DRIVING NATIONAL DEVELOPMENT THROUGH RESEARCH AND INNOVATION

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Protocols

Let me begin by conveying my deepest appreciation to the Vice Chancellor of Obafemi Awolowo University, Ile-Ife, for the thoughtful initiative of not only providing me with the opportunity to share my thoughts with you today on this vital topic at the 65th anniversary celebration of this great university, but also for giving me sufficient notice for the event.

Initially established by the Regional Government of Western Nigeria in 1961 as the University of Ife, the University was taken over by the Federal Government of Nigeria in 1975. As one of the first-generation universities in Nigeria, established to meet the tertiary education needs of the country, the "Great Ife" as fondly called due to its remarkable accomplishments, started with five faculties. From a modest beginning, the university has grown over the decades with 15 Faculties, 118 Departments, 19 Research Centres, and over 32,000 students in various fields of specialization spanning the humanities, arts, natural sciences, social sciences, medical sciences, engineering and technology.

In 1987, the University was renamed Obafemi Awolowo university (OAU), Ile Ife in honour of the first premier of the western region and one of its founding fathers. Chief Obafemi Awolowo was a foremost nationalist, eminent lawyer, reformist, seasoned administrator, accomplished politician, and an advocate of free and quality education, whose commitment to the advancement of education and national development remains unparalleled.

The Theme of the anniversary ***"Legacy of Excellence – Future of Impact"*** appropriately reflects the ideals and enduring heritage of Obafemi Awolowo University as one of Africa's foremost centres of learning, widely recognized for its unwavering commitment to academic excellence. I congratulate you on this milestone.

Expectedly, the university has lived to the ideals of its founding fathers as the breeding ground for erudite scholars, legal luminaries, successful businessmen, diplomats, accomplished technocrats and administrators, including its legion of Nigerian National Merit Award Winners, who are contributing to national development, and have continued to uphold the reputation of the university. For us at TETFund, we shared a common vision of excellence with the Great Ife especially at a time like this, when we are driving the imperative of research and innovation to improve the competitiveness of our tertiary institutions.

Please permit me to pay tributes to the pioneer and successive Vice Chancellors of the university for sustaining the legacies of the university's founding fathers. The Great Ife has remained a symbol of commitment and purposeful leadership. I want to particularly commend the current Vice Chancellor of the University, Prof. Adebayo Simeon Bamire, for bringing a unique combination of his intellectual prowess and administrative experience to bear in the administration of the university. He is providing focused and purposeful leadership for ensuring the stability of the institution and the preservation of its unique identity. This is how a Scholar-Administrator can build bridges between the university and the larger community.

2.0 THE CONCEPT OF RESEARCH AND INNOVATION

Distinguished Ladies and Gentlemen, Research is generally understood as a systematic process of investigation aimed at discovering new knowledge, validating existing ideas, solving identified problems, or improving current systems and practices. According to Creswell (2014), research involves "a process of steps used to collect and analyze information to increase our understanding of a topic or issue." Research may be scientific, social, technological, medical, educational, or policy-oriented, depending on the field and objectives involved (Chu & Chang, 2017).

Innovation, on the other hand, refers to the practical application of ideas, discoveries, or research findings to create value. Innovation transforms theoretical knowledge into useful products, services, systems, or methods that solve societal problems. Schumpeter (1934), one of the earliest scholars in the field of innovation economics, described innovation as the introduction of new products, new production methods, new markets, or new forms of organization, capable of driving economic growth (Karol, 2013).

Although research and innovation are often discussed separately, they are closely connected. Research creates knowledge, while innovation turns that knowledge into practical and useful results. Without research, innovation lacks depth and lasting value, while without innovation, research findings may remain in libraries and journals, with little real impact on society.

A country's progress largely depends on its ability to generate knowledge, apply science, foster innovation, and convert ideas into practical solutions for society. It is obvious that leading economies have advanced by investing in research and innovation, impacting sectors such as industry, healthcare,

agriculture, transport, security, and digital technology. Globally, the focus has shifted from reliance on natural resources to prioritizing knowledge, technology, creativity, and innovation. Accordingly, governments, universities, research centers, and development agencies now play a greater role in supporting research and promoting innovation (Fayyaz & Bartha, 2025).

