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ICT- Social Entrepreneurship Nexus and Job Creation in Nigeria

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This study examined the impact of social entrepreneurship and Information Communication Technology (ICT) utilization on employment in Nigeria. The study made use of survey data obtained from youth entrepreneurship with innovation (YouWiN) (2019). The study engaged descriptive statistics, the ordinary least squares (OLS) and propensity score matching (PSM) to achieve its objectives. The descriptive statistics show that there is a low proportion of social entrepreneurship. The result shows that social entrepreneurship contributes about 21% to employment. In addition, firm ICT utilizations; access to the internet and communication with clients via email contribute about 66% and 64% to firms' ability to contribute to employment level. The study concludes that policies and programmes to support social enterprises for employment creation should be implemented and properly executed.

Keywords: Future employment, ICT adoption, entrepreneurship, sustainable development, Nigeria

JEL: L26, M51

In 2020, the number of people who were unemployed across the world was estimated at 220 million (International Labor Organization [ILO], 2021). This high rate of unemployment and relatively, low labor force involvement is predominantly severe in some specific regions such as Africa and mostly, among the youth (ILO, 2021).

While there is a shortage of employment in the labor market, there exists gender disparity in labor force engagement between men and women and among the youth. While the labor force participation of men was 72.1 percent in 2020 that of their female counterparts was about 45 per cent (ILO, 2022). Concerning the youth, across the globe, the labor force participation rate among the youth is about 38 percent, lower than that of men (72.1 percent) and women (45 percent) in 2020 (ILO, 2022; Mwangi, 2016).

Outside of getting a decent job, employment may not guarantee that individuals have better standards of

living. Across the world, above 20 percent of those who are employed found themselves in absolute or relative poverty in 2020 (ILO, 2022). Prior studies recommend different ways to mitigate the uncertainty in the future labor market including entrepreneurship drive, and skills acquisition, among others.

Irrespective of the various schemes and interventions to curb unemployment issues, many questions remain unanswered to guide policymakers with respect to the most effective solutions to tackle the menace of unemployment. Against the literature and policy gaps, this study has taken a different direction by examining how ICT utilizations and social entrepreneurship contribute to employment creation in Nigeria.

Social entrepreneurship faces an ever-evolving set of problems, however, ICT adoption such as mobile phones and the internet tends to provide opportunities for acquiring skills that are apparent for employment creation.

In the last decades, ICT has undergone rapid development and has been introduced into all segments of people's lives. This has thus brought new opportunities and created flexibility for businesses and individuals (e.g., social networks, searching and sharing information), and better quality of life (Osabohien *et al.*, 2022). Modern ICT tools can decrease costs and increase organizational efficiency (Hengst and Henk, 2001). ICT has also triggered profound variations in communication and accessibility, and availability of information (Pinterič and Grivec, 2007).

Due to ICT development, many things can be performed more efficiently and with tremendous success. For example, ICT is one factor that motivates entrepreneurship (Catherine, 2022). This is because ICT makes it possible to analyse diverse decision-making scenarios. This is why many people believe that ICT might be used as a tool for creating and developing entrepreneurial skills (Matthew *et al.*, 2021). Besides, ICT might offer learning opportunities, business planning solutions, database tools, and business training opportunities with the help of business plan simulators (Olurinola *et al.*, 2021). ICT can help to develop and enhance communication and social networks as well.

In terms of a firm's flexibility, ICT can help firms' message apps and social media platforms to showcase

and sell commodities. ICT has often become essential proof of the growth of technology globally. It has consequently experienced an influx of trade benefits arising from the same.

The increase in mobile phone access and the introduction of smartphones have also increased access to the internet on the go (International Telecommunication Union [ITU], 2017). Mobile phones have replaced the old table-top telephones disrupting the Telecommunication sector (ITU, 2020). The presence of mobile phones and the internet has created new sectors, given rise to new companies and provided jobs for many whiles also impacting entrepreneurship and business models (ITU, 2020).

Technology adoption, particularly, ICT among others, have been tremendous in business operations across the globe (Matthew *et al.*, 2020; Osabohien *et al.*, 2022). Ogbo *et al.* (2019) examined the role of social entrepreneurship on the sustainability of business development in Nigeria and found that lack of entrepreneurship in education, lack of financial assistance, and lack of government support are some of the major drawbacks of social entrepreneurship in Nigeria. In another study, Mathew *et al.* (2021) found that enabling environment, infrastructure and access to ICT tools are crucial to flexible business operations.

