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## Article

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Cogent Economics & Finance

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*Suggested Citation:* Adeyonu, Abigail Gbemisola; Balogun, Olubunmi L.; Amao, Ifeoluwapo O.; Agboola, Timothy O. (2022) : Does farmers' entrepreneurial competencies explain their household poverty status? Evidence from rural areas of Kwara State, Nigeria, Cogent Economics & Finance, ISSN 2332-2039, Taylor & Francis, Abingdon, Vol. 10, Iss. 1, pp. 1-16, <https://doi.org/10.1080/23322039.2022.2071384>

This Version is available at:

<https://hdl.handle.net/10419/303645>

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To cite this article: Abigail G. Adeyonu, Olubunmi L. Balogun, Ifeoluwapo O. Amao & Timothy O. Agboola (2022) Does farmers' entrepreneurial competencies explain their household poverty status? Evidence from rural areas of Kwara State, Nigeria, Cogent Economics & Finance, 10:1, 2071384, DOI: [10.1080/23322039.2022.2071384](https://doi.org/10.1080/23322039.2022.2071384)

To link to this article: <https://doi.org/10.1080/23322039.2022.2071384>



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Received: 08 September 2020  
Accepted: 24 April 2022

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Reviewing editor:  
Antonio Belso-Martinez, Spain

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## GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

# Does farmers' entrepreneurial competencies explain their household poverty status? Evidence from rural areas of Kwara State, Nigeria

Abigail G. Adeyonu<sup>1\*</sup>, Olubunmi L. Balogun<sup>2</sup>, Ifeoluwapo O. Amao<sup>3</sup> and Timothy O. Agboola<sup>4</sup>

**Abstract:** Ending poverty in all its forms and in all places by 2030 is number one of the 17 Sustainable Development Goals (SDGs). However, in less than a decade to the time set for actualizing this goal, poverty is still pervasive in Nigeria and more endemic among farmers in rural areas. Entrepreneurship is seen as a veritable tool to alleviate poverty and stimulate economic growth in some developing countries including Nigeria. However, little is known about the relationship between farmers' entrepreneurial competencies and poverty. Thus, this study examined the effects of farmers' entrepreneurial competencies on household poverty status in rural areas of Kwara State, Nigeria. A three-stage sampling procedure was employed in selecting 272 farm households, with at least a member who was engaged in at least one other means of livelihood (enterprise). Data were collected between February and March 2019 and analysed with descriptive statistics, factor analysis, Foster, Greer, and Thorbecke (FGT) weighted poverty indices and probit regression at  $p = 0.05$ . At a daily poverty line of \$1.90 (₦684.00) per capita, 55.15% of the households were

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### PUBLIC INTEREST STATEMENT

Nigeria is a blessed nation, but a majority of its inhabitants are poor. A majority of the poverty-stricken populace are farmers who reside in rural areas, despite being an agrarian economy. Entrepreneurship has been indicated as a tool to mitigate the menace and stimulate economic growth in the country. This study focused on the influence of farmers' entrepreneurial competencies on their households' poverty. This study showed that poverty is still high among farm households in rural areas in the country and that it varied with their level of entrepreneurial competencies. Perseverance competence had an increasing effect on household poverty, but social competence reduced it significantly. Hence, to reduce poverty in rural areas, poverty reduction strategies that come directly from farmers' own initiative and their resilience that is rural-focused regardless of other challenges should be put in place.

poor. The findings indicate that poverty among farm households varied with their level of entrepreneurial competencies. Perseverance competence significantly increased household poverty, while social competence reduced it. The findings suggest poverty reduction strategies that come directly from farmers' own initiative and their resilience which is rural focused regardless of other challenges that may exist.

