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SOCIAL INNOVATION AND GRADUATE AGRIPRENEURSHIP IN NIGERIA

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Abstract: *Agripreneurship is a new concept in the fields of agriculture and entrepreneurship. Graduates in Nigeria need to develop skills that will enable them to develop the insight needed to identify and explore viable agricultural business opportunity in Nigeria, gather resources, establish and manage their own agribusiness successfully. Therefore, it is important to have an effective curriculum that focuses on programmes and training of students to increase graduates' participation in agripreneurship for employment creation. Social innovation, proxied by educational innovation, entrepreneurship education, digital innovation and agricultural innovation, has not been adequately exploited in the training of undergraduates in Nigerian universities and polytechnics. Thus, this study investigated the effect of social innovation dimensions on graduate agripreneurship in Nigeria. The target population comprised 36,494 youth corps members from six selected states in Nigeria. The calculated sample size of 533 was proportionately selected using the snowball sampling technique. A validated questionnaire was administered to collect data. Data collected were analysed using multiple linear regression. Results of the analysis revealed that there is a positive and significant effect of social innovation dimensions on graduate agripreneurship in Nigeria (Adj.R2 = 0.347, F (4, 510) = 69.130, p < 0.05),educational innovation (β = 0.222, t = 3.926, p = 0.001) and agricultural innovation (β = 0.543, t = 12.961, p = 0.001) have a positive and significant effect on graduate agripreneurship, while entrepreneurship education (β = -0.077, t = -1.477, p = 0.140) and digital innovation (β = -0.044, t = -0.775, p = 0.439) have a negative and insignificant effect on graduate agripreneurship in Nigeria.*

Hence, the study recommended that government should support, finance, develop policies and reform the school curriculum via social innovation to stimulate agripreneurship culture amongst undergraduates by organizing basic agribusiness training and exposing them to agricultural development programs to foster their interest in agribusiness.

I. INTRODUCTION

Agriculture contributes significantly to the economic development of Nigeria. It is a major source of food supply and nutrition, ensures food security, creates employment opportunities, serves as important sources of raw materials for the industries, income for the farmers and revenues for the government (Otache, 2017; Uche &Familusi, 2018; Uneze, 2013). Even though 80 per cent of the land in Nigeria is arable, less than half of this land is currently cultivated for use and agricultural sector has the capacity to employ over 70 per cent of the entire Nigeria population which implies that there are lots of unexplored opportunities in the sector (Adeyanju, Mburu, &Mignouna, 2019). Studies have shown that Nigerian graduates lack the required skills to establish their own agribusinesses and they have negative mind-set towards agribusiness (Ndubuisi, 2018; Kayode-Adedeji &Agwu, 2015). This has resulted into the problem of poor development of agribusiness, poor development of agricultural markets, low performing agricultural sector, untapped agricultural raw materials, high rate of unemployment among the graduates and many others (Kayode-Adedeji &Agwu, 2015; Woldemichael, Salami, Mukasa, Simpasa& Shimeles, 2017). However, little or no effort has been made to enhance the development of agripreneurship in higher institutions, thus, the integration of entrepreneurial skills and knowledge of modern agricultural practices is necessary to produce graduates who are potential entrepreneurs and workforce to cater for agricultural enterprises in Nigeria and beyond (Eze& Chinedu-Eze, 2016). Social innovation has emerged as a possible sustainable solution to economic, educational and societal challenges(Binuyo, Adefulu, Asikhia& Odumosu, 2020), including the problemof poor development of the agricultural sector and agribusiness, high rate of graduates' unemployment among others. In view of these, there is need to determine how social innovation dimensions (educational innovation, entrepreneurship education, digital innovation and agricultural innovation) could be used as a strategy to empower the graduates in agripreneurship to address not only the issues of agricultural production, production of enough nutritious foods, fuelling agro-processing industries, increasing national revenue generation, but also how to enhance entrepreneurial activity among the graduates for jobs creation. Arising from the foregoing, the objective of this paper is to establish the effect of social innovation dimensions on graduate agripreneurship in Nigeria.

