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The Impact of Technology Hubs (Tech Hubs) on Educational Innovations in Ghana: A Case Study of Technology Hubs in Kumasi

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ABSTRACT

The study focuses on the nature of Tech Hubs, the role of government in enabling Tech Hubs participate in formal education, the role of Tech Hub in educational innovation, and the effect of Tech Hubs in promoting educational innovation in an economy. The study adopted the exploratory research design with mixed methods. A sample of 178 was selected using measures of central tendencies, dispersion, and regression for analysis. The outcome of the study suggests that tech hubs foster innovation, addresses skills gaps and have a significant positive effect on education and innovation. The study recommends the government to consider providing funding to support Tech Hubs' participation in education. Further research should consider the role of Tech Hubs in achieving inclusivity.

Keywords: Education, Educational Innovation, Technology, Technology Hubs

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INTRODUCTION

Education entails gaining knowledge to better understand the numerous disciplines that will be relevant in our daily lives. Learning changes our perspective of life, and education is essential for both individual growth and societal advancement. When it comes to innovation in education, the magnitude of the problem is matched by the magnitude of the proposed solution (Cropley, 2015).

A technology and innovation hub, also known as a "tech or ICT hub", is where technologists, computer scientists, hackers, web developers, and programmers gather to network, discuss programs, and create to realise their ideas. In essence, they represent a form of co-working office space that can offer various services, including community building, pre-incubation, incubation, and acceleration (Kelly & Firestone, 2016). Today's innovative hubs around the globe have gone through a successful transformation by moving strictly from innovating tools to educating community members and individuals to inculcate the habit of critical thinking and developing ideas. Tech hubs in Africa have grown consistently over recent years, and their role in training new innovators is well recognized (Kelly & Firestone, 2016). The discourse around tech hubs in Africa has been characterized by an optimistic and promising view. International organizations, venture capitalists, entrepreneurs, and other relevant actors have diverted much attention to tech hubs regarding their ability to promote "entrepreneurship" and "innovation" and the ability to encourage people to set up their start-ups and work towards their development. As Ghana is still emerging as a start-up hub, Richard Nunekpebu, who is the vice president of Legal and Strategy at the Ghana Fintech and Payments Association, advocates the passage of the long-awaited start-up and innovation bill (Njoku, 2025). He believes this passage could accelerate Ghana's tech hub ecosystem just as Kelly & Firestone (2016) believe tech hub phenomena will help grow successful businesses, stimulate job creation and generate new sources of revenue (Kelly & Firestone, 2016).

Africa is experiencing a boom in technology entrepreneurship. High hopes have been invested in the continent's home-grown digital economy, envisioned to become an engine of rapid socio-economic development and transformation. The rapid shift in how businesses operate has been one that is changing the narrative of business operations. More recently, technology advancement through the

utilization of digital tools and platforms in the creation of ideas and new businesses have been one that is leading the way in solving unemployment issues (Sandri, Alshyab, and Sha'ban, 2022)

Africa's startup revolution has spurred a proliferation of hubs, accelerators, incubators, and co-creation spaces across the continent. For individuals who live on the African continent, the establishment of technological hubs is of utmost importance since it presents a chance for homegrown entrepreneurs to develop regional answers to socioeconomic issues and spark Africa's innovation revolution (Amezcua, Grimes, Bradley, and Wiklund, 2013). The world outside Africa needs Africa's technology centres because they are hubs for business prospects. Digital technologies to benefit everyone have spread rapidly, and they require improving the "analog" complement to digital investments by strengthening regulations that ensure competition among businesses. Inclusion, efficiency, and innovation in education are the main mechanisms that promote development in communities (Puranam, Alexy, and Reitzig, 2014).