Rusu and Roman's (2021) findings point out the need for decision-makers to enact policies and strategies that will motivate entrepreneurs to become more performant for employment creation and the economy's overall growth. Teaching entrepreneurship across all levels of education is significant to driving employment and the overall growth of the economy (Hassan, 2020). In a similar study, Shetty *et al.* (2021) find that entrepreneurship development programmes have significantly impacted the overall economy. The findings imply that training interventions on economic aspects with moderate and low impact make entrepreneurship development programmes more effective for employment creation. Matthew *et al.* (2020) found that encouraging entrepreneurship is one of the best ways to create employment for the growing population.

Theoretically, it has been understood that technology adoption and entrepreneurship may have a significant influence on employment creation. Theory such as the X-efficiency theory argues that as firms tend towards expanding, output and product market competition, market sales and revenue, expand providing opportunity to hire more labor (Frantz, 2020).

In the same way, though previous studies have considered the contribution of entrepreneurship to employment, to the best of authors' knowledge, the concept of ICT and social entrepreneurship to create jobs has not been given much attention in the context of the Nigerian literature. Therefore, this study contributes to the extant literature by examining the impact of ICT and social entrepreneurship on job creation in Nigeria, using the propensity score matching (PSM) method, which has not been fully considered in the Nigerian social entrepreneurship to the best of authors' knowledge. The study is carried out with the objective – to examine the impact of social entrepreneurship and ICT adoption on job creation in Nigeria. The study utilised the data obtained from the Youth Enterprise with Innovation in Nigeria (YouWiN) dataset (2019 version) conducted by the World Bank in collaboration with the National Bureau of Statistics (NBS) of Nigeria.

The rest of this paper is structured as follows: Literature review and the important concepts are reported in the next section. Section three presents the method and process of analysis, as well as the results and discussion based on the findings, which are mentioned in section four and five, respectively. Then the conclusion in the final section with implications, limitations and directions for future study are provided.

LITERATURE REVIEW

Theoretical Underpinnings

-The X-efficiency Theory of Entrepreneurship

Harvey Leibenstein, an American economist, developed the X-efficiency theory in the 1960s. According to him, X-inefficiency emerges when there are inefficiencies in markets, such as when incumbents do not utilise their resources efficiently (Leibenstein, 1966; 1978) because of political, normative, cognitive, and structural factors. X-efficiency theory seems to align well with Kirzner's view of entrepreneurship (Leibenstein, 2015) as alertness to opportunities caused by the lack of insight of incumbents.

When the maximum efficient use of a resource is greater than the current use by already existing corporates or firms, an arbitrage opportunity presents itself, which an entrepreneur may benefit from. Entrepreneurs can

also boost inputs by using new resources, which will increase the efficiency of existing output (Worgwu, 2021). Increase in efficiency may result in employment creation because more labor will be required to meet the demand.

Following the X-efficiency theory, using ICT tools enhances facilitate production or delivery of service may further stipulate employment capacity of the firm (Osabohien *et al.*, 2022). This is due to the fact that entrepreneurs are seen as correcting market inefficiencies by increasing market knowledge flow through ICT. Entrepreneurs, especially, those in the social space i.e., social entrepreneurs devise new ways of solving problems in the economy and commercialize it.

Social Entrepreneurship versus For-Profit Entrepreneurship

The distinction between social entrepreneurs and average entrepreneurs is far from clear. Social entrepreneurs have a mission to address social issues, create social change, or initiate responsible conduct amidst their operating environments (Matthew *et al.*, 2021). This is not a particular goal of average entrepreneurs, who have the sole aim of profit-making and may initiate negative externalities and reduce the economic well-being of society. The purpose of profit-making seems somewhat irrelevant to the social entrepreneur (Dees and Anderson, 2006; Kramer, 2005).

The modern social entrepreneur is, of course, motivated by profit but also takes a more holistic approach to business and is seemingly more concerned with the fate of the planet and humanity (Summerfield, 2020). It can, therefore, be inferred that social entrepreneurs are entrepreneurs who have a dual bottom line of social and commercial success (Groot and Dankbaar, 2014). This dual perspective to business is what distinguishes them from average entrepreneurs. Social entrepreneurship differs from other types of entrepreneurship in that it places a greater emphasis on promoting social value and growth rather than capturing economic value. While the profit motive is an essential driver of entrepreneurship, it does not rule out other intentions.

The primary distinction between business entrepreneurship and social entrepreneurship is the critical importance placed on creating societal wealth and value versus that which is placed on economic wealth

creation or profit maximization. However, it can be depicted from enterprise activities that the primary goal of social entrepreneurs is to create social value, with economic value creation in the form of earned income serving as a required by-product that ensures the business's long-term viability (Ogbo *et al.*, 2019).