II. LITERATURE REVIEW

Social innovation is a new method that effectively meets social needs, improves capabilities and better use of assets and resources which can be in terms of products, services, models, markets, and processes (Pisano, Lange & Berger, 2015). It deals with the development of strategies, concepts, ideas, organizations, goods or services, to bring positive changes in the way of meeting or responding to social needs or serving social purposes (Jose, 2014). According to O'byrne, Miller, Douse, Venkatesh and Kapucu (2014), social innovation is the implementation of new ideas, practices, or objects in ways that positively impact the society without the intention of making a profit, through collaborations and partnerships. It can also be defined as new ways, new ideas or re-shaping of old ideas to new ways to bring about improvement and positive change in the quality of life that impacts the society (Odumosu, Binuyo, Adefulu&Asikhia, 2020). For this study, emphasis will be on educational innovation, entrepreneurship education, digital innovation and agricultural innovation as the dimensions of social innovation. Educational innovation is the process of adopting new and creative ideas into the education system to bring about effectiveness, efficiency and significant change (Ugoani&Nwaubani, 2014). It is about the development of new concepts in the curriculum package while the obsolete ones are removed or modified (Amadioha, 2016). Educational innovation is the new method that improves attitudes, dispositions, behaviours, motivation, self-assessment, self-efficacy, autonomy, as well as communication, collaboration, engagement, and learning productivity not only among students but other stakeholders like parents, teachers, educational administrators, researchers, and policymakers which requires their active involvement and support (Serdyukov, 2017).

Entrepreneurship education is the programs that deal with wealth creation through the process of creating something new and in the process assumes both rewards and risks (Adam, 2017). Nnaji and Bagudu (2017) viewed entrepreneurship education as a program that develops entrepreneurship awareness for career purposes and impacts

entrepreneurial skill for business creation and development. This definition is similar to the definition by Omotayo and Usman (2017) who contested that entrepreneurial education is essential not only to shape the mindsets of young people but also to provide the skills and knowledge that are central to developing an entrepreneurial culture. Similarly, Odumosu, Binuyo, Adefulu and Asikhia (2020) defined entrepreneurship education as the form of education that trains and develops entrepreneurial skills, attitudes and qualities in learners to promote entrepreneurship culture that will make them identify commercial opportunities for employment creation. Digital innovation is a new product, process and significant technological changes in products and processes (Oi, 2017). Ciriello, Richter and Schwabe (2018) stated that digital innovation deals with the innovation of products, processes, or business models using digital technology platforms across organisations. Digital innovation can also be defined as any tool or technique, any product or process, any physical equipment or method of doing or making things that help to improve human capability in an organisation (Irungu, Mbugua &Muia, 2015). According to Nambisan, Lyytinen Majchrzak and Song (2017), digital innovation is the application of digital devices for planning and coordinating of new processes, new services and new business models in each context to produce the desired effect. In the same vein, digital innovation was defined as the application of digital devices to develop and design new products, services, techniques and to improve existing products or knowledge to achieve desired tasks in digital environments (Adefulu, Binuyo, Asikhia& Odumosu, 2020).

Agricultural innovation is a new method, practice or product that increases the income and yield of farmers (Singh &Bhowmick, 2015). It deals with the introduction of new inputs, processes, organizational or marketing methods or significantly improved goods or services to increase competitiveness and to offer more cost-effective public goods (Pisante, Stagnari& Grant, 2012). Ogundari and Bolarinwa (2018) opined that agricultural innovation is the new package in the form of training and other benefits given to people especially farmers to improve agricultural productivity of their farm enterprises. According to Food and Agricultural Organisation of the United Nations (2018), agricultural innovation is the use of a new or existing method, processes or ideas to increase effectiveness, competitiveness, and sustainability of agricultural production thereby contribute to food security and nutrition, economic development and natural resource management. Agripreneurship is the type of business that deals with manufacturing, processing and distribution of agricultural products mostly among farmers, and rural SMEs operators for local and international consumption (Olowa&Olowa, 2015). Agripreneurship is the enterprise and institutions that supply material inputs and transform them by adding value to the agricultural products to meet identified market demand (Bock, 2012). Singh and Bhowmick (2015) defined agripreneurship as the entire agricultural activities that include the production, supply of inputs, processing, transporting, and marketing of agricultural and related products. Equally, Ito, Qian and Hassanzoy (2019) defined agripreneurship as all enterprises derived from and around agricultural production (food production, seed supply, agrichemicals, farm machinery), distribution, processing, marketing and retail sales. Furthermore, Otache, (2107) declared that agripreneurship is the ability and willingness of a person to recognize a feasible agricultural business opportunity, gather resources, establish and manage the resulting agribusiness successfully. It can, therefore, be said that graduate agripreneurship is the ability and the willingness of a graduate to identify viable agricultural business, gather resources, establish and successfully manage the agribusiness.