Nigeria, like many developing countries, faces challenges that require practical and knowledge-driven solutions. Notably, issues such as unemployment, insecurity, weak industries, inadequate infrastructure, limited healthcare facilities, food insecurity, and low technological capacity hinder progress. However, these challenges also present opportunities for research institutions and innovation agencies to drive meaningful change (Djalilova, 2022).

3. THE ROLE OF RESEARCH AND INNOVATION IN NATIONAL DEVELOPMENT

There is a clear nexus between research, innovation, and national development. No country can achieve sustainable economic growth and technological progress without investing in knowledge and practical innovation. It is widely acknowledged that research and innovation play a crucial role in the development of all societies and the success of all nations. The importance of research and innovation has grown significantly in the 21st century due to globalization, technological advancement, digital transformation, and increasing competition among nations. There is increasing drive to invest heavily in research institutions, technology hubs, innovation parks, and higher education systems because it is recognized that knowledge is one of the most valuable resources in the modern economy.

The application of research and innovation cuts across virtually every aspect of human life. In healthcare, medical research has led to the development of vaccines, treatment procedures, diagnostic equipment, and disease prevention strategies that continue to save millions of lives globally. During the COVID-19 pandemic, for instance, countries with strong research and innovation systems were able to rapidly develop vaccines and public health responses that helped reduce the virus's spread (World Health Organization, 2021).

In agriculture, research and innovation have contributed to improved crop varieties, mechanized farming systems, irrigation technology, and food

preservation methods that support food security and increase agricultural productivity. Notably, countries such as Brazil, India, and China have invested significantly in agricultural research institutions, resulting in major improvements in food production and export capacity.

Similarly, innovation in engineering and transportation has transformed urban mobility, infrastructure development, and industrial productivity. In the same vein, digital innovation has also revolutionized communication, financial systems, education delivery, governance, and commerce worldwide.

Research and innovation provides governments and institutions with reliable data for planning and policy formulation. Evidence-based policymaking enables governments to make informed decisions rather than relying solely on assumptions or political considerations. Countries that invest in policy research are often able to design more effective economic, educational, healthcare, and social welfare programmes (Fayyaz & Bartha, 2025).

Remarkably, research and innovation also contribute to industrial growth and economic diversification. Nations with strong innovation systems tend to have higher productivity levels because industries can improve production processes, reduce operational costs, and develop new products that can compete globally (Su et al., 2022). According to the Organisation for Economic Co-operation and Development (OECD, 2015), investment in research and development remains one of the strongest drivers of long-term economic competitiveness (Besiroglu et al., 2024).

Furthermore, research supports national security and social stability. Studies on conflict management, migration, social behavior, cybersecurity, and intelligence gathering help governments develop more effective approaches to addressing insecurity and developing response to social unrest.

Education systems equally depend heavily on research. Universities are expected not only to teach existing knowledge but also to generate new ideas that improve society. This is why globally ranked universities are often assessed mainly based on the quality of their research output, innovation impact, and industry collaboration.

In addition, countries such as the United States, Germany, South Korea, China, and Singapore became global economic powers through sustained investment in research and innovation ecosystems. For example, South

Korea invested heavily in science and technology after the Korean War, transforming from a low-income nation into a leading technology-driven economy. Thus, for Nigeria to achieve meaningful socio-economic development, it is absolutely imperative that it prioritize and strengthens its research and innovation ecosystems.

The landscape of the global economy is witnessing rapid changes. Globalization in particular, is generating considerable new opportunities as well as new challenges. The impact of globalization on national economies is driven by significant progress in research and innovation as demonstrated by the plethora of scientific breakthroughs in Space Research, Biotechnology, Information & Communication Technology (ICT), and Energy Development, among others

Thus, as we pivot into the twenty-first century, the development of an appropriate level of research and innovation capacity will obviously continue to be a critical requirement of the development process.