**Subjects:** Rural Development; Economics and Development; Economics

**Keywords:** Entrepreneurial competencies; rural farmers; poverty; factor analysis; Nigeria

### 1. Introduction

Poverty is a serious challenge facing both the developed and the developing countries of the world. This explains why the United Nations is committed to ending it come 2030 as captured by SDG 1 (no poverty; United Nations, 2015). Likewise, the focus of the World Bank is to reduce the global poverty rate from 10% in 2015 to 3% on or before 2030 (Tomizawa et al., 2019; World Bank, 2018). While there was a reduction in the number of extremely poor persons globally to about 630 million or about 9% of the global population in 2018, the poverty rate is still high among farm households in rural areas (Goal keepers, 2018; Castañeda et al., 2018; World Bank, 2018; FAO, 2019; Cheteni et al., 2019); World Bank revealed that in 2018, about 80% of the poor lived in rural areas (Castañeda et al., 2018). However, the global achievement might have been eroded now due to COVID-19 pandemic as well as its variants and oil price drop (World Bank, 2020a). Despite the high level of commitment to poverty eradication and about seven years after the United Nations' pronouncement, the poverty incidence in a few developing countries is worrisome. World Bank (2018) opined that about 400 million extreme poor are found in low-income countries and about 75% of this is found in Indonesia, Bangladesh, Pakistan, India, and Nigeria. Recently, World Bank (2018) forecasted that Nigeria will become the world headquarters of extremely poor people.

Nigeria has a population of close to 202 million, which is about half of the West African population and is the most populated country in Africa (World Bank, 2020b). The country is rich in human and material resources with a Gross Domestic Product of \$375.745 billion in 2016 (World Bank, 2017). Nigeria is an agrarian economy, although its main source of foreign exchange is petroleum. The country is also known for its export of agricultural produce, such as cassava, cashew, cocoa, and rubber. All these notwithstanding, a majority of Nigerians are still wallowing in abject poverty. The poverty situation in the country has been worsening unabated for the past two decades. For instance, the incidence of poverty in Nigeria using the per capita expenditure approach increased from 51.6% in 2004 to 61.2% in 2010. This was forecasted to increase to 62.8% in 2011 (National Bureau of Statistics (NBS), 2012). In 2016, over 99 million Nigerians lived on below \$1.90 per day World Bank (2017), implying that the nation failed woefully to achieve Millennium Development Goal –1. However, according to the recently released National Living Standard Survey data, the poverty rate in the country stood at 40.1% in 2019 using \$1.05 (₦376.52) per capita per day (National Bureau of Statistics (NBS), 2020). With this, achieving the SDG –1 in the country is under serious threat, which required concerted efforts to tackle.

As it is globally, poverty in Nigeria is a rural phenomenon. Sectoral disaggregation of poverty showed that the urban poverty rate that was 52.2% in 2004 declined marginally to 51.2% in 2010 and 18% in 2019, the poverty rate in rural Nigeria during these periods stood at 73.4%. 69.0% and 52.1%, respectively (National Bureau of Statistics (NBS), 2012; National Bureau of Statistics (NBS), 2020). The poverty rate also varies across geopolitical zones and states of the federation. It is highest in the northern part and most states in the region than the southern part. Kwara State in the north-central geopolitical zone of the country with 72.1% poverty incidence in 2010 as against 82.8% in 2004 (with the absolute approach), was the 13<sup>th</sup> poorest state in Nigeria (National Bureau of Statistics

(NBS, 2012). In 2019, poverty incidence in the state, which was 20.35% (with the absolute approach), made the state the 11<sup>th</sup> poorest in the country (National Bureau of Statistics (NBS), 2020).

The worsening poverty situation in the country has been attributed partly to pervasive corruption and lack of continuity in governance, which is destabilizing her economic growth (Dauda, 2019; Ojong & Anam, 2018). The widespread poverty in the rural areas was attributed to the negligence of the area in infrastructural facilities (this has resulted in the loss of opportunities to participate in non-farm enterprises), inadequate access to public services, and an aging agricultural extension workforce (Davis et al., 2019; National Bureau of Statistics (NBS), 2020).