Empirical works have shown diverse results on the interactions between social innovation dimensions and agripreneurship. Notable among the studies is the one by Bhattacharyya and Mukherjee (2019). Their study on the importance of educational innovation on the development of agribusiness in India reviewed that educational innovation has a significant effect on agricultural development. This finding corroborated with the study conducted in Ghana by Oduro-Ofori, Aboagye and Acquaye (2014) which affirmed that exposure to agribusiness training enhances the ability to use the new idea to revamp farm productivity, establishes and sustains modern farm venture. Besides, Wordu and Ojorka (2019) specified that innovation through exposure to agricultural development programs and use of the agricultural technologist in the teaching and learning of agriculture helps to develop practical skill in the students and builds up their confidence and formation of self-esteem needed to start their own agribusiness. Furthermore, the study by Oresanya, Omodewu, KoladeandFashedemi (2014) argued that entrepreneurial skill acquired through practical entrepreneurship education has a positive impact on agribusiness, they claimed that practical entrepreneurship education prepares undergraduates for gainful employment in a specific professional area like agripreneurship. The study by Irungu *et al*. (2015) also revealed that the use of ICTs in agriculture increases opportunities motivates and increases the capacity of the youth to engage in profitable agricultural ventures. However, Olowa and Olowa (2015), Ogunniyi, Oluseyi, Adeyemi, Kabir and Philips (2017)declared a contrary opinion that educational innovation through agribusiness training in schools is not significantly related to agripreneurship.

From theory, it could also be argued that social innovation is a strategy to drive agripreneurship development. The Schumpeter's innovation theory ascribed to the works of Austrian-American, scholar Joseph

Alois Schumpeter (1883 – 1950) posited that social innovation fosters the development of entrepreneurial mind which is essential for graduates to transforming ideas into new businesses and the ability to run and manage an existing agribusiness. This supported Akpan, Inimfon, Samuel and Damian (2015) who opined that social innovation in form of access to information and communications technology, exposure to new agricultural farming techniques, and access to state-owned agricultural programs have a positive and significant impact on driving the youths' intention to be involved in agricultural activities.

The conceptual model for this study in Figure 1 viewed the effect of social innovation dimensions (educational innovation, entrepreneurship education, digital innovation and agricultural innovation) on agripreneurship among graduates in Nigeria, while the model specification is as follows:

$GA = \beta 0 + \beta 1EI + \beta 2EE + \beta 3DI + \beta 4AI + \mu$ ……. Equ. (1)

Where GA is graduate agripreneurship, EI is educational innovation, EE is entrepreneurship education, DI is digital innovation, AI is agricultural innovation, and μ is the exogenous variable, which captures all other variables that could explain graduate agripreneurship outside the model.

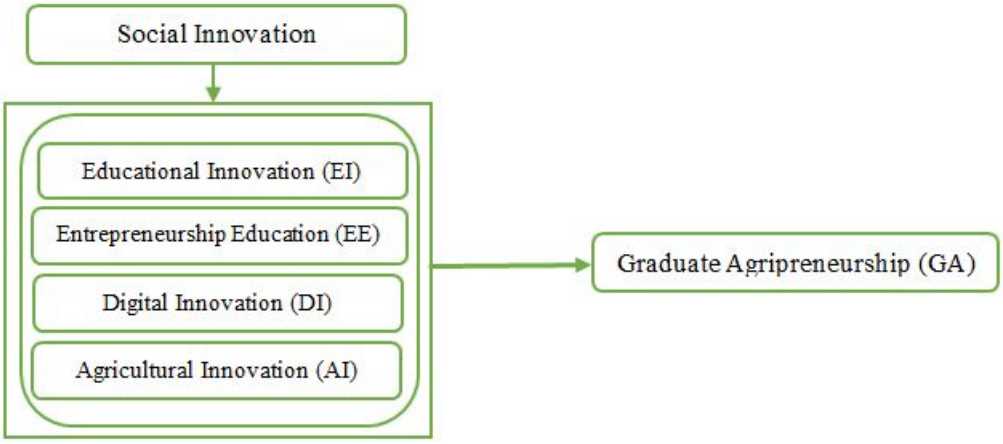

Figure 1. Simplified conceptual model

III. METHODOLOGY

This study adopted a cross-sectional survey research design. The population comprised 36,494 youth corps members from six selected states. The state with the highest number of deployed youth corps members was purposively selected from each of the six geopolitical zones in Nigeria. The sample size of 533 was determined using Krejcie and Morgan formula. The calculated sample size was proportionately selected from the six states, using the snowball sampling technique. A validated questionnaire was administered to collect data. Cronbach's alpha reliability coefficients for the constructs ranged from 0.75 to 0.94. The response rate of 96.6% was achieved.