4. RESEARCH AND INNOVATION WITHIN THE NIGERIAN CONTEXT

In Nigeria, research and innovation activities are primarily conducted in universities and tertiary institutions, specialized research institutes, and government agencies. However, research outputs have not been able to make the desired contributions to national development due to inadequate funding, weak industry collaboration, poor infrastructure, and limited commercialization frameworks.

Historically, Nigeria's approach to development has relied profoundly on the exploitation of natural resources, particularly crude oil. This dependence gradually enfeebled investments in scientific research, manufacturing, and technological development. As a result, the country became more dependent on imported technologies, foreign expertise, and externally developed solutions for local problems. Over time, this has weakened the anticipated links between the universities, industry, and national development planning. The good news is, the tide is changing, and it is being driven from the top.

For many years, research activities in Nigerian tertiary institutions have focused mainly on theoretical and academic outputs, particularly publications required for promotion and career advancement. While scholarly publications are important for academic growth, limited emphasis on commercialization and practical application of research outputs have

reduced the visibility and societal impact of research findings. Many research outcomes with the potential to address societal challenges often remain in libraries, conference proceedings, and academic journals, rather than being developed into products, policies, or technologies that benefit society.

This disconnects between research output, and practical application has remained a major concern in Nigeria's higher education system. According to Adebayo (2019), one of the longstanding weaknesses of research development in Nigeria has been the inability to create a sustainable linkage between academia and industry. Industries often operate independent of universities, while researchers rarely consider industrial and market needs. Consequently, research findings have consistently failed to attract significant investment or commercialization opportunities.

Despite these limitations, Nigeria is witnessing gradual progress in certain areas of research and innovation. In agriculture, local researchers have contributed to the development of improved crop varieties and farming practices suited to Nigerian climatic conditions. Research institutes such as the International Institute of Tropical Agriculture (IITA) and the National Root Crops Research Institute have contributed significantly to food production and agricultural sustainability within the country (IITA, 2021).

In the healthcare sector, Nigerian researchers and medical professionals have also achieved significant milestones in disease management, vaccine research, maternal health studies, and public health interventions. During the COVID-19 pandemic, Nigerian universities and research institutes contributed significantly to public health awareness campaigns, epidemiological studies and interventions, and the production of locally made protective equipment and medical supplies.

The financial technology sector in Nigeria equally demonstrates how innovation can drive economic growth and job creation. Nigeria's fintech ecosystem has grown rapidly over the last decade, producing globally recognized digital payment platforms and financial service innovations. According to the Nigerian Communications Commission (2023), digital technology and innovation continue to contribute significantly to financial inclusion and economic activities across the country.

While these milestones are commendable, they remain relatively isolated given the scale of Nigeria's developmental needs. Many research

institutions still face inadequate infrastructure, weak laboratory systems, limited funding, and poor collaboration frameworks. These challenges hinder researchers' ability to compete globally or generate solutions at the scale needed for national transformation.

5. CHALLENGES AFFECTING RESEARCH AND INNOVATION IN NIGERIA

One of the most significant challenges is inadequate funding. Research and innovation activities require substantial financial investment in laboratories, equipment, fieldwork, technology acquisition, and commercialization. However, despite the efforts of the Government through funding agencies such as TETFund, Nigeria's investment in research and development remains relatively low compared to global standards. According to UNESCO (2022), many developing countries, including Nigeria, spend less than 1% of their Gross Domestic Product (GDP) on research and development activities. This level of funding is insufficient to support world-class research systems or sustain innovation ecosystems capable of competing internationally.

The problem of inadequate infrastructure also remains a major limitation. Several tertiary institutions in Nigeria still struggle with outdated laboratories, insufficient research facilities, poor and unreliable power supply, and inadequate digital infrastructure. In many cases, researchers are forced to work under conditions that limit experimentation, innovation, and advanced scientific inquiry. This challenge does not only undermine research quality but also discourages young scholars and innovators from pursuing ambitious projects.