Nonetheless, attempts to reduce poverty have been made by successive governments in the country. Few of the policies formulated to liberate the country from the grip of poverty are Directorate of Food, Road and Rural Infrastructure (1987), Poverty Alleviation Program (1999), Universal Basic Education (1999), National Poverty Eradication Program (2001), and National Social Protection Policy in support of the pro-poor agenda (2018). In addition to these programs, the government in 2016, also introduced the Agriculture Promotion Policy, one of the principles of which is making agriculture a business (Federal Ministry of Agriculture (FMARD), 2017). With this new policy, agricultural production in the country is expected to expand through innovation and diversification. To be able to cope with this development, farmers need entrepreneurial competence to be able to recognize and pursue enterprise opportunities that will lead to job creation, improvement in their income, and the country's economic growth. Agricultural entrepreneurs do have entrepreneurial competencies, mostly those associated with diversification of undertakings, which defines their entrepreneurial deeds (Pindado & Sánchez, 2017). As opined by Hennon (2012), entrepreneurial competencies aid creativity and innovativeness that reorientate farmers into adopting new management practices that lead to improvement in their welfare. Likewise, achieving an increase in farm production outcomes will benefit from an improvement in farmers' entrepreneurial competencies (Balogun et al., 2021). Naminse et al. (2019) found that a statistically significant and positive relation exists between entrepreneurship and rural poverty alleviation and that qualitative growth of entrepreneurship has a stronger positive influence on rural poverty alleviation than on quantitative growth. Furthermore, opportunity seeking, persistence, risk-taking, motivation, and self-confidence competencies of farmers imparted on farms' productivity as well as farm households' welfare (Arellano & Delos Reyes, 2019; Mustapha et al., 2020). Thus, it becomes imperative to study the influence of entrepreneurial competencies on farm households' poverty. Hence, this study delved into the effect of farmers' entrepreneurial competencies on household poverty in rural areas of Kwara State, Nigeria. We hypothesized that there is no significant relationship between any of the entrepreneurial competencies and households' poverty.

## **2. Conceptual framework and literature review**

### **2.1. Conceptual framework**

#### **2.1.1. Concept of poverty**

Historically, researchers have defined poverty in monetary terms, using income or consumption expenditure levels. Given this approach, poverty denotes the absence or low level of income when compared with others in the society being considered, or having an income lower than a nation's income poverty line. Ravallion (2010) posited that persons with per capita income below the poverty line are categorized as poor. However, this traditional economic definition of poverty has been complemented by other approaches in the past few decades. For instance, according to Imoudu (1998), poverty is a state of deficiency of the basic requirements of life. Handley et al. (2009) conceptualize poverty based on: basic needs approach, capabilities approach, human development approach, and multidimensional approach. Irrespective of the approach used in defining poverty, it can be measured in absolute or relative terms. Absolute poverty is when persons are deficient in simple requirements for survival. It classifies those below the given poverty line who is free of place and time as being poor (Gweshengwe & Hassan, 2020; Ikejiaku, 2009).

Relative poverty exists when people's standard of living is far below the overall standard of living. People are categorized as being poor by equating them with others being considered per time (Gandolfi & Neck, 2010; Rigg). This study adopts the income definition of poverty.

### 2.1.2. Concept of entrepreneurial competence

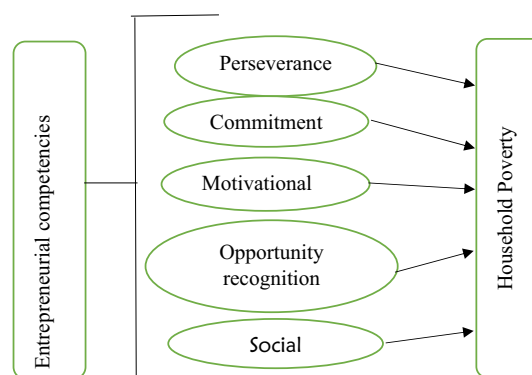
As stated by Schumpeter (1949), an entrepreneur is an individual with the capacity to motivate others and does not accept the restrictions of planned circumstances. An entrepreneur is an individual who explores opportunities by taking advantage of the advancement of technology or improvement in the economy (Dutta & Crossan, 2005). He/she is a facilitator of change, influential in realizing new opportunities, which makes for the uniqueness of the entrepreneurial function. Entrepreneurial simply means the identification and pursuit of business opportunities, while competence refers to broad sets of attitudes, knowledge, and skills that enable the entrepreneur to execute entrepreneurial duties within a given context (Lans, 2009). Competence also refers to the ability to make satisfactory actions to reliably unravel difficulties in variable circumstances. This ability is grounded on attitudes, knowledge, and skills (Tittel & Terzidis, 2020). It is imperative that entrepreneurs respond to any change in the enterprise environment proactively to reduce the bad influence of challenging enterprise environments. In achieving this, entrepreneurial competencies have an important role to play.

