

The Quest for Industrialisation and Development in Ghana: Pathways for Accessible and Equitable University and Higher Education

Augustine Amihere

College of Teacher Education, Zhejiang Normal University, No. 688 Yingbin Avenue,
Jinhua City 321004, Zhejiang Province, China

*austinhere15@gmail.com

Abstract

In recent decades, Ghana has made great strides in developing higher education, which has transformed lives, reduced poverty, and boosted prosperity. Equity and access to higher education have sparked one of the most highly charged debates of the past decade. Thus, scholars and researchers have tried to gain a better understanding of Ghana's higher education development from a variety of perspectives. In today's world, tertiary education is an important concept that contributes to national development and economic growth. Ghana's higher education has achieved tremendous growth in various areas including, increased access and participation, a growing private sector, a transformative policy environment, and expansion of academic facilities. However, in the development of higher education, barriers to access, inequalities in access to quality education, and unequal participation among women and minorities persist. Therefore, Ghana lags behind in innovation, industrialization, and national development, despite commendable progress in higher education. In this regard, this study answered four questions. (1) What is the significance of enhanced access and equity to higher education and university education to innovation and industrialization in Ghana? (2) What is the extent to which policies have made it possible to ensure access and equity to higher education in Ghana? (3) What are the factors compromising access to the higher education system in Ghana? (4) What are the possible options for addressing equity and access challenges in higher education? A qualitative research approach, entailing analysis of documents and publications was conducted. The documentary review provided a quick way of coming up with the research findings. Particular attention was on examining the relevance of enhanced access to higher education in Ghana's developmental needs. The data were analysed thematically, with the findings presented in line with the research questions. The study showed that universities' role comes into action as a basic resource with their human assets and research institutions capable of producing knowledge, creativity, and innovation represented in researchers, research centres, and scientific departments. Universities are considered a resource of economic development and the most important inputs of production processes for the knowledge-based economy in this century. Education policy points out that higher education shall be made equally accessible to all, on the basis of capacity, by every appropriate means, and in particular, by the progressive introduction of free education. Access is compromised by a number of factors, including brain drain, resource inadequacies, and delays in decision-making. The study recommended that the government of Ghana should create a good environment for industrial growth through the provision of funds to universities for research and development. Furthermore, many organizations need to work to close the gaps as a way to achieve education equity. There is also a need for the universities to develop and promote a programmatic approach to research and innovation for the generation of knowledge, products, goods, and services that respond to the needs of industry, commerce, and society by conducting consultative workshops with relevant stakeholders.

Keywords: Access, Equity, Higher Education, Industrialisation, Innovation; National Development

DOI: 10.7176/JEP/13-24-02

Publication date: August 31st 2022

1. Introduction

The role of higher education in development and economic growth is widely acknowledged in literature, and one of the great African scholars, Amilca Cabral, argues that the crisis of an African existence is neither political nor economic; rather, it is a crisis of knowledge and educational policies. Yet it seems as if there are barriers to access to higher education, inequalities in access to quality education, and issues of unequal participation among women and minorities (Effah, 2018). In addition, universities and higher educational institutions have long been recognized as sources of knowledge creation, innovation, and technological advances (Bareke, 2018). University education and research focus on the conscious process of knowledge acquisition and skills development for the purpose of developing a 'knowledge or industrial society' (Selyutin et al., 2017). Thus, quality education is part of the global development agenda and Sustainable Development Goal (SDG) Number 4 aims to ensure that there is an inclusive and equitable quality education as well as promote lifelong learning opportunities for all (United Nations, 2020). In line with the need for quality education SDG Goal Number 9 advocates for the promotion of

inclusive and sustainable industrialization and fostering innovation. A prosperous Africa based on inclusive growth and sustainable development is the first aspiration of the African Union Agenda 2063 (African Union Commission, 2015). Aspiration number 1 in the Agenda 2063 of the African Union indicates the importance of a quality education system, a skilled labor force, and industry innovation, and emphasizes the importance of universities focusing on research and producing quality graduates. In Africa, there is a clear agenda to achieve the goal of inclusive and transformative industrialization. Yet, inadequacies in terms of skills compromise the industrialization process. Africa is relatively less industrialized compared with other parts of the World, despite having encouraged mass university education (United Nations, 2021). Accordingly, to achieve its industrialization goal as laid out in Agenda 2063, a more transformative approach to human capacity development must be a top priority (Moyo, 2019).