While for-profit entrepreneurs measure success by delivery of services or goods and financial returns, social enterprises measure success by their ability to create sustainable social impact (i.e., improvement in society at large) rather than by their ability to provide services to the group they represent (i.e., concentrating on outputs) (Robinson, 2006; Zappala and Lyons, 2000). For similarity, both social and for-profit entrepreneurs look for market gaps to fill with a new venture to serve an underserved market. In addition, social and economic entrepreneurs have the same emphasis on vision and opportunity and the same ability to persuade and inspire others to help them make their dreams a reality.

Social Entrepreneurship and the Nigerian economy

Over time, poverty and unemployment have increased, and many people have lost their jobs, made worse by the COVID-19 pandemic (Roy *et al.*, 2021). The National Bureau of Statistics (NBS) estimated that above 20 percent of the full-time employment in Nigeria lost their jobs due to the COVID-19 pandemic in 2020. On the other hand, the informal sector of the Nigerian economy is thought to be vital in generating income and improving society's wellbeing. The small-and-medium enterprises (SMEs) in Nigeria are social enterprises that have a social drive and the economic wellbeing of the people at the heart of their operations (Matthew *et al.*, 2020).

Despite the achievements and progress that accrue to an economy having a high concentration of social enterprises, some challenges still exist that can hamper the performance of these social enterprises. According to Ogbo *et al.* (2019), it has been observed that technological factors, *inter alia*, are the significant evolution experienced by a social enterprise in Nigeria. Social entrepreneurs in Nigeria face other financial, administrative and economic conditions that withhold their full subscription to technology for process improvements (Matthew *et al.*, 2020). This keeps them underperformed and unproductive.

In the case of Nigeria, it can be seen that microfinance providers are one type of social enterprise that has been a bit successful due to their adoption of innovative practices. Most of them have a dual goal of reaching many poor customers in rural areas, mainly SMEs, while still being financially viable. The primary purpose of microfinance enterprises is to transform society by bringing about social change where it is needed. They think of new ways to improve the lives of the poorest community members by giving them access to credit without having to put up any collateral. When it comes to launching and managing social enterprises, this is what motivates social entrepreneurs. Subscription to innovative practices is necessary if any social enterprise will attain its societal impact, business success, and general economic wellbeing.

ICT Utilization and Improved Enterprise Performance

Determining a company's success hinges on its ability to innovate (Ramadani *et al.*, 2013; Tse *et al.*, 2015). This postulation validates the idea that even social enterprises need to significantly engage innovation in their enterprise activities if they desire improved performance. Firms that do not innovate risk underperformance and perhaps financial ruin (Abad-Segura *et al.*, 2019; Ratten, 2019).

The following fundamental forces can be attributed to enterprise growth: an increase in factors of production, improvements in the efficiency of allocation across economic activities, and the rate of innovation (Braunerhjelm, 2010). The idea of growth by Braunerhjelm (2010) also incorporates the speed of innovation. This implies that the level of innovative activities carried out in an enterprise will determine how fast they experience growth.

In this study, the concept of innovation would be streamlined to Information and Communications technology (ICT). ICT encompasses the use of computers, the integration of telecommunications (telephone lines and wireless signals), and other necessary enterprise software, hardware and digital technologies in business procedures. Bresnahan and Trajtenberg (1995) indicate that ICTs operate as an enabling factor for businesses to innovate and improve their performance, serving as a general-purpose technology. The ICT Research and Development in the European Union (EU) carried out an analysis and discovered that ICTs had

changed the production process in various sectors of European economies.

The discussion has progressed beyond firm performance via investments in innovation to the effect of size on ICT investments, with the argument that small businesses have less capital and therefore less to invest in ICT (Aragón-Sánchez & Sánchez-Marín, 2005; Gërguri-Rashiti *et al.*, 2013). Most social enterprises can be termed as small businesses, and as a result, they particularly suffer from this challenge. This makes them miss out on the advancements and growth, and innovative practices accrue to a firm. Aragón-Sánchez and Sánchez-Marín (2005) and Gërguri-Rashiti *et al.* (2013) also looked at innovation from the standpoint of resources, claiming that small businesses lack resources and bargaining power, limiting their ability to innovate.

Regarding the funding of enterprise activities, the effect of social media and technology on social venture funding cannot be ignored. The rise of global connectivity is enabling unprecedented access to capital for entrepreneurs. Taking a more practical example, Facebook has over 2.5 billion users. They have been acknowledged for assisting activists in defeating oppressive governments, mobilising donors, and fostering social connectivity among those they had never met before. When combined with nearly ubiquitous cell phone technology around the world, social media will forever support to improve the relationship between social entrepreneurs and their work. It has increased the publicity of their business services and products, causing them to gain more recognition from stakeholders. Following the X-efficiency theory, this study aims to test following hypothesis stated in its null form:

H₁: ICT utilization has no significant impact on job creation.