The impressive growth and advancement of businesses within Africa through technology hubs have piqued the interest of the global organization as reflected in media outlets such as The Economist (2015) and international agencies like the World Bank (Kelly and Firestone, 2016). World Economic Forum Report (2016) revealed that the rapidly accelerating technological change that can unlock growth and leapfrog the limitations and costs of physical infrastructure in important areas of economic life could be achieved through the role of tech hubs in providing skills training for potential startups and businesses. Despite the perceived potential of Africa and, for that matter, Ghana's technological hub serving as an educational tool to innovate new ideas for the growth of the country and beyond, there is still little effort to provide a favourable ground for growth in innovation. The essence of innovative education in the community is an eye-opener to coming up with creative solutions. However, Ghana's education system trains and prepares young people to seek jobs after 20 years of education, thereby limiting individuals' innovative and critical thinking to initiate business ideas. In essence, there is a need to identify the activities conducted by these tech hubs in Ghana in equipping individuals with technological ideas that hinge on current economic development for business development and growth (Okoro, Nasse, Ngmendoma, and Carbonell, 2022). International Trade Center (2024) identified over one thousand tech hubs in Africa, with more than one hundred in Ghana scattered around the three big cities; Accra, Kumasi, and Takoradi (International Trade Administration, 2024). This makes Ghana one of the countries in sub-Saharan Africa with numerous tech hubs, making it an interesting area of concern for this study.

The study seeks to address objectives such as the nature and concept of tech hubs in Ghana; the role of government in enabling tech hubs to participate in formal education; the role of tech hubs in promoting educational innovation in Ghana; and the effect of tech hubs in promoting educational innovation in the

economy of Ghana. It is revealed through research that tech hubs in different parts of the world serve different purposes, so the nature and concept of tech hubs will bring to light the main purpose of tech hubs in Ghana. The government of Ghana has, over the years, played a role in enabling tech hubs to participate in formal education to provide the youth with the technological skills needed to thrive in the world of work as entrepreneurs. This objective will examine the government's contribution to the field of tech hubs, innovation, and entrepreneurship. Ghanaian education for decades has been based on the ideology of "go to school, graduate, get a job, and retire at sixty years." This hinders creativity and innovation as students develop less or no interest in entrepreneurship, and this is the gap the role of tech hubs in promoting educational innovation in Ghana seeks to achieve. The study furthermore seeks to analyse the effect of tech hubs in promoting educational innovation in the economy of Ghana.

LITERATURE REVIEW

The theories reviewed by the study include the Diffusion of Innovation (DoI) and the Technology Acceptance Model (TAM) theory. The Diffusion of Innovation (DoI) theory propounded by sociologist Everette M. Rogers (1931–2004) focuses on explaining how new ideas or innovation spread in a social system, and identifies four key elements (innovation, communication channels, time, and social system) and five stages (knowledge, persuasion, decision, implementation, and confirmation) that influences the innovation-decision process (García-Avilés, 2020). In contrast, the Technology Acceptance Model (TAM) proposed by Davis (1989) aims to forecast and understand how individuals adopt and utilize technology, emphasizing perceived usefulness and perceived ease of use as crucial factors influencing their willingness to use technology. Studies applying TAM seek to identify these aspects to explain or predict whether users will use a particular technology. The model is still relevant in today's world of technological advancement, as Alshammari & Alkhwaldi (2025) used TAM to investigate the sustainable use of digital learning technologies. Overall, both DoI and TAM have been widely used and provided useful insights into the adoption and diffusion of innovations, but they also have some limitations and may not fully capture the complex and dynamic nature of innovation processes in social systems.

RESEARCH METHOD

The exploratory research design was selected for this study. According to Cooper and Schindler (2003), exploratory design provides the researcher with various options during the data collection and analysis stage. This design ensures that there is in-depth research conducted on the study, at the same time allowing the possibility to generalize the result to the entire population. With the exploratory

research design, the cross-sectional survey was adopted to meet the objectives of the study.