Tertiary education in Ghana comprises education provided by universities, polytechnics, colleges, and professional institutes. Initially, higher education in Ghana began during the colonial era with the establishment of the University College of the Gold Coast (UCGC), now known as the University of Ghana (UG) (Apusigah 2009). Ghana expanded its higher education mandate after independence to meet the needs of the newly 'liberated' nation-state. The new Ghanaian State required citizens with the requisite knowledge, skills, and attitudes for shaping and propelling national development, and the place of higher education in accelerating national development was recognized (Bingab et al., 2016). However, the growth of higher education was slow with the state being the main provider (Keche, 2021). The expansion was witnessed in the 1980s, and the changing needs of the state, in the 1990s were characterized by an explosion in the establishment of many higher education institutions including non-government-owned entities (Effah, 2018). A study by Atuahene and Owusu-Ansah (2013) asserted that public universities in Ghana are internationally recognized in terms of the quality of programmes offered, teaching, research, and knowledge transfer.

In Ghana, higher education growth is one priority to boost the welfare of its citizenry and is considered an essential driving force for economic and social development. Ghana is recognized internationally for the coherence and vision of the policy framework that has shaped developments in its tertiary education sector. Higher education in Ghana has recently seen remarkable growth in various frontages, widening access and participation, expansion of academic facilities, a transformative policy environment that has led to the growth of private sector participation, and innovative funding approaches to increase the financial sustainability of institutions, and so on. Nevertheless, according to the Higher Education Research Data Collection (2021), there remain inequalities in the higher education system in Ghana, as access has not been broadened to include all social groups. Thus, despite having one of the highest literacy rates in Africa and the world, Ghana has a low level of industrialization. The country faces a myriad of socio-economic problems, including poverty, unemployment, food and nutrition insecurity, and poor infrastructure. There are also problems in terms of environmental degradation and natural resource depletion. These problems seem to point toward the absence of research and innovation. Communities lack the knowledge, skills, competencies, and requisite technologies and tools to harness the available natural and human capital endowments. Access and equity to higher education are required so that there is industrial innovation. The specific research questions were:

1. What is the significance of enhanced access and equity to higher education and university education to innovation and industrialization in Ghana;
2. What is the extent to which policies have made it possible to ensure access and equity to higher education in Ghana;
3. Identify the factors that affect access to the higher education system in Ghana, with particular reference to gender-based disparities, socioeconomic status, and regions of origin; and
4. Propose possible options for addressing equity and access challenges in higher education.

2. Theoretical Framework

There was the application of two theories, the first one being the Human Capital Theory. Human capital is a strategy for improving workforce productivity to drive higher value for the firms and it has become an important focus in the industry (Wuttaphan, 2017). The human capital theory was first introduced by Theodore W. Schultz in 1961 in order to increase organizational performance, organizations rely on employees' skill, knowledge, and ability as a key concept of value creation, (Wuttaphan, 2017). In the current global market, companies are composed of competitors, regardless of industry. To develop a competitive advantage, it is important that firms truly leverage the workforce as a competitive weapon. The value of human capital theory is widely accepted (Tan, 2019). The term 'human capital' has been defined as a key element in improving firm assets and employees in order to increase productivity as well as sustain competitive advantage. Human capital refers to processes that relate to training, education, and other professional initiatives in order to increase the levels of knowledge, skills, abilities, values, and social assets of an employee which will lead to the employee's satisfaction and performance, and eventually on firm performance (Tan, 2019). If human capital theory is

employed at a national level, the country will boost the industry and address the country's problems. Therefore, Ghana might as well have policies that build up the human capital through enhanced access to higher education.