The Role of Social Entrepreneurs in Job creation in Nigeria

In a study conducted in Mexico, it was discovered that SMEs are the backbone of the economy due to their significant effect on employment creation (Hulleman and Hudone, 2015). These SMEs are made up of social and for-profit enterprises in the economy. It is no news that high-growth corporations account for a large portion of new jobs and are essential contributors to the country's economic growth, as measured by employment

expansion rates (Akpan and Ibidunni, 2021; Worgwu, 2021). Small and medium-sized businesses (SMEs) provide more net jobs than larger businesses. SMEs have been shown in various studies to be influential employment creators (Akpan and Ibidunni, 2021). According to such reports, employment formation and job contraction go hand in hand in all countries.

In Sub-Saharan Africa (SSA), where millions of people lack access to essential services such as education, social entrepreneurs are paving the way for a meaningful change in their social enterprises playing a variety of beneficial roles, including providing a path to self-sufficiency, providing training and education, and harnessing skills – all of which increase job access (Osabohien *et al.*, 2022).

According to a British Council (2020) study on social enterprises and their effect on job growth, more social enterprises (78%) seek to build jobs than profit-first companies (27%) (British Council, 2020). Furthermore, 73 percent of social enterprises intentionally recruit workers from low-income communities instead of 56 percent of profit-driven businesses. The British Council estimated the number of jobs generated directly by social enterprises in Africa to be between 28 million and 41 million based on the best available data. From the study's outcome conducted by the British Council, it is expedient that social enterprises have a vital role in job creation (British Council, 2020). However, there exists an untapped opportunity created for social enterprises by innovation. This study aims to test following null hypothesis:

H₂: Social entrepreneurship has no significant impact on job creation.

METHODOLOGY

Population and Sample

For this study, cross-sectional survey was engaged, which is called the Youth Enterprise with Innovation (YouWiN). The survey was conducted by the World Bank in conjunction with National Bureau of Statistics (NBS), Nigeria, Programme Impact Evaluation 2011-2016 (NBS and World Bank, 2019), where NBS was the primary investigator. The programme surveyed a total of 3,139 entrepreneurs in Nigeria.

-Model Specification

The model for this study is hinged on the X-efficiency theory of entrepreneurship. In the 1960s, American economist Harvey Leibenstein proposed the X-efficiency principle. The theory states that entrepreneurs are input complement or void fillers. Because of political, normative, cognitive, and systemic factors, these gaps (X-inefficiency) arise when markets are inefficient, such as when established parties do not use their capital effectively (Leibenstein, 1987).

Bias is inevitable when core variable of studies is omitted in the regression model, seen in econometrics studies, the magnitude of which depends on the interaction between the omitted variable, the other explanatory variables and the dependent variable. In order to preclude the omitted variable bias, the model used in this study follows the literature. Also, there are dimensions such as social entrepreneurship to control for the social contributions. Based on theory, and previous studies, this study modeled job creation as a function of social entrepreneurship, ICT utilization, and other covariates.

The dependent variable in the model is job creation measured by the estimated number of the people the firm will be able to employ in the next five years. The independent variables include - social entrepreneurship, measured by 0 and 1. That is, 1 if the firm is a social enterprise (such as the hospitality industry), 0 if the firm is for-profit. ICT utilization (measured by firms that use the internet and communication with clients via email), gender (measured by the gender of the ownership of the firm (1 if the firm's owner is a female, and 0 if the firm's owner is a male), age of the firm owners in years, and access to loan and educational level of the firm's owners. Thus, the model for this study are specified in line with the literature and the objectives of the study as follows:

$$JC = f(SOE_i, ICT'_i, X'_i) \quad (1)$$

$$JC_i = \beta_0 + \beta_1 SOE_i + \beta_2 ICT'_i + \vartheta Z'_i + v_i \quad (2)$$

From the model, JC_i means job creation for firm i , SOE_i implies the likelihood of firm i being a social entrepreneurship (1 if the firm is a social enterprise or otherwise). In the same way, ICT'_i is a covariate of ICT

utilization (firms that use email and internet), v_i represents the error term. On the other hand, Z' represents the covariates of exogenous variables, with the coefficient ϑ ($\vartheta = 1, 2 \dots N$). The covariates of exogenous variables included in the study are – access to loans, level of education of business owners, age of business owners, gender of business owners, and marital status of business owners.

-Estimation Technique

This study analyzed the aspects of the data focused on social enterprises and their activities, such as hospitality businesses. For the method of accounting, descriptive statistics were used to examine the extent of social entrepreneurship. To investigate the impact of social entrepreneurship and ICT utilization on job creation, the propensity score matching (PSM) technique was used. The PSM is used to control for selection bias. Though it has been argued that the PMS model is used for policy evaluation, however, contemporary studies, have also applied PSM for non-policy intervention, which forms the basis for the use of PSM. In addition, it was used to augment the ordinary least squared (OLS) regression results.