Entrepreneurial competencies are referred to as underlying attributes of an individual which results in new enterprise creation (Bird, 1995; Boyatzis, 1982). Some of the attributes are inherent, while others are acquired through training. Entrepreneurial competence has also been explained in terms of experience, knowledge, traits, and skills (Boyatzis, 1982; Brophy & Kiely, 2002; Lau et al., 2000). Also, entrepreneurial competencies are said to be a specific set of quality attributes that characterize the competency of an entrepreneur to perform a job (Mitchelmore & Rowley, 2013). Al-Mamun et al. (2016) define entrepreneurial competencies as the capabilities to utilize resources for improving the performance of an enterprise. Lee et al. (2016) identified five domains of entrepreneurial competencies, which are: opportunity competence, administrative competence, relationships competence, personal competence, and commitment competence. Kyndt and Baert (2015) in their study identified 12 entrepreneurial competencies, which include: perseverance, social, opportunity, strategic, insight into the market, and so on among the respondents. For this study, we adopt these approaches to identify five main entrepreneurial competencies that are most relevant to smallholder farmers in rural areas.

### 2.1.3. Conceptual framework linking entrepreneurial competencies and poverty

We developed this framework based on literature that shows that farmers' entrepreneurial competencies explained households' well-being. Households' well-being is captured as poverty status

**Figure 1. Conceptual framework linking entrepreneurial competencies with household poverty.**



in this study. As Figure 1 shows, farmers' entrepreneurial competencies consist of five different



dimensions, which are: perseverance, commitment, motivational, opportunity recognition, and social. The various entrepreneurial activities (farm and non-farm) generated certain levels of income for the households based on farmers' level of entrepreneurial competencies. However, we employed expenditure as a proxy for household income given the problem associated with the latter from where the per capita expenditure was derived. The study utilized the absolute poverty line which helped to determine household poverty status.

## 2.2. Literature review

In an attempt to suggest policies that will lead to the eradication of poverty among farm households in developing and developed nations, researchers have conducted studies on smallholder farmers': poverty status, entrepreneurial competencies, and the linkage between them. For instance, some of the numerous previous studies on household poverty status include: (Akpan et al., 2016; Bacha et al., 2011; Baser & Kaynakci, 2019; Chiputwa et al., 2015; Debucquet & Martin, 2018; Ekpa et al., 2017; Gava et al., 2021; Jaiyeola & Bayat, 2019; Mat et al., 2012; Ogundipe et al., 2019; Ogutu et al., 2020; Okunola & Ojo, 2020; Van den Broeck et al., 2017). Despite the differences in the methodology used, all the studies reported a high incidence of poverty among farm households with variation across the study areas.

Likewise, Mulder et al. (2007), Phelan and Sharpley (2012), and Sinyolo and Mudhara (2017) and Arellano and Delos Reyes (2019) had conducted researches on entrepreneurial competencies of farmers. Mulder et al. (2007), show that farmers rated their levels of entrepreneurial competencies lower than internal co-workers and external assessors. Sinyolo and Mudhara (2017) revealed that respondents reported low level of strategic, conceptual, and opportunity competencies with high levels of relationship, organizing, and commitment competencies. Phelan and Sharpley (2012) opined that a majority of the respondents had low levels of perseverance, commitment, motivational, and opportunity recognition competencies, while only very few had high level of the social competence. Also, Arellano and Delos Reyes (2019) revealed that about 50% of the respondents possessed low level of opportunity recognition and commitment competencies, about 40% had moderate level of persistence competence, and below one-third were vast in social competence.