The second theory is the Resource-Based View (RBV) as a basis for a competitive advantage of a firm lies primarily in the application of the bundle of valuable interchangeable, intangible, and tangible resources at the firm's disposal (Collis and Montgomery, 1995). The characteristics of a firm's crucial resources and strategic capability were developed by Barney (1991), who suggested that to sustain competitive advantage, a firm has to possess the resources that are valuable, rare, and non-substitutable. According to Barney (1991), the importance of a given resource can only be assessed in comparison to those held by competitors, since only a competitively unique and superior competence can be a source of superior performance. Resources have an advantage in creating conditions that lead to superior performance or produce equilibrium returns in excess of the cost of capital. Superior performance-producing resources must be valuable, rare, imperfectly imitable, and not perfectly substitutable (Collis and Montgomery, 1995). The resource-based view presents the advantage of creating conditions such as value, inimitability, non-substitutable, and rareness. Resources that meet these four conditions would strengthen the relationship between linkage strategies and university performance.

3. Conceptual Framework

The key concepts in this study are access and equality in higher education, innovation, industrialization, and national development. Figure 1 shows the key variables in this study.

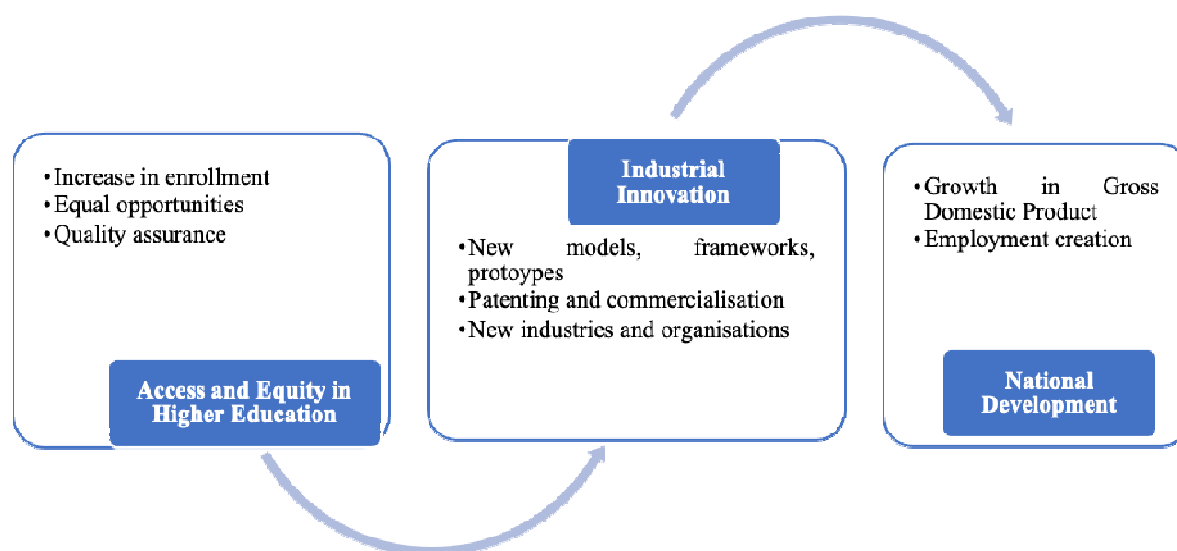


Figure 1: Role of Higher Education in Industrial Innovation and Development

Source: Self-Generated by Researcher (2022)

According to Figure 1, higher education ought to include problem identification and the development of human skills to search for solutions. The solutions can be in the form of new models, frameworks, and prototypes. Through enhanced access to higher education, there must be the creation of new industries and organizations, leading to growth in GDP, as well as employment creation.

4. Methodology

A qualitative research approach was applied in carrying out this research. The study entailed an analysis of documents and publications pertaining to the role of university research in industrialization. The documentary review provided a quick way of coming up with the research findings. Particular attention was on examining the relevance of enhanced access to higher education in Ghana's developmental needs. The data were analysed thematically, with the findings presented in line with the research questions.

5. Findings

The findings of the study are presented in line with the major research questions. There are four key questions answered by this study. The first question focused on the relevance of higher education and university education to innovation and industrialization in Ghana. The second question sought to find answers to the extent to which policies have made it possible to ensure access and equity to higher education in Ghana. The third question centered on the factors that compromise access to higher education research and the industrialization process in

Ghana. The last question sought answers pertaining to the major evolving strategies that could be adopted to enhance access and equity to higher education, university research, and industrial development in Ghana.