Another major challenge is the weak relationship between universities and industry. In countries with strong research and innovation ecosystems, universities and industries work closely to identify problems, fund research, develop prototypes, and commercialize innovations. In Nigeria, however, this link remains relatively weak. Many industries rarely invest in university-based research, while researchers often have limited understanding of market and industrial needs. This disconnect reduces opportunities for commercialization and limits the practical impact of research findings in the country. The weakness in the linkages between researchers and industry is one of the deep gaps in Nigeria's research ecosystem that needs to be bridged. This is particularly so, as these challenges have continued to impede the research capacity of our institutions. According to Etzkowitz and

Zhou (2017), successful innovation ecosystems depend largely on the ability of universities to interact effectively with industry and government through what is described as the “Triple Helix” model of innovation.

The issue of brain drain has equally affected Nigeria’s research environment. Over the years, many highly skilled academics, scientists, medical professionals, and researchers have left the country in search of better working conditions, improved remuneration, and more conducive research environments abroad. This has weakened institutional capacity and reduced the availability of experienced researchers within the country. According to the African Development Bank (2020), the migration of highly skilled professionals remains a major obstacle to scientific and technological development across Africa.

Policy inconsistency and weak implementation frameworks also contribute significantly to the challenges affecting research and innovation in Nigeria. While governments often develop policies supporting science, technology, and innovation, implementation is frequently undermined by political transitions, inadequate coordination, and limited institutional continuity. As a result, several innovation policies and research programmes fail to achieve their intended objectives.

In addition, the culture of commercialization within Nigerian universities remains relatively weak. Many researchers still view research primarily as an academic exercise rather than a process capable of generating economic value. Consequently, issues relating to intellectual property protection, patent registration, product development, and business incubation are often neglected.

The challenge of poor data management and limited access to reliable national statistics also affects research quality in Nigeria. Effective research depends heavily on accurate, reliable and accessible data. However, in many sectors, researchers struggle to obtain current and reliable information needed for evidence-based analysis and policy recommendations. This often affects the credibility and applicability of research findings.

Furthermore, insecurity in several parts of the country has negatively affected research activities. Researchers conducting field studies in conflict-prone areas frequently encounter safety risks, restricted movement, and logistical difficulties. These conditions does not only affect the quality of data

collection but also discourage research activities in critical areas such as agriculture, public health, migration, and social development.

There is optimism that with sustained investment, institutional reforms, and stronger collaboration, Nigeria can strengthen its research and innovation ecosystem to drive sustainable development.

6. TETFUND'S INITIATIVES ON STRENGTHENING RESEARCH AND INNOVATION FOR NATIONAL DEVELOPMENT

The Tertiary Education Trust Fund (TETFund), being an Intervention Agency set up to provide supplementary support to all levels of public tertiary institutions in Nigeria has renewed its commitment for transformative intervention activities. In recognition of the imperative of research and innovation in driving national development, the Fund has evolved to become a major force in funding research and innovation, and education development in Nigeria (Echono, 2023).

Since its establishment, TETFund has played a transformative role in Nigeria's tertiary education sector. Remarkably, TETFund's R&D initiatives aims to ensure that research from Nigerian universities leads to tangible products, technologies, services, and solutions that support national development. Apart from physical infrastructure intervention, one of the most significant developments in TETFund's evolution has been its growing emphasis on supporting research and innovation activities.

In addition to the annual allocation to beneficiary institutions for Institution Based Research to provide opportunities for smaller-scale research activities in the institutions, and in response to the need to address the paucity of funds necessary to facilitate cutting-edge research in the areas of national priorities, TETFund introduced the National Research Fund (NRF) intervention intended to fund impactful research that will contribute to national developmental efforts as well as tackle global challenges. The grants cut across three (3) broad thematic areas of Science, Technology and Innovation (SETI); Humanities and Social Sciences (HSS); and Cross Cutting (CC). The goal is to ensure that Nigerian scholars and researchers are supported to tackle not only our unique national priorities but also the pressing global challenges of our time.