The OLS regression analysis was used to test the linear relationship between social entrepreneurship and ICT utilization on job creation, and to test the significance of other variables such as access to loans, and level of education, among others, concerning future employment. The t -statistics were used to show the significance of the independent variables. The t -statistics of a variable is said to be significant if it is greater than or equal to 1.65, 1.97 and 2.30 at 10 percent, 5 percent and 1 percent level of significance, respectively. These techniques will allow the realization of the objectives of the study.

RESULTS

-Descriptive Statistics

The descriptive statistics is presented in Table 1 (see Appendix-I). According to Table 1, the social entrepreneurship sector can be characterized as an untapped sector in the Nigerian economy. The findings of this study show that only 3 percent of firms in Nigeria are social enterprises. This shows that most business

owners prefer to own businesses with profit maximization as their primary objective rather than get involved in social entrepreneurship, which has a primary goal of maximizing societal and economic wellbeing. The low participation rate in this sector is responsible for their lower contribution to job creation. However, they remain significant in determining future employment in Nigeria.

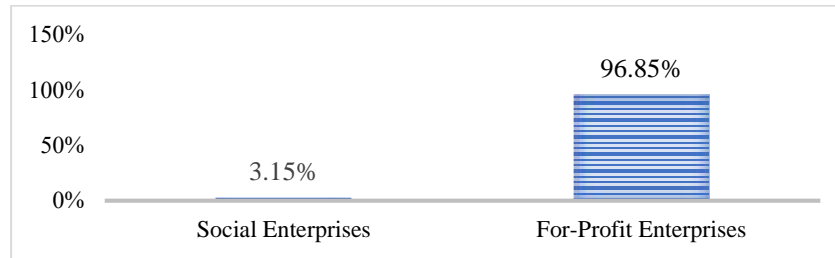
The outcome variable engaged in this study is job creation. It was measured by the number of employees that businesses will generate in the future and their collective contribution to future employment in Nigeria. It has a mean value of 52.438, indicating that the companies will contribute approximately 52 percent to available jobs. From the summary statistics of variables, the first ICT utilization variable, firm's access to the internet, has a mean value of 0.7420, indicating that approximately 74 percent of enterprises in Nigeria have access to the internet. On the other hand, the second ICT utilization variable, the firm's utilization of emails, has a mean of 0.9525, indicating that approximately 95 percent of enterprises in Nigeria have access to the internet.

Gender variable measures the gender of the business owners. It has a mean value of 0.8314, indicating that 83 percent of the business owners featured in the analysis are male. The education variable has a mean value of 0.015, indicating that 1.5 percent of the business owners are uneducated or never went to school.

The marital status variable has a mean of 0.4649, indicating that 46 percent of the business owners featured in the analysis are married. In the same way, age has a mean of 30.474, indicating that the mean age of the business owners is approximately about 31 years. The loan variable has a mean value of 0.0991, indicating that only 9 percent of the firms have access to loans.

Extent of Social Entrepreneurship Involvement in Nigeria

The social entrepreneurship sector can be characterized as an untapped sector in the Nigerian economy. Findings of this study reflect (see Figure 1) that only 3 percent of the firms in Nigeria are social enterprises. This shows that most business owners prefer to own businesses with the profit maximization as their primary objective rather than get involved in social entrepreneurship, which has a primary goal of maximizing societal and economic wellbeing. The low participation rate in this sector is responsible for their lower contribution to



Source: Authors' Presentation using NBS & World Bank YouWin Data

Figure 1. Extent of social entrepreneurship in Nigeria

employment. However, they remain significant in the determination of future jobs in Nigeria.

Extent of ICT Utilization among Firms

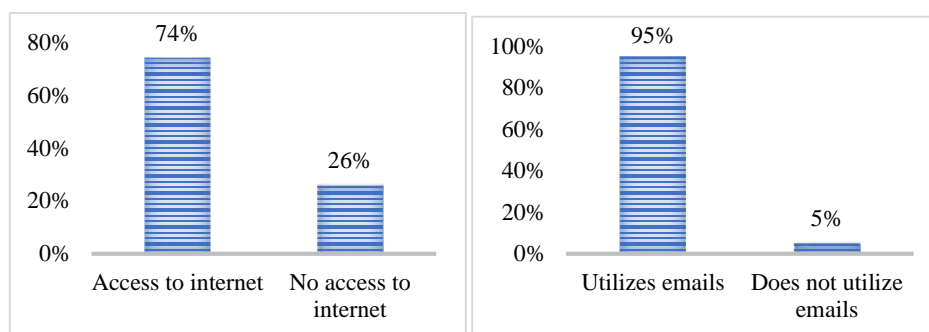
The study's findings indicate that approximately 74 percent of enterprises in Nigeria have access to the internet, while the remaining 26 percent do not. With this measure of information, more firms are seen as innovative.