The researcher utilized both the quantitative and qualitative method as its research approach. The selection of the mixed method approach was based on the research problem being studied (Hanson, Stephens, Pangaro, and Gimbel, 2012). The choice of this method was to investigate the role of technology hubs in educational innovations in Ghana. The utilization of the qualitative approach is to yield comprehensive information on the subject matter and facilitate a deeper understanding of the relevance of tech hubs in education. This method also enables the interpretation of respondents' perspectives and the discovery of new information regarding the role tech hubs play in educational innovation (Bacon-Shone, 2015). The quantitative part of the study allows the researcher to provide relational connections between the role of tech hubs in education and how that translates to innovation.

Consequently, the research employs an Individual Depth Interview (IDI) as a qualitative data collection technique, using semi-structured interview guides. In-depth interviews are ideal for collecting data on individuals' histories, viewpoints, and experiences, especially when sensitive subjects are being explored that are specific to the study (Fugard and Potts, 2015).

Participants

The population of interest for this study comprised all staff of tech hubs in Kumasi. The target
population for this study, therefore, comprises all tech hubs in Kumasi that provides education 40 and learning to startups and other businesses and individuals. These groups of hubs thus constitute the target population. Their perspectives, expertise and experiences on tech hubs will be sought to provide data for the analysis of the study.

The following hypotheses were proposed:

H_1: Tech Hubs in Kumasi's education and innovation have a positive effect on the economy of Ghana**.**

H_2: There is a significant positive effect of Tech Hubs in Kumasi on the education and innovation in Ghana.

RESULTS

Respondents rated their agreement on a Likert scale from 1 to 5, with 1 indicating "strong disagreement" and 5 indicating "strong agreement." The mean represents the average value, and the standard deviation measures the extent to which individual responses vary from the mean. A higher mean indicates stronger agreement, while a lower standard deviation reflects greater consensus among

respondents. Overall, the combination of a high mean and a relatively low standard deviation suggests consensus among respondents.

The Nature and Concept of Tech Hubs in Ghana

This section of the study focused on identifying the nature and concept of tech hubs in Kumasi, Ghana. With the highest mean of 4.57, respondents strongly agree that "Tech Hubs organise events, workshops, and training programs to enhance the skills and knowledge of innovators in Ghana." This item also has the lowest standard deviation of 0.765, indicating strong consensus. Additionally, two items share the second-highest mean of 4.49: "Tech Hubs serve as a physical space where innovators can create new ideas" and "Tech Hubs offer mentorship and guidance to individuals and start-ups in the innovation sector in Ghana." Together, these items reflect the strongest levels of agreement and consensus among respondents.

Table 1: The Nature and Concept of Tech Hubs in Kumasi, Ghana

The Nature and Concept of Tech Hubs in Kumasi, Ghana	Min.	Max.	*M*	*SD*
Tech hubs in Ghana serve as a physical space where innovators can create new ideas	1	5	4.49	.804
Tech hubs provide resources and infrastructure to support the development of innovative ideas and projects in Ghana	1	5	4.33	1.006
Tech hubs foster a culture of creativity and experimentation among innovators in Ghana	1	5	4.38	.863
Tech hubs offer mentorship and guidance to individuals and startups in the innovation sector of Ghana	1	5	4.49	.964
Tech hubs organize events, workshops, and training programs to enhance the skills and knowledge of innovators in Ghana	1	5	4.57	.765
Tech hubs facilitate networking opportunities with industry experts, investors, and potential partners in Ghana	1	5	4.41	.799
Tech hubs play a role in connecting innovators in Ghana with funding sources and investment opportunities	1	5	4.18	.845
Tech hubs support the growth and scalability of start-ups in the innovation ecosystem in Ghana	1	5	4.31	.818
Tech hubs contribute to the development of a supportive community of innovators and entrepreneurs in Ghana	1	5	4.26	.805

Note. M = Mean, *SD* = Standard Deviation.