In the same vein, given the importance of entrepreneurial competencies of farmers on their poverty status, Bergevoet (2005), Sinyolo and Mudhara (2017), Arellano and Delos Reyes (2019), Mustapha et al. (2020) had examined the effects of entrepreneurial competencies on enterprise success and farm households' welfare. Bergevoet (2005) employed data from Dutch dairy farmers to examine the influence of farmers' entrepreneurial competencies on the success of respondents' ventures. The study revealed that association exists between higher scores in the competency domain and enterprise success. Also, Sinyolo and Mudhara (2017) examined the effect of entrepreneurial competencies on farm households' food security in South Africa. They reported that entrepreneurial competencies had positive association with farm households' food security status. Recently, Arellano and Delos Reyes (2019) revealed that opportunity seeking, persistence, risk-taking, motivation, and self-confidence competencies of rice farmers were positive determinants of farms' productivity in Philippine. Finally, Mustapha et al. (2020) studied the effect of entrepreneurial competencies on enterprises' income and assets in Malaysia. The results show that entrepreneurs' commitment and opportunity recognition competencies influenced enterprises' income positively, whereas, only opportunity recognition competence affected the net worth of enterprises' assets positively.

Our concern about most of the studies on rural farm households' welfare and farmers' entrepreneurial competencies was a failure to decompose welfare indicators including poverty indices among farm households based on their entrepreneurial competencies. The only exception to this is Sinyolo and Mudhara (2017) that decomposed farm household food security based on farmers' entrepreneurial competencies. Also, most of the studies that identified different types of entrepreneurial competencies among farm households were conducted outside Nigeria. In the same vein, little or nothing is known about the effects of entrepreneurial competencies on farm households' welfare in Nigeria, to the best of our knowledge. Hence, this study focused on the

association between entrepreneurial competencies of farmers and their poverty status in rural areas of Kwara State, Nigeria. Distinguishing itself further from related studies, this present study decomposed household poverty based on respondents' levels of entrepreneurial competencies.

### 3. Materials and methods

#### 3.1. Study area and data collection

The study was conducted in Kwara State. The state is one of the six states in the north-central geopolitical zone of Nigeria. Kwara State comprises 16 Local Government Areas (LGAs). The state shares national boundaries with Oyo, Osun, Kogi, Ekiti, and Niger States, while it shares an international boundary with the Republic of Benin. It lies between latitudes 45°N and 30°N and longitudes 30°E and 25°E, covering a total landmass of 32,500 km<sup>2</sup> with a population of about 2.5 million people (National Population Commission (NPC), 2006). The state is characterized by distinct dry and rainy seasons. While the rainy season usually lasts for about seven months (April–October), the remaining five months constitute the dry season. The majority of the inhabitants (80%) are farmers practicing rain-fed agriculture (National Population Commission (NPC), 2006; Kwara State Ministry of Agriculture and Natural Resources, 2010). Among crops normally cultivated in the state are: cashew, palm produce, maize, cassava, yam, sweet potato, vegetables, and rice. Farmers in the state are also engaged in other activities, such as weaving, petty trading, hunting, etc., most especially during the dry season.

#### 3.2. Sampling and data collection techniques

Primary data were collected from respondents through a three-stage sampling techniques. The first stage was a random selection of Asa and Irepodun LGAs. At the second stage, 20 villages were randomly selected from each of the selected LGAs. The list of farmhouseholds in each of the selected villages was compiled by the enumerators with the assistance of village heads. The last stage was a random selection of households using probability proportionate to the size of the households in each of the selected villages. A validated, pre-tested, well-structured questionnaire was used to collect data from 320 households between February and March 2019. The study used 272 respondents (household heads and persons in the household with the highest number of enterprises aside from farming if not the head of the house) with useful information for the analysis. Information was gathered on household socio-economic characteristics, food, and non-food expenditure, types of non-farm activities, and level of entrepreneurial competencies.