Gains in performance will arise if they are organizing well-tailored marketing campaigns to the right target market or if the firms use their access to the internet to learn about strategies to improve business performance. This could be a possible reason why more of the firms are innovative but are not experiencing improved performance, to increase their contribution to employment.

Figure 2 graphically explains the extent of a firm's access to the internet in Nigeria, derived from the summary statistics. The findings show that approximately 95 percent of enterprises in Nigeria have access to the internet, while the remaining 5 percent do not. From this measure of information, more firms are seen as innovative however the improvement in performance that will result from their utilization of emails for marketing also depend on how frequent they use their emails to market their products, their email marketing technique and the response of customers to their emails. This could be a possible reason why more firms are innovative but are not experiencing improved performance to increase their contribution to employment

Ordinary Least Squares Regression

The OLS method was utilized to check the significance of the independent variables in determining job creation. From the result displayed in Table 2 (see Appendix-II), the coefficient of access to the internet is statistically significant. This implies that a one-unit increase in internet access by businesses would result in a 28.37 percent increase in future employment.



Source: Author's Presentation

Figure 2. Extent of Firm's ICT Utilization

and the response of customers to their emails. This could be a possible reason why more firms are innovative but are not experiencing improved performance to increase their contribution to employment

The coefficient of email is statistically significant. This implies that a one-unit increase in the utilization of email businesses would result in a 30.23 percent increase in employment. Since the firm's utilization of emails in business communications is statistically significant, it is an essential determinant of job creation. This is in line with the findings of Olurinola *et al.* (2021), showing ICT utilization positively contributes to the employment capacity of firms.

The coefficient of loan implies that a one-unit increase in business access to loans would result in an 18 percent increase in Future employment. Since the firm's access to loans is statistically significant, it is, therefore, an important determinant of future work.

Impact of Social Entrepreneurship on Job Creation

Table 3 (see Appendix-III) shows the results of the propensity score matching. Using the average treatment

effects on the treated (ATT) for both matching algorithms (the nearest neighbor matching [NNM] and the kernel-based matching [KBM]), It can be inferred that social entrepreneurship plays a statistically significant and favorable role in explaining the extent of job creation in Nigeria.

The value of the average treatment effects on the treated (ATT) for both NNM and KBM show that social entrepreneurship would contribute 21 percent to job creation. The ATE value depicts the average treatment effect. The ATE compares the average outcome of those firms which are social enterprises and those that are not.

Social enterprises account for approximately only 3 percent of the total firms analyzed in the study from the data utilized. This is the reason for their lower current contribution to employment. With the increased involvement in that sector and improved utilization of ICT, access to loans, education, among others, these enterprises will contribute even more to future employment. However, with a *t*-value of 1.81, social entrepreneurship is statistically significant in explaining the extent of job creation at a 10 percent level of significance. This implies that it is a substantial factor in determining the extent of future employment in Nigeria.

Concerning the impact of social entrepreneurship on future employment, and in line with the study by Hassan (2020), teaching entrepreneurship across all levels of education is significant to build entrepreneurial competencies among youth to drive employment and overall growth of the economy, a crucial factor. A similar finding reported by Osabohien *et al.* (2022) shows that entrepreneurship development programmes to build business skills among the youth positively impacted the overall economy and reduced unemployment. The findings imply that training interventions on economic aspects with moderate and low impact make entrepreneurship development programmes more effective for employment creation.

Impact of Firms Access to the Internet on Job Creation

The value of the average treatment effects on the treated (ATT) for both matching algorithms (NNM and KBM) show that firms who have access to the internet would contribute 64 percent to job creation. The value of the average treatment effects on the untreated (ATU) for both matching algorithms (NNN and KBM) depicts that

firms who do not have access to the internet would contribute only 25.4 percent to future employment. The ATE value compares the average outcome of the treated and control groups.

Table 4 (see Appendix-IV), showcases an ATE value of 32.57 percent, portrays the effect on job creation if the non-adopters had access to the internet. With a t -value of 3.77, the second measure of innovation is statistically significant in explaining the extent of future creation at a 5 percent level of significance.

Impact of Firm's Utilization of Emails on Job Creation

In Table 5 (see Appendix-V), the value of the average treatment effects on the treated (ATT) for both matching algorithms (NNM and KBM) shows that firms who use email contribute 65.6 percent to job creation. The value of the average treatment effects on the untreated (ATU) for both matching algorithms (NNN and KBM) depicts that firms who do not use emails for marketing would contribute only 26.8 percent to future employment.

