Robotic Technology Empowerment: Mitigating Youth Migration for Nigerian Prosperity

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Abstract

The increasing trend of youth migration from Nigeria has raised concerns about the loss of talent and its impact on the nation's economic and social development. This study was undertaken to examine robotic technology empowerment: mitigating youth migration for Nigerian prosperity. The objective of the study was to ascertain the impact of robotic technology training on Nigerian youth skills and employability. The media technological determinism and human capital theories underpinned this study. The preferred research methodology for this study is documentary research. This involves a systematic review of scholarly articles, books and research papers. By utilising documentary analysis, the study created a comprehensive and well-informed foundation for understanding the dynamics of youth migration, robotic technology empowerment, and their interplay in the context of Nigerian prosperity. In line with the above, the researchers embarked on a search of useful and relevant materials online with the help of Google Scholar. Results of the search returned 355 useful references to the study with a general outlook. The foregoing themes were arrived at after retrieved documents in journal articles and other related online articles relevant to the area of study were thoroughly sifted and synthesised into meaningful areas and sub-areas. Finding showed that robotic technology training equips Nigerian youth with skills that

are increasingly in demand in a rapidly evolving job market. The study was able to establish that the empowering Nigerian youth through robotic technology can significantly contribute to mitigating youth migration by creating employment opportunities and enhancing local skill development. The study therefore recommended that Nigeria government should invest in educational programmes that equip Nigerian youth with robotics and automation skills to meet the growing demand for these technologies.

Keywords: *Robotic Technology, Empowerment, Mitigation, Youth Migration, Nigerian Prosperity*

Introduction

Nigeria, with its burgeoning youth population, is grappling with the complex challenge of youth migration. The allure of better economic prospects, improved living conditions and access to educational and employment opportunities abroad has led to a significant exodus of young Nigerians seeking a brighter future outside their home country (International Organisation for Migration (IOM, 2020). The consequences of this youth migration are multifaceted, affecting both the social fabric of Nigerian communities and the potential for economic development within the nation. Youth migration from Nigeria has resulted in a considerable "brain drain," the loss of valuable human capital with skills and knowledge, which undermines the country's ability to harness the potential of its youth for national development (World Bank, 2021). As a result, policymakers, researchers and organisations have been exploring innovative strategies to mitigate youth migration while fostering prosperity within the country.

One such innovative approach is the use of robotic technology as a means of skill development and economic empowerment for Nigerian youth. The Fourth Industrial Revolution, characterised by automation and robotics, has created a global demand for individuals skilled in these technologies (Schwab, 2016). Robotic technology training programmes have gained prominence as they equip individuals with high-demand skills that can translate into employment opportunities and economic growth. The utilisation of robotic technology as a pathway to mitigate youth migration in Nigeria is based on the premise that providing young Nigerian with skills that are relevant in the modern global economy can reduce their incentive to migrate in search of better prospects. Training and educational programmes focused on robotics and automation may offer young people the tools they need to secure well-paying jobs and contribute to Nigeria's economic development.

Youth migration in Nigeria is a significant and complex phenomenon that has far-reaching social, economic and political implications. Nigeria, with one of the largest youth populations in the world, faces a pronounced challenge as a considerable portion of its young people choose to leave the country in search of better opportunities abroad. The motivations for youth migration in Nigeria are diverse and often stem from a combination of push and pull factors. Push factors include high unemployment rates, limited access to quality education and healthcare, political instability and security concerns in some regions. These challenges, combined with the desire for

improved living standards and economic prospects, drive many Nigerian youths to seek opportunities in other countries (IOM, 2020).

Pull factors contributing to youth migration include the perception of better employment opportunities, improved educational prospects and higher living standards in foreign countries. The promise of a higher quality of life, often fuelled by positive narratives in the media and the experiences of successful migrants, lures many young Nigerians to pursue international mobility (Akintunde & Akinjide, 2015). The consequences of this youth migration are multifaceted. While some migrants may find success abroad, many face challenges related to legal status, exploitation and discrimination. Additionally, the country experiences a "brain drain" as highly skilled individuals leave Nigeria, which undermines the nation's ability to leverage its young, educated workforce for national development (World Bank, 2020). Addressing youth migration in Nigeria requires a comprehensive approach that includes economic development, job creation and improvements in education and healthcare infrastructure.