The interviewing session brought to light that Tech Hubs bring a wealth of industry experience beyond textbook knowledge for young entrepreneurs to learn from these experts who have navigated the challenges and opportunities of the

Tech sector. Tech Hubs tailor their training programs to meet the unique needs of each entrepreneur. This customization ensures that the skills acquired align with the entrepreneur's specific project or startup, making the training immediately applicable. Managers unanimously acknowledged that, until recently, the relationship between tech hubs and educational institutions was relatively limited. Tech Hubs primarily operated as standalone entities, with limited collaboration with universities. Currently, the University of Cape Coast (UCC), University of Education (Winneba), and the Kwame Nkrumah University of Science and Technology (KNUST) in Ghana establishing their business training centres suggests a broader trend of educational institutions recognizing the value of tech hubs in bridging the gap between academia and practical entrepreneurship. It was a good indication that managers expressed optimism about the increasing awareness among both tech hubs and educational institutions regarding the mutual benefits of collaboration. The establishment of business training centres by universities is seen as a potential point of partnership with tech hubs. This indicates a proactive step taken by educational institutions to align their programs with the practical needs of the tech ecosystem. During the interview, it was explained that the evolving partnerships between tech hubs and educational institutions hold promise for nurturing a more robust and mutually beneficial ecosystem in Ghana. Collaboration can facilitate knowledge transfer, enhance skill development, and bridge the gap between theoretical education and real-world entrepreneurship.

The Role of Government in Enabling Tech Hubs to Participate in Formal Education

This section of the study focused on the government's role in enabling tech hubs to participate in formal education. With the highest mean value of 3.66, respondents strongly agree that "government prioritizes the development of tech hubs as part of its overall economic development strategy." In terms of consistency, the lowest standard deviation, 0.978, was recorded for "government provides funding to support tech hub's participation in formal education programs." These are roles played by the government in enabling tech hubs to participate in formal education.

During the interview session, managers acknowledged that, historically, there has been limited direct influence of government policies and regulations on tech hubs in Ghana. The tech hub ecosystem operated relatively independently until recently. The COVID-19 pandemic is cited as a turning point, highlighting the pressing need for digitalization and technology-driven solutions. The recognition of tech hubs as essential in times of crisis has brought them into the spotlight, leading to discussions about government support. Managers refer to the international trade administration's publication, which indicates that the government seeks to support technology entrepreneurs and tech hubs. This supportive stance is seen as a positive step toward fostering growth and

sustainability. The government's focus on promoting IT-enabled services, including business process outsourcing (BPO), aligns with the objectives of tech hubs and their potential to contribute to the economy. The interviewing session brought to light that there is a need for ongoing dialogue and collaboration between tech hubs and government authorities to ensure that policies align with the evolving needs of the tech ecosystem.

Table 2: The Role of Government in Enabling Tech Hubs to Participate in Formal Education

The Role of Government in Enabling Tech Hubs to Participate in Formal Education	Min	Max	*M*	*SD*
The government provides funding to support tech hubs' participation in formal educational programs	1	5	2.88	.978
The government has established partnerships with tech hubs to facilitate their participation in formal educational programs	1	5	3.10	1.063
The government has created policies that promote the integration of tech hubs into formal educational programs	1	5	2.88	1.085
The government has provided incentives to encourage tech hubs to participate in formal educational programs	1	5	2.71	1.106
The government prioritizes the development of tech hubs as part of its overall economic development strategy	1	5	3.66	1.169

The Role of Tech Hubs in Promoting Educational Innovation in Ghana

This section of the study focused on the role of Tech Hubs in promoting educational innovation in Ghana. With the highest mean of 4.21, respondents strongly agree that "Tech Hubs can leverage technology to create more inclusive and accessible educational opportunities." In terms of consistency, the lowest standard deviation of 1.007 was recorded for "Tech Hubs can play a significant role in addressing the skills gap in the Ghanaian workforce."

During the interview, the study found that tech hubs can enhance formal education by positioning themselves as experts in STEM (Science, Technology, Engineering, and Mathematics) education. Developing a tailor-made curriculum that aligns with both local and international standards is seen as a pivotal step, and this was some of the input from participants. Managers emphasize the importance of tech hubs extending their services beyond urban areas. Establishing district or community training centres is seen as a proactive step in reaching underserved communities. These centres can provide training and educational opportunities to students who may not have access to traditional educational institutions.