5.1. Relevance of Higher Education to Innovation and Industrialisation in Ghana

Any higher education institution or university should shape its own way by making use of its professors, students, and infrastructure. In fact, a face-to-face meeting between professors and their students allows them to perform outstanding jobs and helps them create and innovate, enabling the university to perform vital functions including the acquisition of new knowledge, making use of the previous findings, and leading the new generation. A university that adapts itself to the new competitive environment depending on its points of strength and adopts new techniques will have a brilliant future (Al-Youbi et al., 2021). In all countries of the world, sustainable economic development is facing challenges imposed by modern developments caused by globalization and fierce competition. This is where higher education institutions and universities' role come into action as a basic resource with their human assets and research institutions capable of producing knowledge, creativity, and innovation represented in researchers, research centres, and scientific departments. Universities are considered a resource of economic development and the most important inputs of production processes for the knowledge-based economy in this century (Keche, 2021). This is the age of information and knowledge, and universities have a big role to play in the industrialization of any country because of their reliance on scientific research, creativity, and innovation. Research is the most essential requirement for transforming communities or countries from poor into rich countries, or from developing into advanced countries on the right path. Filling the knowledge gap is the doorstep to moving from stagnation to progress, whether it is economic, scientific, or cultural (Al-Youbi et al., 2021).

It should be taken into consideration that nations' wealth is no longer centered on natural materials and sources of wealth such as natural resources and lands, and it is rather represented in knowledge. That explains how countries that lack natural resources, such as Japan, Switzerland, Denmark, and Singapore, turned wealthy because of their knowledge resources. Such countries have become among the world's richest and highest GDP per capita countries. Meanwhile, some of the richest countries in terms of natural resources, such as Russia and Brazil, are of low GDP per capita income in comparison with other major countries. Knowledge and thinking are the main tools for creativity for their contribution to the continuous development of institutions, industries, and countries. Effective institutions, and even countries that follow the progress path primarily in the age of knowledge, are based upon the effort, creations, and innovations of human resources and intellectual capital (Fredua-Kwarteng, 2021).

Innovation means the new ways or methods that differ from conventional methods used in creating or developing things and ideas. It is about processes expressing fundamental changes in thinking, production or products, processes or ways and methods of performance. The main objective behind innovation is most likely the positive change and significantly making things, ideas, or methods better than what they originally were before becoming innovative. In many scientific and professional fields, innovation leads to increased productivity and mainly contributes to the development of organizational and national resources. Thus, innovation is the successful application of creative ideas in any institution, organization, or facility (Al-Youbi et al., 2021).

Innovation is the main factor that plays an important role in universities' tasks and is represented by using and employing the activities and outputs of universities' mission in education and scientific research fields, employing them in community service and thus achieving revenue for universities. As for the knowledge triangle, including education, scientific research, and innovation, we denote that innovation is the result of education and scientific research through creative knowledge and reaching new ideas. There is also the need to develop and improve what is already there, transferring knowledge beyond universities, participating with business and society, and applying achieved innovations and transferring them to commodities and services (Gleason, 2018). Higher educational institutions and universities should be more open to the community and the world by creating a strong relationship with the communities. This entails working on providing expertise, marketing knowledge, increasing academics, and executives focus on mutual interests, publishing, and implementing innovations for achieving their main objective, which is supporting and developing business. Thus, there is the attainment of economic prosperity through utilizing the university's capabilities for providing high-efficiency skills and high-quality basic, practical research and for spreading the research and innovation culture. The true value of any university lies in creative capital or intellectual human capital which means the mental capability for generating new adequate ideas with high quality (Al-Youbi et al., 2021).

5.2 Policies for Access and Equity in Ghanaian Higher Education

Access is conceptualized as giving equitable access to everyone regardless of human ability and experience, which according to Tan (2019), is about representation for all. Many researchers have raised concerns on how to resolve the achievement gap and practices that focus on educational equality, which leads to treating all students

the same as well as advancing educational equity. School and district leaders grapple with a daunting challenge, they must reform policies and practices that currently contribute to opportunity and achievement gaps (Lee et al., 2020). Furthermore, this means that a child's social, racial, or geographic background is irrelevant to the education they should receive. Students are different in terms of what they need to reach any level of achievement. Some students have different needs than others because they may come from a disadvantaged social environment or because they have special educational needs. Simply put, nothing should hold a child back from opportunities to pursue their talents and passions. Everyone deserves the same education. Keche (2021) shares the same sentiments and argues that the best way to improve economic opportunity and reduce inequality is to increase educational attainment and skills.