TETFund has also funded other innovative initiatives targeted at deepening impactful research and uptake of research outcomes with potentials for

commercialization. In this regard, the Fund has been sponsoring the TETFund Alliance for Innovative Research (TETFAIR) programme, an initiative designed to pull researchers, innovators and inventors from various Beneficiary Institutions to accelerate their researches, innovations and inventions with the aid of state-of-the-art innovation hub, experts and mentors to transform their ideas into innovative solutions that can be pitched to investors for commercialization.

So far, the TETFAIR programme has produced 55 prototypes. Most noteworthy is that a team designed and developed a hearing aid that is self-programmable, affordable, and more suitable for the African market. This Team was selected among the top 3 participants in the ARC Center for Digital Innovation Entrepreneurship Program at the Sheba Hospital in Israel where they presented their innovation at an international medical conference. Interestingly, all fifty-five (55) prototypes have been tested and are receiving positive feedback from potential investors.

In the same vein, to enhance the capacity of our lecturers for innovative and impactful research the Fund also sponsored 873 lecturers of beneficiary institutions for intensive capacity building programme on Research for Impact (R4i) since the inception of the prpgramme in 2022. The Initiative is intended to groom a generation of dynamic researchers, innovators and inventors within the academia for solving societal problems. The programme is designed to provide participants with an in-depth insight into the necessity, principles, processes, platform and procedures of research and development ideation and implementation, as well as prototyping. The ultimate objective is to translate research from Nigerian tertiary institutions to innovations, inventions and solutions for practical application and commercialization. The R4i has produced 168 prototypes thus far.

Furthermore, the Fund has taken a step further to support some prototypes from the TETFAIR and R4i programmes through the introduction of the new initiatives, the Commercialization Innovation Fellowship (CIF). This is a follow-on programme that takes a small group of tested research projects from the prototype stage into real markets. It focuses on innovation teams that have successfully participated in the TETFund-supported TETFAIR/R4i programmes and have progressed beyond the ideation phase to develop a Minimum Viable Product (MVP) or a functional prototype. These teams represent research outcomes that have demonstrated practical applicability and strong potential for commercialization. The Initiative is targeted at

supporting such teams along the research commercialization pathway by providing structured assistance to ultimately facilitate the translation of research innovations into scalable enterprises capable of addressing national development challenges and contributing to economic growth.

To bolster the global competitiveness of our scholars, TETFund sponsored 1,761 academic staff from various beneficiary institutions for international "train-the-trainer" workshops between 2019 and 2022. This capacity-building initiative focused on Research Proposal Writing and Grant Management, equipping faculty with the specialized skills needed to secure prestigious international research grants and tap into diverse global funding streams. To optimize the impact of this investment by ensuring that more scholars benefit from this laudable initiative, it was systematically stepped down and held locally across the six geopolitical zones. This cascading effect is creating a critical mass of research-driven faculty, and turning our beneficiary institutions into a powerhouse capable of competing for global funding opportunities.

Recognising the role of Centres of Excellence in the Institutionalization of R&D, the Fund was motivated to establish thirty (30) Centres of Excellence in our Beneficiary Institutions with eighteen (18) Centres in selected Universities, six (6) Centres in Polytechnics, and another six (6) Centres in Colleges of Education specializing in various aspect of national needs. This initiative was provoked by the belief that Centres of Excellence invariably define research and innovation priorities of any country for local, regional and national needs. It is hardly surprising that OAU houses two of these centres. This new thinking underscores the unwavering commitment of TETFund to promote the interface between the academia and industry, on the premise that the Centres would ultimately partner with research institutions and the industry, being an organizational environment that strive for high standards of protocols and methodical benchmarks in a field of research and innovation. This initiative has further boost under the present Administration with the establishment of six (6) additional centres of excellence with focus on Robotics, AI, Cybersecurity and relevance of the sector.