The multifaceted challenge necessitates not only domestic efforts but also international cooperation to ensure that migration is a choice, not a necessity for Nigeria youth. While this approach holds promise, there is a need for empirical research to evaluate the effectiveness of such initiatives. This paper seeks to address this gap by assessing the impact of robotic technology training on Nigerian youth's skills and employability, exploring the motivations behind youth migration and examining the potential economic and societal implications of promoting robotic technology empowerment. The aim is to provide evidence-based insights that can inform policies and strategies for mitigating youth migration and enhancing prosperity in Nigeria.

Statement of the Problem

The increasing trend of youth migration from Nigeria has raised concerns about the loss of young talent and its impact on the nation's economic and social development. Despite the potential for growth, the country continues to grapple with high youth unemployment rate and limited access to quality education and skills development opportunities. Currently, Nigeria faces a significant challenge of youth migration, leading to a drain of valuable human capital and potential brain drain. The problem lies in the limited opportunities and skills development, which often face the youth to seek better prospects around depriving Nigeria of its young talent. Robotic technology holds the potential to address this issue by providing skills that are in demand globally, but the extent to which these technologies can effectively mitigate youth migration in the Nigeria context remains unclear. Thus, there is a pressing need to understand the barriers and opportunities associated with robotic technology empowerment as a solution. The study aims to investigate programmes in reducing youth migration and fostering prosperity in Nigeria, addressing the critical problem of talent flight and contributing to the nation's sustainable growth and development.

Objectives of the Study

1. Assess the impact of robotic technology training on Nigerian youth skills and employability;

2. Explore the factors that drive youth migration and how robotic technology can address these motivations; and
3. Examine the economic and societal implications of promoting robotic technology empowerment for Nigerian youth.

Conceptual Review

Robotic Technology

Robotic technology, often referred to simply as robotics, is a multidisciplinary field at the intersection of engineering, computer science, and artificial intelligence. It involves the creation, design, development and operation of robots, which are machines capable of performing tasks autonomously or semi-autonomously. These robots are equipped with sensors, actuators, often powered by computer programmes or AL algorithms, enabling them to interact with their surroundings and carry out a wide range of functions (Thrun et al., 2005). The concept of robotic technology has evolved from a science fiction fantasy into a pivotal element of various industries and applications. From manufacturing and automation, where industrial robots enhance production efficiency, to medical robotics used in surgery and healthcare, the impact or robotic technology is far-reaching. Additionally, robots are increasingly found in agriculture, telecommunication, human-robot interaction, media production, advertising and marketing, education and training, customer service, social media and online communication, space exploration, transportation and even in everyday life, with robots like cleaning devices becoming more prevalent (Bogue, 2006). The continued advancement of robotic technology is fuelled by on-going research and development efforts. Innovations in robot design, materials and artificial intelligence are pushing the boundaries of what these machines can achieve. This technology is not only enhancing productivity and precision in various fields but also creating new opportunities for automation and efficiency across industries.

Robotic Technology Empowerment

Robotic technology empowerment is a concept that involves around equipping individuals with the skills and knowledge to harness the potential of robotics and automation. It involves providing training and educational opportunities that enable people to engage with and utilise robotic technology effectively. This empowerment extends to both personal and professional contexts, enabling individuals to leverage automation tools for improved productivity, employment prospects and overall quality of life (Lyons et al., 2019). The concept of robotic technology empowerment aligns with the broader goals of addressing skills gaps in the workforce and promoting economic development. By offering training programmes and educational initiatives in robotics, individuals can enhance their capabilities in areas such as programming, automation and robotics maintenance. As a result, they become better equipped to participate in industries that heavily rely on automation, including manufacturing, healthcare, agriculture, advertising and marketing and more. Moreover, robotic technology empowerment can foster innovation and entrepreneurship by enabling individuals to create and implement robotic solutions to real-world challenges (Mann, 2007). In essence, robotic technology empowerment is not limited to the acquisition of technical skills but also includes fostering the mind-set and adaptability required to

thrive in an increasingly automated world. It represents a proactive approach to ensuring that individuals have the means to leverage automation for personal growth, professional success and contributions to societal progress.

Nigerian Prosperity

Nigeria prosperity is a multifaceted concept that reflects the aspirations and goals of Nigeria as a nation. It encompasses economic growth, improved living standards, social development and the overall wellbeing of its citizens. Prosperity in Nigeria is not only about the accumulation of wealth but also includes factors such as equitable distribution of resources, access to quality education and healthcare, and social cohesion United Nations Development Programme (UNDP, 2020). In recent years, Nigeria has shown potential for significant economic growth, driven by its vast natural resources, including oil and gas reserves. However, prosperity in Nigeria faces challenges, including high levels of poverty, income inequality, and a need for diversification of the economy. Achieving prosperity in the country necessitates addressing these challenges while also focusing on improving governance, infrastructure and human development indicators. Nigeria's journey towards prosperity is closely linked to efforts to address corruption, enhance business and investment environments, and promote innovation and entrepreneurship. It requires collaboration between the government, civil society and the private sector to create an enabling environment for sustainable economic growth and the betterment of the lives of its citizens (UNDP, 2020).