Equity ensures that all people have the opportunity to grow, contribute, and develop, regardless of their identity. Basically, it is the fair and just treatment of all members of a community. It requires commitment and deliberate attention to strategic priorities, resources, respect, and civility, with ongoing action and assessment of progress toward achieving specified goals. The issues of equity and access are very important to address. A study by Ndiaya and Kangjuan (2018) stated that the idea of education equity is that everyone is born equal and is entitled to the right to quality education, which enables them to develop and master essential knowledge and skills to lead a satisfying life, and as long as one works hard, they have equal opportunities to succeed. At its most basic form, equity has been ascribed as an approach that ensures that everyone has access to the same opportunities and recognizes that advantages and barriers exist and that, as a result, everyone does not start from the same place (Tan, 2019).

Access to education, on the other hand, refers to the ways in which educational institutions and policies ensure that students have equal and equitable opportunities to take full advantage of their education. The availability of academic, and residential facilities and government subsidies influence admission to UEW and UCC. With the high demand for participation in residential facilities, access to the two private universities, Central University (CU) and Catholic University of Ghana (CUG) are also determined by available capacities. A study by Amponsah and Onuoha (2013) indicated that there remain greater percentages of students who are excluded from participating in tertiary education despite the surge in enrolment from as low as 14,500 in 1993 to 179,998 during 2009-2010, and then rose to 201,153 during 2010-2011. It is no coincidence that all four universities have made efforts to collaborate with external funding agencies to promote equity and access to higher education.

Every nation attempts to formulate a policy of higher education in which it attempts to spell out the aims, objectives, and purposes of higher education. Higher education is a powerful engine of social mobility, and the benefits to society of more people earning postsecondary credentials cannot be understated (Calderon, 2018). Higher education is seen as a central site for generating research and analysis to improve the effectiveness of government policy and services (Ekanem and Okon, 2015). It is for this reason that the 1992 Constitution of Ghana places a high premium on free and equitable education for all (Akansina, 2017). Garwe (2015) defines policy as a projected programme of goals, values, and practices. Public Policy is 'whatever a government chooses to do or not to do in education. According to Penprase (2017), governmental policies and fundamentals, which are destined to operate in educational systems, are generally called education policies. Issues of education policies may be teaching methods, curricula content, class size, or school infrastructure investment. Government policies supplement laws and serve as continuous guidance to higher education (Tan, 2019).

Education policy has been undergoing a great transformation in Ghana since the initiation of the economic reform. The reforms and pursuit of economic growth in a globalized economy have had important impacts on Ghana's education policy and development. Simandan (2020) asserts that state policy can create an environment that encourages the identification, dissemination, and implementation of procedures that improve outcomes for students who are identified as needing remediation. Some of the challenges with the higher education sector in Ghana and Africa, in general, can be attributed to policy implementation, management, and governance, and the rise of private higher education (Effah, 2018). Since independence, Ghana has had the 10-year development plan and the Accelerated Education Development Plan. Subsequently, Operation Feed Yourself, and Vision 20/20. However, there remain a few lapses in the education policy vision. Moreover, some of the international policies on widening participation in higher education are targeted at increasing access to higher education globally, widening access, and reducing the gap between conditions in 'developed' and 'developing' countries (Kogabayev and Maziliauskas, 2017).

Equitable access is the first area of focus in the 2016 Declaration and Action Plan, and Akansina (2017) asserts that students place significant emphasis on their ability to finance their education in their decisions about postsecondary education. Article 251(c) of Ghana's 1992 Constitution states that "higher education shall be made equally accessible to all, on the basis of capacity, by every appropriate means, and in particular, by the progressive introduction of free education (Effah, 2018). In addition, Sustainable Development Goal (SDG) Number 4 stresses the emphasis on ensuring that there is an inclusive and equitable quality education as well as promoting lifelong learning opportunities for all (United Nations 2021). The University of Education and the

University of Cape Coast, including the two private universities (Central University and Catholic University) therefore encourage the elimination of barriers that restrict access to students who are ethnically, racially, and socio-economically underserved. The equity and access policy were therefore formulated to support the Universities' goal to provide and maintain an environment for university members that is free from discrimination based on gender identity and gender expression. Policy analysis is more focused on how the decision-makers get the best policy alternatives, as well as alternatives chosen as a recommendation of policy analysis or policy analysis team. The role of policy analysis is to ensure that the policies to be taken really are based on the optimal benefits to be received by the public, and not the origin of favourable policymakers (Awour, 2015).

