 10.00%	3.05	1.435
3.	Science Education Contribute to Economic Development of Delta State, Nigeria.	35 35.00%	30 30.00%	15 15.00%	20 20.00%	2.80	1.211
4.	Entrepreneurial Digitization is positively connected to Science Education.	30 30.00%	45 45.00%	20 15.00%	5 5.00%	3.00	1.581
5.	Science Education creates awareness for technological advancement and social change.	45 45.00%	40 40.00%	15 15.00%	5 00.00%	3.00	1.810
6.	Science education leads to creativity among the students and entrepreneurial innovation	40 40.00%	30 30.00%	20 20.00%	10 10.00%	3.00	1.341
7.	Technological advancement is as a result of Science education	40 40.00%	35 35.00%	20 20.00%	10 15.00%	2.90	1.536
8.	Science Education creates entrepreneurial mindset and culture.	30 30.00%	35 35.00%	10 5.00%	30 30.00%	2.65	1.484
9.	Science education creates technical skills among students.	35 15.00%	20 20.00%	15 35.00%	30 30.00%	2.20	1.438
10.	Science education leads to economic digitization	40 25.00%	15 15.00%	25 40.00%	20 20.00%	2.45	1.414

Source: Field Survey, 2026

Table 4.2, what is the extent of connection between Science Education and Technological Transformation and Entrepreneurial digitization of Delta state, Nigeria.

Thus, the result from the responses tend to agree with most of the issues raised about their opinions as evidenced by the mean score above the 2.5 as the decision point, the results indicated that responses in Items 2, 3, 4, 5, 6, 7 and 8 have high mean scores of 3.05, 2.80, 3.00, 3.30, 3.00, 2.90 while 2.65, while items 1, 9 and 10 have a mean score of 2.25, 2.20 and 2.45 respectively. This indicated that majority of respondents agreed that the role of science education is significant to Entrepreneurial digitization. The result also showed that Science Education is significantly connected to Technological transformation of Delta state, Nigeria. The results also revealed that Science Education Contribute to Economic Development of Delta State, Nigeria. The result also proved that Science Education creates entrepreneurial mindset and culture.

In like manner, majority of the respondents agreed that the Science education leads to creativity among the students and entrepreneurial innovation. But because Items 9 and 10 strongly agreed that Science education creates technical skills among students as well as that Science education leads to economic digitization.

DATA ANALYSIS

This study will use linear regression analysis to analyze the relationship between the dependent variable (technological transformation and Entrepreneurial digitization) the independent variables (Science education). Hypothesis of the study formulated earlier will be tested using the p-value of the individual models as specified in chapter three.

The result of the analysis is as presented below in table 4.0

Table 4.0 a. Model Summary

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.994 ^a	.988	.987	1.12420	.381

a. Predictors: (Constant),

b. Dependent Variable: Technological Transformation and Entrepreneurial Digitization

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9663.982	3	3221.327	2.549E3	.000 ^a
	Residual	121.328	96	1.264		
	Total	9785.310	99			

a. Predictors: (Constant), Science Education

b. Dependent Variable: Technological Transformation and Entrepreneurial Digitization

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-6.912	.574		-12.049	.000
	Science Education	.566	.102	.450	5.572	.000
	Science methods	.837	.045	.740	18.814	.040
	Science foundation	-.224	.061	-.199	-3.648	.020

a. Dependent Variable: Technological transformation and Entrepreneurial Transformation

The result shows that there is a significant and positive connection or relationship between the Science Education and Technological Transformation and Entrepreneurial Digitization in Delta State. The R² value of 0.988 indicated that 98.8% variation in Technological Transformation and Entrepreneurial Digitization is as a result of change in Science Education. The sign value of 0.000<0.05 indicate that the independent variables where able to explain science education role in Technological transformation. All coefficients are significant and positively correlated (P 0.000<0.05, 0.556), (P 0.040<0.05, 0.837) with Science Education role in Technological transformation and Entrepreneurial digitization (P 0.020<0.05, -0.224). The F-sat of 2.549 show the fitness of the included variable into the model and revealed that the result obtained is not by error

1.3 Test of Hypothesis.

This hypothesis will be tested in this study as formulated. The decision rule is comparing of the p-value and alpha 0.05 i.e 95% confidence interval. When $p < 0.05$ we will reject the null hypothesis and accept the alternative, if other wise, i.e $P > 0.05$ we will accept the null hypothesis and reject the alternative

4.3.1 Test of Hypothesis.

Ho: There is no significant relationship between Science Education and Technological Transformation and Entrepreneurial Digitization in Delta State

H1: There is a significant relationship between Science Education and Technological transformation and Entrepreneurial Digitization in Delta State.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.949 ^a	.901	.900	3.13744	.068

a. Predictors: (Constant), Science Education

b. Dependent Variable: Technological transformation and Entrepreneurial Digitization

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8820.642	1	8820.642	896.083	.000 ^a
	Residual	964.668	98	9.844		
	Total	9785.310	99			

a. Predictors: (Constant), Science Education

b. Dependent Variable: Technological transformation and Entrepreneurial Digitization

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2.242	1.046		-2.143	.035
	Science Education	1.195	.040	.949	29.935	.000

a. Dependent Variable: Technological transformation and Entrepreneurial Digitization

From the result of the analysis where R^2 is 0.901 implying that 90% variation in Science Education role in Technological transformation and Entrepreneurial Digitization. The p-value of 0.0000 as shown on the table above is less than alpha 0.05 at 95% confidence interval and given our decision rule; we have to reject the null hypothesis and accepted the alternative hypothesis that there is a significant relationship or connection between Science Education and Technological transformation and Entrepreneurial Digitization of Delta State, Nigeria.

CONCLUSION

The study findings showed that there is a significant relationship or connection between Science Education and Technological transformation and Entrepreneurial Digitization of Delta State. The result also confirmed that Science Education creates entrepreneurial mindset and culture. The study discovered that any country's degree of scientific literacy determines its level of economic development. Therefore, if developing nations like Nigeria do not have the necessary scientific and technology capacity to generate more value-added goods and services, they would not be able to thrive in an increasingly competitive global economy and open trading system. Education in science and technology has been shown to be a true instrument for technological transformation. Therefore, raising the standard of science and technology education shouldn't be sacrificed. Without scientific

understanding, the Transformation agenda cannot be implemented. Strengthening science instruction at all levels in schools is vital for all parties involved in education. Nigeria is still working to transform the country via the use of science and technology. The study concludes that Nigeria will experience a technological transformation when students are able to apply the scientific and technological knowledge they have learned in the classroom to real-world social and practical contexts.

RECOMMENDATION

According to the study's findings, ensuring the availability of the necessary resources—such as technically skilled teachers, tools, scientific equipment, specimens, chemicals, etc.—as well as prudent management is the most compelling method to advance science and technology in Nigeria. The government should oversee the distribution and acquisition of these educational materials closely in addition to providing the required funding. Additionally, a maintenance culture should be ingrained in the school. By creating a National Science and Technology Foundation to supervise science instruction in schools, the government may improve primary and secondary education and reduce the startling proportion of kids failing science and math classes.

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