Theoretical Framework

The Media Technological Determinism Theory and Human Capital Theory underpinned this study**:** Media technological determinism theory was originally propounded by Marshall McLuhan in 1964. Its central tenet posits that media technologies shape and determine the cultural, social and cognitive structures of society, exerting a profound influence on human behaviour and perceptions. While it offers valuable insights into the impact of media on society, this theory has faced criticism for being overly deterministic and neglecting the role of human agency in shaping media use and its effects (Postman, 1970). The theory highlights how new technologies, including robotics, can shape societal structures and perceptions. In the context of this study, understanding how media and communication technologies influence the perception and adoption of robotic technology among Nigerian youth is essential. It can shed light on how media narratives and communication channels may encourage or discourage the empowerment of young individuals with robotic skills.

Media technological determinism theory also addresses how media can alter cultural norms and behaviours. Robotic technology empowerment programmes can impact local cultures and norms, and the study may benefit from considering how media representations of these initiatives influence societal attitudes and acceptance. The study can explore how robotic technology itself is used within media and communication platforms. This could include analysing how robotics is employed in media content creation or entertainment, and its potential to shape narratives about youth migration and empowerment. While not a direct focus of the theory, its insights into how media and technology can shape society and culture can provide valuable context and perspectives

for understanding the broader implications of robotic technology empowerment in mitigating youth migration and fostering prosperity in Nigeria.

The "Human Capital Theory" is highly suitable for this study. The Human Capital Theory was propounded by Gary Becker in 1964 (Becker, 1964). This theory is rooted in the tenet that individuals can increase their economic productivity and earning potential by investing in education, training and skill development. It posits that these investments in human capital, often measured in terms of knowledge, skills and health, are akin to investments in physical capital like machinery or equipment. The central assumption is that individuals make rational decisions to maximise their long-term utility and they weigh the costs of education and training against the expected future benefits, such as higher income and job opportunities. While, the Human Capital Theory has been influential in understanding the role of education and skills in economic development, it has faced criticisms. Some critics argue that the theory does not adequately account for social and structural inequalities, as access to education and training can be unevenly distributed. Others point out that the theory may overlook the non-monetary value of education and skills, such as personal fulfilment or contributions to society. Additionally, it is critiqued for not considering factors like discrimination, job market dynamics and the changing nature of work, which can impact the returns on human capital investments (Bowles, 1970).

The relevance of the Human Capital Theory to this study is multifaceted, the theory emphasises that investments in education and skill development enhance individuals' human capital, making them more productive and economically valuable. In the context of robotic technology empowerment, the study aims to assess the impact of such training on Nigerian youth. It is crucial to understand if acquiring skills in robotics and automation increases the human capital of the youth, potentially making them more attractive to local job opportunities. It underscores the importance of skills development, human capital enhancement and the potential to reduce youth migration while fostering economic growth.

Methodology

The preferred research methodology for this study is documentary research. Documentary analysis is a valuable and widely-used research methodology that involves the examination and interpretation of existing documents, text and records. Hence, this study involves the analysis of relevant academic literature that explores the themes of robotic technology, youth migration and economic development in Nigeria. This involves a systematic review of scholarly articles, books and research papers. By critically assessing the existing literature, the study can build on prior research and identify gaps or areas where further investigation is needed. By utilising documentary analysis, the study creates a comprehensive and well-informed foundation for understanding the dynamics of youth migration, robotic technology empowerment, and their interplay in the context of Nigerian prosperity. In line with the above, the researchers embarked on a search of useful and relevant materials online with the help of Google Scholar. The following keywords were used in the search parameters: Impact of robotic technology training on Nigerian youth skills and employability, factors that drive youth migration, how robotic technology addresses migration motivations, economic and societal implications of promoting technology empowerment for Nigeria youth.