Table 3: The Role of Tech Hubs in Promoting Educational Innovation in Ghana

The role of tech hubs in promoting educational innovation in Ghana	Min	Max	*M*	*SD*
Tech hubs are effective in providing alternative learning models that can supplement formal education	1	5	3.99	1.092
Collaboration between tech hubs and educational institutions is important for driving educational innovation in Ghana	1	5	4.16	1.009
Tech hubs can play a significant role in addressing the skills gap in the Ghanaian workforce	1	5	4.19	1.007
Tech hubs can leverage technology to create more inclusive and accessible educational opportunities	1	5	4.21	1.093
Tech hubs should prioritize educational innovation as part of their overall mission	1	5	4.10	1.045
Educational innovation by tech hubs can help to promote economic growth and development in Ghana	1	5	4.15	1.102
Tech hubs can be effective in fostering cross-disciplinary collaboration and learning in the educational sector	1	5	4.12	1.118

The Effect of Tech Hubs in Promoting Educational Innovation in the Ghanaian Economy

This section of the study focused on the effect of tech hubs on promoting educational innovation in Ghana's economy. With the highest mean value of 4.47, respondents strongly agreed that "Tech Hub educational innovations can contribute to the growth of the Ghanaian economy." In terms of consistency, the lowest standard deviation, 0.919, was recorded for "Tech Hubs educational innovation can help promote the development of local talent in Ghana."

The managers in the interview discussed the collaborative efforts required, the potential for job creation, and the reduction of digital illiteracy through tech hub initiatives. Managers highlight the collaborative nature of providing technological logistics for education. Tech hubs are seen as catalysts that can leverage their technical expertise to teach and mentor others. Tech hubs also function as bridges, connecting various stakeholders such as donors, governments, and civil society. This collaborative approach is seen as essential for the successful implementation of online learning platforms. Managers emphasize the role of tech hubs in increasing the capacity of start-ups and entrepreneurs. By providing entrepreneurial and tech skills training, tech hubs empower start-ups to produce

more services, potentially leading to job creation. Tech hubs are viewed to reduce digital illiteracy in the workforce. By exposing entrepreneurs and start-ups to digital skills training, tech hubs contribute to building an efficient and digitally literate workforce. The broader impact of tech hubs on the Ghanaian economy is seen as significant. By fostering entrepreneurship, tech hubs contribute to economic growth and innovation. Reducing digital illiteracy is viewed to enhance workforce productivity and participation in the digital economy. Tech hub managers believe that tech hubs can serve as gateways to online platform education by facilitating collaboration among stakeholders and leveraging their technical expertise. The broader impact on the economy and society in Ghana includes job creation, reduced digital illiteracy, and contributions to economic growth and innovation.

Table 4: The Effects of Tech Hubs in Promoting Educational Innovation in the Economy of Ghana

The Effects of Tech Hubs in Promoting Educational Innovation in the Economy of Ghana	Min	Max	*M*	*SD*
Tech hubs in Kumasi have a key role to play in driving educational innovation in Ghana	1	5	4.18	1.085
Tech hubs' educational innovation can contribute to the growth of the Ghanaian economy	1	5	4.47	1.053
Tech hubs' educational innovation can help to create new job opportunities in Ghana	1	5	4.39	1.048
Tech hubs' educational innovation can help to promote the development of local talent in Ghana	1	5	4.30	.919
Tech hubs' educational innovation can help to increase the competitiveness of Ghanaian businesses	1	5	4.15	1.076
Tech hubs' educational innovation can help to address socio-economic inequalities in Ghana	1	5	4.21	1.120
Tech hubs' educational innovation can help to promote sustainable development in Ghana	1	5	4.15	1.022
Collaboration between tech hubs and other stakeholders is crucial for the success of tech hubs' educational innovation	1	5	4.19	1.033
Tech hubs' educational innovation can help to position Ghana as a leader in innovation and technology in the region	1	5	4.13	1.042