IV. DATA ANALYSES

Diagnostic tests were carried out before the analysis of data to ensure that the data did not violate the important assumptions of regression analysis.The tests conducted included linearity, normality, homoscedasticity and multicollinearity. After the diagnostic tests, various analyseswere carried out in line with the main objective of the study, which is to establish the effect of social innovation dimensions on graduate agripreneurship in Nigeria.The data were analysed using multiple regression analysisand the results are contained in Table 1.

Table 1 Summary of Multiple Linear Regression of Social Innovation Dimensions on Graduate Agripreneurship

N	Variables	*B*	*β*	*T*	*Sig*	R^2	*Adj.* R^2	*F(4,510)*	*F Sig*^{2}
515	Constant	8.727		7.342	0.001	0.352	0.347	69.130	0.001
	Educational Innovation	0.322	0.222	3.926	0.001				
	Entrepreneurship Education	-0.081	-0.077	-1.477	0.140				
	Digital Innovation	-0.044	-0.044	-0.775	0.439				

	Agricultural Innovation	0.520	0.543	12.961	0.001				

a. Dependent Variable: Graduate Agripreneurship
b. Predictors: (Constant), Agricultural innovation, Education innovation, Entrepreneurship education, Digital innovation

Source: Field Survey Data (2020)

The results from Table 1 revealed that there is a positive and significant effect of social innovation dimensions on graduate agripreneurship in Nigeria (*Adj.R2* = 0.347, F (4, 510) = 69.130, $p < 0.05$). This means that the combination of social innovation dimensions was statistically significant in explaining changes in graduate agripreneurship in Nigeria. The results further revealed that educational innovation (β = 0.222, t = 3.926, p = 0.001) and agricultural innovation (β = 0.543, t = 12.961, p = 0.001) have a positive and significant effect on graduate agripreneurship in Nigeria. However, entrepreneurship education (β = -0.077, t = -1.477, p = 0.140) and digital innovation (β = -0.044, t = -0.775, p = 0.439) have a negative and insignificant effect on graduate agripreneurship in Nigeria. The analysis in Table 1 showed that *Adj.R2* is 0.347, which implies that agricultural innovation, education innovation, entrepreneurship education, digital innovation all accounted for 34.7% variance in the graduate agripreneurship in Nigeria. The *p-value* of 0.001 implies that the regression model is significant at the 95% significance level. The remaining unexplained 65.3% variance could be due to other factors that were not considered in this study model. According to the regression equation established, taking all factors (agricultural innovation, education innovation, entrepreneurship education, digital innovation) constant at zero, the graduate agripreneurship in Nigeria will be 8.727. This explains that, without the influence of the predictor variables, the graduate agripreneurship would be 8.727. From the model, an improvement in educational innovation would result in 0.222 times increase in graduate agripreneurship. Also, the model shows that an improvement in agricultural innovation will lead to 0.543 times direct changes in graduate agripreneurship. This reveals that, agricultural innovation has the greatest influence on the graduate agripreneurship (β = 0.543; t = 12.961; p = 0.001) followed by the educational innovation (β = 0.222; t = 3.926; p = 0.001) which also influences graduate agripreneurship on a high scale level. From the result of the table, the model to predict the effect of social innovation dimensions on graduate agripreneurship is summarized as follows:

GA = 8.727 + 0.222EI – 0.077EE – 0.044DI + 0.543AI …… Equ. 2

V. DISCUSSION

This study determined the effect of social innovation dimension on graduate agripreneurship in Nigeria. The comprehensive result of the multiple linear regression analysis showed that social innovation dimensions have a positive and significant effect on graduate agripreneurship in Nigeria, it implied that social innovation enhances the graduates' ability to use the new idea to revamp farm productivity, develop practical skill in them to build up their confidence and formation of self-esteem needed to start their own agribusiness. This finding aligned with the assertion of Akpan *et al*. (2015) that declared that there is a positive and significant relationship between social innovation and agripreneurship. Their study revealed that social innovation in form of exposure to new agricultural farming techniques, access to information and communications technology and access to agricultural training and programs have a positive and significant impact on driving the youths' intention to be involved in agribusiness. Equally, the study by Bock (2012) claimed that social innovation is often appointed as an essential part of agricultural and rural innovation, it helps in identifying society's need for more sustainable production methods and revitalizing of rural areas. The findings of Msuya, *et al*. (2014) is in line with the submission of Bock (2012) and Msuya, *et al*. (2014) who further opined that social innovation improves attitudes towards agriculture and develops skills that will make the graduates employable and self-reliant. Also, Wordu and Ojorka (2019) specified that social innovation through exposure to agricultural development programs and use of the agricultural technologist in the teaching and learning of agriculture helps to develop practical skill in the students and builds up their confidence and formation of self-esteem needed to start their own agribusiness.