The study did not restrict the search to particular date or year of publication. Results of the search returned 355 useful references to the study with a general outlook. Since documentary research requires a careful synthesis of data, the researchers based their judgment on the main content viz: abstract, research results or findings and conclusion to arrive at a final data set useful for this present study. A total of 25 papers which include journal articles, online articles and others made the final selection, out of which 9 (36%) delved into themes that discussed impact of robotic technology training, 3(12%) looked at Nigerian youth skills and employability, 6 (245%) focused on factors driving youth migration, 4 (16%) dealt with issues surrounding how robotic technology addresses motivations for migration, while 3(12%) discussed economic and societal implications of promoting robotic technology empowerment for Nigeria youth. Therefore, for the purpose of this study, n = 25. Total retrieved publications that match this present study in terms of relevance equals 25 i.e., n = 25.

The researchers thoroughly read and analysed the content of each publication and then grouped them in line with the objectives of this study. Consequently, the papers were arranged along four themes as presented below:

i. Impact of robotic technology training on Nigerian youth skills and employability;
ii. Factors that drive youth migration in Nigeria;
iii. How robotic technology addresses these motivations of migration;
iv. Economic and societal implications of promoting robotic technology empowerment for Nigerian youth.

The foregoing themes were arrived at after retrieved documents in journal articles and other related online articles relevant to the area of study were thoroughly sifted and synthesised into meaningful areas and sub-areas. In line with the foregoing, below is the thematic presentation of the themes and sub-themes.

Impact of Robotic Technology Training on Nigerian Youth Skills and Employability

Previous research efforts have shown that the impact of robotic technology training on Nigerian youth skills and employability is a critical aspect of the study, and it holds significant implications for the nation's economic development and the future of its youth. Here, this study explores this impact with reference to existing research and data. Robotic technology training equips Nigerian youth with skills that are increasingly in demand in a rapidly evolving job market. According to the World Economic Forum, automation and robotics are transforming industries, and individuals with expertise in these areas are becoming more attractive to employers (World Economic Forum, 2018). Consequently, Nigerian youth who undergo robotic technology training gain competitive edge in the labour market. Youth unemployment is a pressing issue in Nigeria, with many young people struggling to find stable employment. Robotic technology training offers a potential solution by broadening their career prospects. As the skills acquired become more marketable, this can lead to reduced unemployment rates among trained youth. A study conducted by Lyons et al. (2019) found that a robotics curriculum in schools positively influenced students' motivation and engagement, pointing to the potential for increased employability.

Beyond traditional employment, robotic technology training fosters a culture of entrepreneurship and innovation. Young Nigerians who acquire skills in this field are better positioned to create their own business ventures, develop automation solutions, and contribute to technological advancements. This not only enhances their employability but also has broader implications for economic growth and prosperity. In an interconnected world, the skills acquired through robotic technology training are not limited to the Nigerian job market. Nigerian youth with expertise in robotics can explore international employment opportunities and contribute to global innovation. The potential for global mobility and remote work opportunities further enhances their employability (Tassiopoulos et al., 2016). Robotic technology training has a profound impact on Nigerian youth by enhancing their skills, reducing unemployment, fostering entrepreneurship and opening doors to global opportunities. These outcomes align with the study's goal of mitigating youth migration and fostering prosperity within Nigeria by equipping its youth with skills they need to thrive in a rapidly changing world.

Factors that drive Youth Migration in Nigeria

Documents of research findings showed that youth migrations in Nigeria are driven by a combination of push and pull factors, as well as structural and individual determinants. These factors collectively contribute to the decision of young Nigerian to seek opportunities abroad. The finding delves into these key drivers with reference to existing research. High youth unemployment rates in Nigeria serve as a significant economic push factor. A lack of job opportunities, underemployment, and low wages make it challenging for young Nigerians to achieve financial stability and career growth within their home country (Chete et al., 2016). The inadequate access to quality education and educational infrastructure in Nigeria drives many young people to seek better educational opportunities abroad. Inadequate resources, overcrowded classrooms, and declining educational quality have spurred the pursuit of higher education oversees (International Organisation for Migration, 2020). Political instability, corruption, and insecurity in some regions of Nigeria create a sense of uncertainty and fear among young Nigerians. This can motivate them to leave in search of safer and more stable environments (IOM, 2020). Environmental factors, including climate change and natural disasters, can displace populations, including young people. These environmental push factors contribute to internal and international migration (IOM, 2020).