Access has become correspondingly difficult for those unable to afford additional/private tuition during their school education. Groups notionally targeted by access policies have therefore not been enabled to participate, with the possible exception of (school-leaver) female applicants who have benefited in some cases from slightly reduced cut-off points on aggregate school scores. Excellent but needy students who are qualified are thus increasingly denied entry to higher education. Further, despite the initial emphasis on the need for credit transfer and mobility schemes and the desirability of lifelong learning, only one pilot scheme is presently in place to meet the needs of non-traditional entrants.

5.3 Factors Compromising University Research, Innovation and Industrialisation

There are few research activities going on because of a number of reasons including brain drain, poorly resourced libraries, limited access to the internet, inadequate research equipment, unavailability of transport to visit research sites, limited journal and other publication outlets as well as the absence of external research funding (Garwe, 2015). Brain drain resulted in a large number of experienced and well-qualified academic staff leaving the country due to conflict, financial issues, poor salaries, health hazards, and other economic problems and this has a negative effect on research. Ghana has to transform its human capacity development approach towards building more researchers for innovation and industrialization through universities. Poorly resourced libraries and limited access to the internet are other challenges as researchers are limited by internet access due to low bandwidth, connectivity problems, and frequent power cuts that negatively influence research activities. This state of affairs affects most higher education institutions (Kaloudis et al., 2019). Lack of research equipment and transport to research sites is also a problem. This forces some researchers to abandon their research projects; this is caused by the unavailability of funds (Garwe, 2015). Delays in decision-making are also another problem. There are procedures in higher learning institutions, which also affect the funding approved by the institutional research boards. Delays in the making of decisions also affect research as applications for the partnership may take time as information has to move from office to office and takes time such that partners may end up pulling out. Lack of motivation has also crippled research at universities as many academic staff and researchers are busy with other things like bread-and-butter issues associated with the poor research environment in terms of infrastructure and facilities, absence of research incentives, limited time available for research due to heavy teaching loads as well as poor research skills and inexperienced faculty.

5.4 Strategies for Enhancing Access and Equity to Higher Education and Industrialisation in Ghana

The government of Ghana should create a good environment for industrial growth through the provision of funds to universities for research and information communication technologies (ICTs) development. Improve social and economic infrastructure, especially electricity supply and functional university education. There is a need for a conducive investment environment in the economy to encourage research and industrial activities. Education equity and access in terms of entering and completing higher education as well as educational achievement and learning quality are of great concern in many parts of the world, including Ghana. Although loan amounts to students are inadequate, an increasing number of needy students are accessing the Student Loan Trust Fund (SLTF), which is complemented by financial aid provided by some of the institutions. In order to increase access in under-served areas, the government of Ghana has recently established three universities in regions that had no public universities. In 2016, Parliament passed the Technical Universities Act to convert eight polytechnics into technical universities, to enhance the public perception of technical education, raise the image of graduates, and provide a clear path to academic progression (Effah, 2018). Tan (2019) argues that the best way to improve economic opportunity and reduce inequality is to increase educational attainment and skills. In addition, there is the need to broaden access to provide additional services or remove any actual or potential barriers that might prevent some students from equitable participation in certain courses or academic programmes. Factors such as race, religion, gender, sexual orientation, disability, perceived intellectual ability, past academic performance, special-education status, English-language ability, and family income or educational-attainment levels affect access to education. Besides, factors such as relative community affluence, geographical location, or school facilities may contribute to certain students having less access to educational opportunities than other students do. It is essential to raise the level of attention paid to such disparities, for example in health care, education, and

employment by the Government, development partners, and civil society, with the aim that greater awareness of inequities will lead to concrete actions to give every child an equal start in life. It is worth mentioning that in order to increase access to higher education, universities are required to provide additional services or remove any actual barriers that avert students from equitable participation in the academic programme.