Table 5 showcases an ATE value of 32.3 percent, which portrays the impact on job creation if the non-adopters used emails to communicate with clients. With a t -value of 2.54, the third measure of innovation is statistically significant in explaining the extent of future employment at a 5 percent level of significance.

CONCLUSION

This study examines the impact of social entrepreneurship ICT utilization on job creation in Nigeria, using data sourced from youth entrepreneurship with innovation (YouWiN, 2019) survey conducted by the World Bank in conjunction with the National Bureau of Statistics of Nigeria. Evidence from the research shows that social entrepreneurship contributes about 21 percent to job creation. In addition, firm ICT utilization, access to the internet, and communication with clients via email contribute about 65.6 percent and 64 percent to firms' ability for job creation.

The findings of this study provide a substantial validation of the hypothesis that social entrepreneurship and ICT significantly contribute to job creation. However, the small contribution of social enterprises compared to profit-oriented enterprises, discovered in this study, is a result of the little number of entrepreneurs engaged in

that sector. Therefore, this limits the amount of job creation that can be created by that sector. This study advocates for the increase in the wave of social entrepreneurship in Nigeria and youth involvement in the sector, in order to improve job creation capacity by the sector. In addition to the involvement in social entrepreneurship, the study advocates for the adoption of different components of ICT which would improve the performance of these social enterprises and enhance their capacity to contribute to employment.

IMPLICATIONS

From the empirical analysis, the study depicted the contribution of social entrepreneurship to Jobs in Nigeria. The investigation revealed that only 3.15 percent of Nigerian enterprises are social enterprises and contribute about 21 percent to job creation. It implies that a unit increase in the establishment of social enterprise can contribute to future employment levels in Nigeria by 21 percent within years. In other words, for every five years, if the establishment of social entrepreneurship is increased by 1 percent, job creation may increase by 21 percent. This contribution of social entrepreneurship calls for more involvement in this sector to improve future employment. There has to be a significant delve into this sector to attain a boost in future employment creation in Nigeria.

The study shows that ICT adoption and social entrepreneurship are crucial for job creation in Nigeria. With regards to other indicators of job creation, the study reveals that access to loans has a negative and significant effect on the determination of job creation by firms. This could result from their inability to pay back, in the long-run, causing them certain financial constraints capable of leading them to restrict their level of employment. Therefore, it is recommended that easy access to loans be granted to business owners, social enterprises are given tax holidays, and youth-owned enterprises should be given incentives and subsidies to witness a significant increase in their performance, influencing their future employment capacity.

This study recommends that there should be an increase in the wave of social entrepreneurship in Nigeria and youth involvement in the sector to improve the number of jobs that can be created from that sector.

In addition to the participation in social entrepreneurship, the study suggests the adoption of different

elements of ICT tools which would improve the performance of social enterprises and enhance their capacity to contribute to employment. These findings indicate that with ICT adoption and involvement in social entrepreneurship, Nigeria is likely to witness significant improvement in its future employment. This influences the capacity of the economy to attain sustainable economic development as most social enterprises have the social and economic wellbeing of individuals as their top priority as opposed to sole profit maximization. This implies that with a wave of youths delving into the social enterprise sector and adopting ICT in enterprise activities, the economy would go beyond attaining economic growth to witnessing economic development. Employment would be created and inequality and poverty might be reduced.

LIMITATIONS AND FUTURE DIRECTIONS

A vast understanding on ICT adoption with relation to social entrepreneurship has been established in the study; however, the limitations should not be neglected. The replication of this study in another country is highly recommended with strong supervision as relevancy and applicability might defer. Further research can direct its focus towards ICT adaptation on entrepreneurship, private sectors, inequality, human development index, poor governance on violence in different aspect, and unemployment. An introduction of more sophisticated econometric analysis would produce a wider variety of results that can have economic utilization.