In addition, the result of this study displayed that educational innovation and agricultural innovation have a positive and significant effect on graduate agripreneurship in Nigeria. This corroborated with the study by Bhattacharyya and Mukherjee (2019) that revealed that educational innovation has a significant effect on agricultural development. The findings of Bhattacharyya and Mukherjee (2019) supported the submission of a similar study conducted in Ghana by Oduro-Ofori *et al*. (2014) which affirmed that educational innovation in the form of exposure to agribusiness training enhances the ability to use new ideas, modernize farm productivity, establish and sustain modern farm venture. Equally, the study by Bawa and Ani (2015) conducted in Nigeria

revealed that educational innovation in the form of agricultural extension scheme increase production levels and profit margin considerably.

Furthermore, the result of the multiple linear regression analysis of this study showed that entrepreneurship education and digital innovation have a negative and insignificant effect on graduate agripreneurship in Nigeria, which negated the studies by Ekezie and Deebom (2019), Oresanya *et al*. (2014) and Yusoff, Ahmad and Halim (2016) that argued that entrepreneurial skill acquired through practical entrepreneurship education has a positive impact on agribusiness, they claimed that practical entrepreneurship education prepares undergraduates for gainful employment, they further explained that the more students are exposed to relevant agribusiness training, the more they are motivated to start their own agribusiness. The finding of this study also did not align with the findings by Adams (2019) and Irungu *et al*. (2015) that revealed digital innovation has a positive impact on agribusiness, improves productivity and profitability of farming activities through high yield prices and farm income, increases agriculture opportunities and motivates the capacity of the youths to engage in profitable agricultural ventures. The negative effect showed by this result could be due to the challenges of entrepreneurship education and digital innovation in Nigeria. According to Ndubuisi (2018), Nnaji &Bagudu (2017), Oleforo, Oko& Akpan (2013) and Osakwe (2015), some of the challenges include the use of inappropriate curriculum in schools, inadequate competent lecturers, poor teaching methods, use of theoretical rather than practical and goal-oriented techniques in teaching, inadequate teaching materials, lack of systematic plans that can address the existing gap of entrepreneurship education in tertiary institutions, inadequate collaboration with experts, inadequate modern equipment, lack of funds and absence of government support, inadequate credit facilities, lack of interest in agriculture, poor road network and poor infrastructural facilities, harsh business climate and environment, unstable social and political climate, absence of credit policy that addresses the specific needs of enterprises, and insufficient provision of funds by the government. Also based on the above result, the variation in the findings compare to previous studies could be attributed to the methodology employed in the various studies as well as the differences in the geographical location of the studies.

VI. CONCLUSION AND RECOMMENDATIONS

The study concluded that social innovation dimensions had a positive and significant effect on graduate agripreneurship in Nigeria, which implied that social innovation dimensions improve the attitude of the graduates towards agriculture and develop the ability and the willingness in them to identify viable agricultural business, gather resources, establish and successfully manage their own agribusiness. The findings further revealed that educational innovation and agricultural innovation have a positive and significant effect on graduate agripreneurship in Nigeria, while entrepreneurship education and digital innovation have a negative and insignificant effect on graduate agripreneurship in Nigeria. Hence, there is a need to improve agripreneurship among graduates via social innovation to make the graduates employable and self-reliant. In view of the findings and conclusions of the study, it is recommended that:

i. The government should support, finance, and develop policies to encourage the development of social innovation in schools to enhance graduate agripreneurship.
ii. Higher institutions should reform the school curriculum via social innovation to stimulate agripreneurship culture amongst undergraduates
iii. The government should invest more on entrepreneurship training/programmes by organizing basic agribusiness training and exposing them to agricultural development programs to foster their interest in agribusiness.
iv. Digital innovation like the use of information and communication technologies should be encouraged in schools to attract, motivates and increases the capacity of the graduates to engage in profitable agricultural ventures in Nigeria.
v. The government should make agricultural innovation a lifelong learning process lasting through all levels ofeducation, aiming at harnessing graduates' participation in the overall agribusiness development process.

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