Furthermore, many organizations need to work to close the gaps as a way to achieve education equity. This can be done by supporting quality school choices and strong connections between tertiary institutions, families, and communities. Many underprivileged students need mentors to guide them in school and in life choices. This study seeks to conduct a detailed examination of the proposals for addressing challenges related to equity and access in higher education. There is a need to mobilize resources and increase research funding. Working conditions of academic staff have to be improved to curb brain drain and keep the academic staff in place.

Review the Institutional Intellectual Property frameworks to guide collaborative relationships with partners. The Ministry of Education needs to adjust its intellectual property rights management strategy and devise tools to manage openness. Universities need to resolve how to interface the “closed innovation” paradigm required to acquire intellectual property rights in law and to introduce openness in the process of innovation and decentralized innovation process, (Keche, 2021). It is important to have Intellectual Property Rights, the institutional regulations that enable innovation by creating the incentives to invest in research and development so that researchers are sure of the security of their products.

There is also a need for the universities to develop and promote a programmatic approach to research and innovation for the generation of knowledge, products, goods, and services that respond to the needs of industry, commerce, and society by conducting consultative workshops with relevant stakeholders. Another significant strategy is the need for the universities to engage in partnerships for co-innovation, research collaboration, and joint implementation for the generation of goods and services established and funded. Collaborative relationships and partnerships in industrial, skills and professional training for enhancement of the University’s academic programming fostered. Conduct an environmental scan for strategic partners.

Moreover, there is a need for the universities to develop impeccable social and professional networks for co-innovation, and research collaboration toward converting knowledge into tangible and helpful goods and services. These can be done by ensuring community/stakeholder engagement (road shows, workshops, exhibits, fairs, industrial parks). Research and Development collaboration with universities is likely to have the highest impact on product innovation, followed by research and development collaborations with suppliers, customers, and, finally, competitors (Asakawa, 2008 Lee et al., 2020). Audit/Review of existing business policies and practices is important. The structural economic transformation toward the industry is critical for the sustained economic growth and development of Ghana. The industrial sector performance has been subdued and thus, provides the rationale and context for new policy interventions/measures to stimulate industrial growth and development.

6. Conclusion

Ghana’s higher education has achieved tremendous growth in various areas including, increased access and participation, a growing private sector, a transformative policy environment, and expansion of academic facilities. However, there still exists an accessibility and participation gap in relation to students’ socioeconomic backgrounds, gender, and regions of origin. This study attempted to cover that gap by presenting a detailed assessment of the equity and access policies in Ghanaian higher education and then making suggestions for alternative arrangements. Ghana can build on the existing higher educational policies by strengthening the integration of human capital development in the national development planning policies. This can be done by increasing the allocation of budgets to universities and prioritizing research and industrial innovations. The government of Ghana needs to put more effort to mobilize domestic and external resources such as diaspora remittances to fund universities for research. The study has shown that there is a link between the role of university research and industrial innovation and modernization. In this endeavour, University executives and academics are expected to be catalysts in forging and strengthening this relationship.

References

- African Union Commission (2015), *Agenda 2063. The Africa We Want. First Ten-Year Implementation Framework 2014–2023*. Available at www.un.org/en/africa/osaa [Accessed 21 March 2018].
- Akansina, A.M. (2017), *Privatisation of Compulsory Education in Ghana: Examining the Institutional Genesis*, University for Development Studies Wa, Ghana, Department of Community Development.
- Al-Youbi, A.O, Zahed, A.H.M., Nahas, M.N., and Hegazy, A.A. (2021), *The Leading World’s Most Innovative Universities*, Cham, Switzerland: Springer.
- Amponsah, E.B. and Onuoha, L.N. (2013), The Performance and Challenges of Private Universities in Ghana and Nigeria, *International Journal of Business and Social Science*, 4(5), 256-263.