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Indicator	Description	Mean	Std. Dev.	Min.	Max
Social Entrepreneurship	1 if the business is a social enterprise, and 0 otherwise	0.0315	0.01751	0	1
Access to internet	1 if the business has access to the internet, and 0 otherwise	0.7420	0.4376	0	1
Access to email	1 if the business utilises emails for business activities, and 0 if the business does not.	0.9525	0.2126		
Job creation	Measured by the number of employees the business will employ in the next five years.	52.438	311.773	20	9998
Gender	1 if the business owner is a male, and 0 if the business owner is female	0.8314	0.3744	0	1
Education	1 if the business owner is educated, and 0 otherwise	0.015	0.1250	0	1
Marital Status	1 if the business owner is married, and 0 otherwise	0.4649	0.4988	0	1
Age	Age (in years) of the business owners.	30.474	4.7921	18	80
Access to Loan	1 if the business has access to loans, and 0 otherwise	0.0991	0.2989	0	1

Source: Authors' Presentation

Table 1. Summary Statistics of Variables

Appendix-II

Variables	1	2	3	4	5	6	7	8	9
Constant	58.175 (1.40)	61.7987 (1.49)	112.013 (1.63)	120.155 (1.73)	90.471 (1.52)	107.823 (1.89)	179.89 (1.51)	141.990 [*] (2.66)	84.284 (1.74) 10%
Age	-0.077 (-0.07)	-0.260 (-0.26)	-0.671 (-0.45)	-0.500 (-0.34)	0.117 (0.15)	-0.572 (-0.50)	0.642 (0.17)	-.0512 (-0.31)	-0.238 (0.16)
Gender	-23.6001 (- 0.59)	-25.963 (-0.64)	-61.836 (-0.87)	-61.213 (-0.86)	-47.638 (-0.83)	-34.714 (-0.72)	-107.99 ^{**} (-2.30)	-34.206 [*] (-1.70)	-27.786 (-1.55)
Marital status	-12.796 (-0.79)	-12.422 (-0.77)	-22.273 (-0.85)	-22.323 (-0.86)	-13.008 (-0.64)	-16.644 (-0.88)	-61.128 [†] (-1.74)	-16.828 (-1.10)	-16.298 (-1.15)
Access to Internet		28.372 ^{**} (3.34)							
Email			30.229 [*] (2.48)						
Loan						-17.899 [*] (-2.38)			
R-squared	0.0116	0.0110	0.0077	0.0118	0.0085	0.0062	0.0230	0.0124	0.0044

Source: Authors' Presentation

Note: The parenthesis () contains the values for the *t*-stat.†*p*<0.1 (10%), **p*<0.05 (5%) and ***p*<0.01 (1%)

Table 2. Determinants of Job Creation

Nearest Neighbor Matching (NNM)					
Sample	Social Enterprise	Other Businesses	Difference	Standard Error	<i>t</i> -stat
Unmatched	21.25	57.1530	-35.9030	68.9049	-0.52
ATT	21.25	45	-23.75	13.1299	1.81 [†]
ATU	57.1530	20.05102	-37.1020		
ATE			-36.5784		
Kernel-Based Matching (KBM)					
Sample	Social Enterprise	Other Businesses	Difference	Standard Error	<i>t</i> -stat
Unmatched	21.25	57.1530	-35.9030	68.9049	-0.52
ATT	21.25	45.00	-23.75	13.1299	1.81 [†]
ATU	57.1530	20.0510	-37.1020		
ATE			-36.5784		

Source: Authors' Presentation

Note: [†] $p < 0.1$ (10%)**Table 3. Impact of Social Entrepreneurship on Job Creation**

Nearest Neighbor Matching (NNM)					
Sample	Adopters	Non-Adopters	Difference	Standard Error	t-stat
Unmatched	64.5730	25.4198	39.1532	24.1263	1.62
ATT	64.5730	9.91780	54.6552	14.4978	3.77 [†]
ATU	25.4198	21.9083	-3.5114		
ATE			41.2636		
Kernel-Based Matching (KBM)					
Sample	Adopters	Non-Adopters	Difference	Standard Error	t-stat
Unmatched	64.5730	25.4198	39.1532	24.1263	1.62
ATT	64.5730	9.91780	54.6552	14.4978	3.77 [†]
ATU	25.4198	21.9083	-3.5114		
ATE			41.2636		

Source: Authors' Presentation

Note: [†] $p < 0.1$ (10%).*Table 4. Impact of Firm's Access to the Internet on Future Employment*

Nearest Neighbor Matching (NNM)					
Sample	Adopters	Non-Adopters	Difference	Standard Error	<i>t</i> -stat
Unmatched	65.5790	26.8205	38.7585	65.988	0.59
ATT	65.5790	23.7020	41.8769	16.5018	2.54*
ATU	26.8205	32.3076	5.48717		
ATE			40.1270		
Kernel-Based Matching (KBM)					
Sample	Adopters	Non-Adopters	Difference	Standard Error	<i>t</i> -stat
Unmatched	65.5790	26.8205	38.7585	65.9887	0.59
ATT	65.5790	23.7020	41.8769	16.5018	2.54*
ATU	26.8205	32.3076	5.4871		
ATE			40.1270		

Source: Authors' Presentation

Note: * $p < 0.05$ (5%)*Table 5. Impact of Firm's Utilization of Emails Job Creation*