The pull of improved living standard abroad, often portrayed positively in the media, motivates Nigerian youth to seek a better quality of life, including access to healthcare, housing and social amenities in countries with stronger economies (Akintunde & Akinjide, 2015). The perception of greater career and economic prospects abroad, driven by international job markets and the potential for higher earnings, attracts young Nigerians to explore global opportunities (IOM, 2020). These factors collectively illustrate the complexity of youth migration in Nigeria, highlighting the interplay of push and pull factors, individual motivations, and structural determinants. Addressing youth migration in the context of the study on "Robotic Technology Empowerment" necessitates understanding and addressing these multifaceted drivers.

How Robotic Technology addresses these Motivations of Migration

Research findings revealed that robotic technology, when strategically harnessed, can address several motivations for youth migration in Nigeria, offering potential solutions to these challenges. Robotic technology training equips young Nigerians with skills that are in demand in a rapidly evolving job market (World Economic Forum, 2018). As automation becomes more prevalent in various industries, these skills enhance employability and income potential, reducing the economic push factors for migration. The use of robotics in education can improve the quality of learning experiences and expand access to educational resources (Parsons et al., 2018). Online courses, robotics in STEM education, and virtual learning platforms can offer Nigerian youth access to quality education, addressing the pull factor of better educational opportunities abroad. The application of robotic technology can enhance security and stability within Nigeria. For example, drones and surveillance robots are used for security and law enforcement purposes, contributing to peace and stability (Kannad, 2018). These technologies can mitigate the push factor of insecurity.

Robotics and automation can play a role in addressing environmental challenges and disaster response (Paladino, 2016). Innovations such as agricultural robots can help adapt to climate change and enhance environmental resilience, reducing environmental push factors for migration. As robotic technology empowers Nigerian youth with skills in high-demand fields, their earning potential increases, this improvement in income, coupled with innovations like home automation, can enhance living standards domestically, reducing the pull factor of better living conditions abroad (Lyons et al., 2019). The skills gained through robotic technology training are internationally marketable. Nigerian youth can explore global job opportunities or contribute to global markets through remote work and technology-driven entrepreneurship, addressing the pull factor of global prospects (Tassiopoulos et al., 2016). Robotic technology, when effectively integrated into education, workforce development, and various sectors, has the potential to mitigate many of the motivations for youth migration in Nigeria. by enhancing economic prospects, educational quality, security and overall wellbeing, it can provide a compelling alternative to the prospect of seeking opportunities abroad.

Economic and Societal Implications of Promoting Robotic Technology Empowerment for Nigerian Youth

From the documents sourced and analysed, the introduction of robotics and automation technologies can lead to the creation of new job opportunities. Nigerian youth can be trained to design, maintain and operate robots, ultimately reducing unemployment rates (Smith, 2020). Johnson (2019) stated that the acquisition of skills related to robotics and automation can empower Nigerian youth with valuable expertise. These skills can be used not only within the country but also in the global job market, potentially leading to increased income and improved living standards. According to Okafor (2018), incorporating robotic technology in various industries can significantly enhance productivity. Sectors such as manufacturing, agriculture, and healthcare can benefit from automation, resulting in higher output and economic growth. Adewale (2021) posited that robotic technology can facilitate agricultural automation, which is vital for a predominantly agrarian economy like Nigeria. by empowering youth with knowledge of agricultural robotics, rural development can be stimulated, reducing poverty and food insecurity. Account in support of the above findings is Obi (2019), who found that as the world advances in automation and robotics,

Nigeria' youth empowered in this field can help the country remain competitive in the global economy. Nigeria can become a hub for robotics research and development. Promoting robotics can also help address gender disparities. Empowering female Nigerian youth in this field can promote gender equality and empower women to participate more actively in the labour force (Nwosu, 2017). Promoting robotic technology empowerment among Nigerian youth has the potential to bring about economic growth, job creation and societal benefits. Proper investment in education and infrastructure is essential to harness the full potential of this technology for the betterment of Nigerian society.

Conclusion

The study was able to establish that the empowering Nigerian youth through robotic technology can significantly contribute to mitigating youth migration by creating employment opportunities and enhancing local skill development. This approach has the potential to improve the country's economic prosperity and reduce the strain on migration and brain drain. In conclusion, investing in robotics for youth empowerment is a promising solution to retain talent and promote a prosperous future in Nigeria.

Recommendations

1. Nigeria government should invest in educational programmes that equip Nigerian youth with robotics and automation skills to meet the growing demand for these technologies.
2. There should be collaboration between the government, industry and educational institutions to create a conducive ecosystem for technology development and job creation, reducing the need for youth migration.
3. Policymakers should implement policies and incentives that support the growth of robotics start-ups and industries in Nigeria, further bolstering the economy and providing opportunities for the country's youth.

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