HYPOTHESIS TESTING

Hypothesis 1: Tech Hubs in Kumasi's Education and Innovation Have a Positive Effect on the Economy of Ghana.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.847[a]	.717	.704	.600	.717	53.534	8

Model	Change Statistics		Durbin-Watson
	df2	Sig. F Change	
1	169[a]	.000	2.118

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	154.097	8	19.262	53.534	.000[b]
	Residual	60.808	169	.360		
	Total	214.904	177			

In this research, multiple linear regressions were used to measure and observe the effect education and innovation have on the economy of Ghana and to determine if the proposed hypothesis is supported. Table 5 shows the analysis for multiple regression tests. R value represents the correlation coefficient between the dependent variable and independent variables, according to Cleophas and Zwinderman (2016). Based on the results, the value of R is .847[a]; hence, there is a positive correlation between tech hub education and innovation and the economic growth of Ghana.

According to Cavana, Delahaye, and Sekaran (2001), the coefficient of determination (R-square) facilitates the explanation of variance. The R square of this research is 0.717, which indicates that 54% of the dependent variable (economy of Ghana) can be explained by the independent variable (Tech Hubs Education and Innovation). The Analysis of Variance f-statistic is valued at 53.534 and is significant at the .000 level. Mun and Glantz (2011) highlighted that if the F-statistic is large, it can be concluded that most of the variation is explained, and the model is a good descriptor of the relation. Based on the results, the independent variable of Tech Hubs Education and Innovation has a positive significant effect on the dependent variable of Economic Growth of Ghana by meeting the requirement of p value less than 0.01 ($p<0.01$).

In essence, the outcome of the study indicates that at a 1 percent level of significance, Tech Hub education and innovation have a positive significant effect on the economy of Ghana. This result clearly suggests that when there is improvement in education and innovation in the various tech hubs in Ghana, it positively affects the economic growth of the country.

Hypothesis 2: There is a Significant Positive Effect of Tech Hubs in Kumasi on the Education and Innovation in Ghana.

The study also examined whether Tech Hubs have a significant positive effect on education and innovation in Ghana. This study focused on identifying some of the activities Tech Hubs have been doing in terms of education and innovation. The study showed an R-squared of .818 and an adjusted R-squared of .812. The value of the adjusted R-squared suggests that tech hubs have about 81.2 percent effect on the dependent variable, which is education and innovation in Ghana.

In addition, the regression result indicates f-statistic had a value of 128.244. This result indicates that Tech Hubs have a significant effect on education and innovation in Ghana. Thus, at the 1 percent significance level, Tech Hubs have a positive and significant effect on education and innovation in Ghana.

Table 6: There is a Significant Positive Effect of Tech Hubs in Kumasi on the Education and Innovation in Ghana.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.905[a]	.818	.812	.471	.818	128.244	6

Model	Change Statistics		Durbin-Watson
	df2	Sig. F Change	
1	171[a]	.000	2.295

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	170.383	6	28.397	128.244	.000[b]
	Residual	37.865	171	.221		
	Total	208.247	177			

DISCUSSION AND CONCLUSIONS

Regarding the nature and concept of Tech Hubs in Ghana, respondents explained tech hubs as a place of innovation and development of ideas. The result of the study confirms the work of Kelly and Firestone (2016) who defined tech hubs as a specific area or region known for having a significant presence of technology companies and start-up businesses that help with the development of ideas. The nature of tech hubs in Ghana also confirms the work of De Beer et al., (2017) as well as the findings of Friederici (2018), as they indicated that hubs are commonly recognized as focal points for innovation and entrepreneurial activities. They are usually distinguished by a supportive environment that includes venture capitalists, academic institutions, and various resources aimed at promoting growth and

progress. The study is also consistent with both the Diffusion of Innovation and Technological Acceptance Model theory as it was found that tech hubs tend to spread new ideas to the social system for innovative approaches. As highlighted by Atiase, Kolade, and Liedong (2020), African tech hubs have stepped in where traditional universities have struggled to produce knowledge and generate innovative solutions that meet specific industry needs and address important societal challenges.