- Apusigah, A.A. (2009), *Over Fifty Years of Higher Education in Ghana: What Has Happened to Equity?* University for Development Studies Wa, Ghana, Department of African and General Studies.
- Awour, A.C. (2015), *Factors Influencing Research Outputs in Kenya: The Case of Selected Public Universities.* Nairobi: University of Nairobi, Master of Arts in Project Planning and Management.
- Bareke, M.L. (2018), *Managing University-Industry Linkage in Government Universities of Ethiopia: Challenges and Opportunities,* Johannesburg: University of South Africa.
- Barney, J.B. (1991), Firm Resources and Sustained Competitive Advantage. *Journal of Management.* 17(1), 99-120.
- Bingab, B.B.B., Forson, J.A., Mmbali, O.S., and Baah-Enumh, T.Y. (2016), The Evolution of University Governance in Ghana: Implications for Education Policy and Practice, *Asian Social Science*, 12(5), 1-14.
- Calderon, A.J. (2018), *Massification of Higher Education Revisited: Analytics and Insights,* Melbourne: RMIT University
- Collis, D.J. and Montgomery, C.A. (1995), Competing on Resources: Strategy in the 1990s. *Harvard Business School Review.* 118-128
- Effah, P. (2018), *Rethinking Higher Education Governance in Ghana: Reflections of a Professional Administrator,* Dakar, Senegal: Council for the Development of Social Science Research in Africa.
- Ekanem, E.E. and Okon, J.E. (2015), Transforming University Knowledge Production towards the Promotion of Inclusive Development in Nigeria Department of Educational Administration and Planning, *Journal of Education and Social Policy*, 2(4), 23-45.
- Fredua-Kwarteng, E. (2021), How Universities Can Contribute to National Development. Ontario; Canada: University World News.
- Garwe, E.C. (2015), Obstacles to Research and Publication in Zimbabwean Higher Education Institutions: A Case Study of the Research and Intellectual Expo. Zimbabwe Council for Higher Education Zimbabwe. *International Research in Education*, 3(1), 1-15.
- Gleason, N.W. (2018), *Singapore's Higher Education Systems in the Era of the Fourth Industrial Revolution: Preparing Lifelong Learners.* Singapore: NUS College.
- Government of Ghana (2010), *Education Strategic Plan 2010 to 2020, VOLUME 1. Policies, Strategies, Delivery and Finance.* Ministry of Education. December, 2010.
- Higher Education Research Data Collection. (2021). *Research Services.* Western Sydney University. <https://www.westernsydney.edu.au/research/researchers>. [Accessed on 16 November 2021].
- Kaloudis, A., Aspelund, A., Koch, P.M., Lauvås, T.A., Mathisen, M.T., Strand, O., Sorheim, R and Aadland, T. (2019), *How Universities Contribute to Innovation: A Literature Review-based Analysis.* NTNU Report. NTNU Grafisk Senter.
- Keche, K. (2021), *Relevancy of New Higher Education Approaches in Second Republic, Zimbabwe.* Available at [www.intechopen.com/online - first 78588](http://www.intechopen.com/online-first/78588). [Accessed on 16 November 2021].
- Kogabayev, T. and Maziliauskas, A. (2017), The Definition and Classification of Innovation. *Journal of Business and Public Administration*, 12(2), 46-62.
- Lee, N., Nystén-Haarala, S, and Huhtilainen, L. (2020), *Interfacing Intellectual Property Rights and Open Innovation.* Munich: Munich Intellectual Property Law Center.
- Moyo, T. (2019), Development of Human Capital for Industrialisation: Drawing on the Experiences of Best Performers. *Africa Development*, XLIII(2), 107-127.
- Ndiaya, C., and Kangjwan, L. (2018), Role of Industrialization on Economic Growth: The Experience of Senegal (1960-2017). *American Journal of Industrial and Business Management*, 2018(8), 2072-2085.
- Penprase, B.E. (2017), *The Fourth Industrial Revolution and Higher Education.* California: Soka University of America.
- Selyutin, A.A., Kalashnikova, T.V., Danilova, N.E., and Frolova, N.V. (2017), *Massification of the Higher Education as a Way to Individual Subjective Wellbeing, Future Academy:* Brussels: European Proceedings on Social and Behavioural Sciences.
- Simandan, D. (2020), *Industrialisation.* Ottawa: Brock University.
- Tan, T.Q. (2019), Principles of Inclusion, Diversity, Access and Equity. *The Journal of Infectious Diseases, Volume*, 220(1), 43-60.
- United Nations. (2021). *The Sustainable Development Goals Report 2021,* New York: United Nations Publications.
- Wuttaphan, N. (2017), Human Capital Theory: The Theory of Human Resource Development, Implications and Future. Faculty of Management Sciences, *Rajabhat Journal of Social Sciences and Humanities*, 18(2), 240-253.