Recognizing that cutting-edge innovation requires world-class facilities, the Fund is establishing six (6) Multipurpose Zonal Laboratories within selected Beneficiary Institutions to serve the six geopolitical zones of the country. These strategic facilities are designed to provide the high-level infrastructure

necessary for impactful research and product development, creating a truly enabling environment for academic excellence. Crucially, these laboratories will domesticate advanced scientific inquiry, significantly reducing the dependence of our researchers on overseas institutions for "benchwork" and other complex laboratory analysis. By providing these localized facilities, we are not only accelerating the global competitiveness of our institutions but also ensuring that Nigerian research and innovation ecosystem contributes in accelerating national development. These laboratories are currently at various stages of completion, and the Fund is proactively making provision for equipping and operationalizing them with world-class equipment.

Given the complexity surrounding employability and the need for education to be responsive to the needs of the society, the Fund is strategically establishing forty-five (45) Innovation Hubs and sixty (60) ICT Experience Centres across the six geopolitical zones of the country. The Hubs/Parks are expected to provide the enabling environment for conducting ground-breaking research and development of innovative technologies and solutions to drive national development, thereby stimulating the Triple Helix Synergy in Nigeria.

The ICT Centres will obviate the current challenges of inadequate ICT infrastructure, limited access to emergency technologies, and in adequate digital skills development platforms. They will facilitate integration of information and communication technology into teaching, learning and research processes.

Tetfund is also building alliances and forging partnerships with global institutions in the UK, USA, EU, Germany, France, Brazil and Malaysia in furtherance of this initiative. Recently, TETFund and the United Nations Development Programme (UNDP) signed a Memorandum of Understanding (MoU) for operationalization of innovation hubs to accelerate Nigeria's transition toward an innovation-driven, knowledge-based economy. This partnership formalizes a strategic alliance committed to making innovation and entrepreneurship the primary drivers of Nigeria's socio–economic development.

The Fund has also supported the Innovation Fellowship for Aspiring Inventors and Researchers (i-FAIR) programmes as one of the sponsoring partners. The i-FAIR programmes were organized by the Israeli Embassy to support scientific researchers, innovators and entrepreneurs who are

passionate about using innovation to solve societal problems and transform Nigeria. The i-FAIR initiative has been designed to help academics, researchers and inventors to deeply explore the field of R&D and entrepreneurship, create prototypes from research ideas, pitch prospective investors and industrialists for uptake of research outputs into commercialisable goods and services. TETFund supported the i-FAIR 1, 2, 3 & 4 programmes with the participation of over thirty-five (35) Nigeria researchers/inventors. I am pleased to report that some of the university academics nominated by the Fund to participate in the programme came out with innovations that are patented, thereby facilitating the emergence of entrepreneurs who are creating value in the economy.

7. CONCLUSION

Research and innovation remain key drivers of national development. Nations that have achieved sustained economic growth and technological advancement have done so through deliberate investment in knowledge generation, scientific inquiry, and practical innovation. In today's global economy, development does not depend on natural resources but on the capacity to create, apply, and commercialize knowledge.

Nigeria's developmental challenges, though significant, also present opportunities for innovation-driven transformation. Addressing issues such as unemployment, insecurity, hunger, healthcare limitations, industrial underdevelopment, and technological dependence requires sustained investment in research and innovation systems that generate practical solutions suited to local realities. The education family will be eternally grateful to President Bola Ahmed Tinubu for his laser-beam focus on this endeavour.

I must stress that, building a fully functional and innovation-driven economy requires concerted efforts and deliberate investment to address issues such as funding constraints, insufficient infrastructure, inadequate motivation, limited academia-industry collaboration, and challenges in commercializing research outputs.

TETFund's role in enhancing the capacity of our tertiary institutions for research and development through its interventions activities is becoming increasingly strategic for strengthening Nigeria's research and innovation ecosystem. By supporting research funding, academic capacity development, innovation hubs, commercialization initiatives, and

entrepreneurship programmes, the Fund is repositioning the institutions as active contributors to national development.

Nigeria's sustainable development largely depends on how effective we are at leveraging knowledge, innovation, and technology to grow national economy, expand opportunities, create jobs and wealth, develop new products and services and improve the well-being of its people. This is essential for national growth, competitiveness, and long-term stability.

Thank you for your kind attention.

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