On the role of government in supporting tech hubs, the study found that respondents were not convinced about the work of tech hubs in Ghana. Governments around the world have explored the notion of cities as innovation hubs in the drive for economic growth (Chou et al., 2023), but support from the Ghanaian government is not forthcoming. The outcome of the study supports the view of Kelly & Firestone (2016) as they purported that the government barely support hubs. DeBeer et al., (2017) and Friederici (2018) also confirmed that there is a lack of financial commitment from the government to tech hubs.

Based on the role of tech hubs in education and innovation in Ghana, the study found that tech hubs have contributed immensely to education and innovation. This comes as no surprise as most tech hubs in Ghana are developing prototypes of innovations that could improve ways of living. The result is in support of the view of Germain (2016) with the notion that there are several studies and practitioner reports that explore the clustering of innovation based on product or service lines, which is like agglomeration. Another study conducted by Catlin and Bughin (2018) which supports the study purports that one of the benefits of tech hubs is their ability to provide access to the latest technology and tools, and this is exactly what Loizidou (2025) describes as the power of tech hubs. However, the outcome of the study conflicts with the work of Osabutey and Jackson (2019), who indicated that many developing countries, especially those in Africa, are struggling to respond to the challenges and opportunities posed by a fast-paced knowledge economy. The study however agrees that in providing a development-oriented agenda for Africa, it has been advocated that technologies must be locally built and should be designed to meet the local and fiscal needs of the community (Botchie, Sarpong, and Bi, 2018).

On the effect of tech hubs' educational innovation on the economy, the outcome of the hypothesis revealed that education and innovation by tech hubs could result in economic development. The outcome is consistent with Thanh and Tri (2024) as they contend that the prosperity of tech hubs is intricately linked to the calibre and accessibility of proficient human resources. They propose that educational and training initiatives aimed at fostering technical and entrepreneurial expertise play a pivotal role in both drawing in and retaining talent within tech hubs. In addition, the study realizes the need for jobs can be achieved through the adoption of education and innovation in tech hubs and collaboration with tertiary institutions. This is supported by Carayannis and Rakhmatullin (2012), who assert that incorporating educational institutions into the innovation ecosystem of tech

hubs can lead to a more vibrant and cooperative environment conducive to innovation for economic growth.

Regarding the nature and concept of Tech hubs in Ghana, the study concludes that a tech hub is a place of innovation and development of ideas. They offer mentorship and guidance to individuals and startups in the innovation sector in Ghana and organize events, workshops, and training programs to enhance the skills and knowledge of innovators in Ghana.

On the role of government in supporting tech hubs, the study concludes that the government barely provide support to tech hubs, which has been making their success story difficult. The government prioritizes the development of tech hubs as part of its overall economic development strategy, but support never comes from the government to help recognize their full potential.

The study furthermore concludes that tech hubs have contributed immensely to education and innovation. Tech hubs can promote educational innovations in Ghana by leveraging on technology to create more inclusive and accessible educational opportunities.

Lastly, it can be concluded that education and innovation by tech hubs could result in economic development.

IMPLICATIONS

Given that tech hubs are places of innovation and idea development, the study advocates policies that promote the growth and sustainability of tech hubs, including tax incentives, streamlined regulatory processes, and government support for infrastructure development.

The study recommends allocating government funding or grants to support collaborative initiatives between tech hubs and educational institutions, such as joint research projects, internship programs, or curriculum development.

The study also recommends that there should be an advocate for closer collaboration between tech hubs and educational institutions to co-create innovative educational solutions.

The study again recommends that the work of tech hubs be highlighted in the public domain, as this can contribute significantly to economic growth, job creation, and talent development in Ghana.

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