Data on entrepreneurial competencies were collected using five different constructs with varying items. The constructs are perseverance, commitment, motivational, opportunity recognition, and social. The respondents were asked to rate the levels of their entrepreneurial competencies on a 5-point Likert scale, which ranges from 1 (very high) to 5 (very low; Wickramaratne et al., 2014). Self-assessed competencies were chosen because competencies are not observable, hence, respondents should ideally know better their own entrepreneurial competencies (Lans, 2009; Morgan et al., 2010). Similarly, the respondent's perspective is vital in examining their entrepreneurial skills because business decisions are centered on their opinions (Morgan et al., 2010). Furthermore, relevant studies on the subject matter Man et al. (2008), Al-Mamun et al. (2021), Bergevoet and Woerkum (2006), and Sinyolo and Mudhara (2017), employed self-rated competencies. The various items in each construct were basically guided by the previous studies (Chell, 2013; Jain, 2011; Lizote & Verdine, 2014; Markowska, 2011; Sinyolo & Mudhara, 2017; Vaghely & Julien, 2008).

#### 3.3. Analytical techniques

Data were analyzed with descriptive statistics, FGT poverty indices, factor analysis, and probit regression. While SPSS version 22 was used for factor analysis, STATA version 14 was used to analyze probit regression, and Distributive Analysis Stata Package version 2.3 developed by Araar and Duclos (2013) as earlier adopted by Cheteni (2019) was used for FGT poverty indices.



### 3.3.1. Foster greer and thorbecke measure of poverty indices

Measuring and decomposing poverty start with the derivation of the poverty line, which can be obtained through different approaches. We employed the expenditure approach as adopted by Teka et al. (2019) and used the latest World Bank's international poverty line of \$1.90/capita/day as adopted by (Castañeda et al., 2018; Mahembe & Odhiambo, 2019). This translates to ₦684.00/capita/day using the parallel market exchange rate as at the time of the survey. Based on the poverty line, the non-poor households are those on or above the poverty line, while those below it are said to be poor. The FGT poverty indices developed by Foster et al. (1984) were used to measure and decompose respondents' poverty indices based on their entrepreneurial competencies. The FGT model is specified as:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^q \left[ \frac{Z - y}{Z} \right]^{\alpha} \quad (1)$$

Where:

Z = the poverty line

y = the daily per capita expenditure, which comprises expenditure on both food and non-food commodities

i = individual household 1, 2, ... .., 272

q = the number of poor farming households in the population of size n,

$\alpha$  = the degree of poverty aversion;  $\alpha = 0$ ; is the headcount index ( $P_0$ ) measuring the rate/incidence of poverty;  $\alpha = 1$  is the poverty gap index ( $P_1$ ) measuring the depth of poverty that is on average, how far the poor is from the poverty line;  $\alpha = 2$  is the squared poverty gap ( $P_2$ ) measuring the severity of poverty among households, that is, the depth of poverty among the poor.

### 3.3.2. Factor analysis

The data was first subjected to an exploratory factor analysis to determine their suitability as adopted by (Naminse & Zhuang, 2018). Only items with significant loadings on the factors were retained for factor analysis (Ambad & Ag Damit, 2016). Bartlett test of sphericity and Kaiser–Meyer–Olkin sampling adequacy measure were conducted on the remaining matrix. The values obtained (Table 3) further indicated the adequacy of the data for factor analysis. The extraction of suitable factors was done with Principal Component Analysis. Factors with eigen value >1 as earlier adopted by Li (2009) and Doran et al. (2018) and accounted for moderate level of total variance in the factors were retained. The new scores of the retained factors were calculated and used for further analysis (probit regression).

### 3.3.3. The effect of entrepreneurial competencies on poverty status (Probit regression)

In analyzing the effects of farmers' entrepreneurial competencies on their poverty status, we adopted probit regression model following (Korosteleva & Stępień-Baig, 2019; Sekhampu, 2013). It is used to model dichotomous or binary dependent variable (Y) which takes on the value (0/1). In this study, the binary probit model takes the value of 0 for poor households, and 1 for the non-poor households. The probability  $P_i$  of belonging to one group and not to the other can be stated as:

$$P_i = \text{prob}[Y_i = 1|X] = \int_{-\infty}^{x_{ip}} (2\pi)^{-\frac{1}{2}} \exp\left(-\frac{t^2}{2}\right) dt = \Phi(x'_i \beta) \quad (2)$$

where  $\Phi$  denotes the cumulative distribution of a standard normal random variable (Uzunoz & Akcay, 2012).

**Table 1. Measurement of the variables used in probit model**

| Variable                       | Definition and measurement   | Expected sign  |
|--------------------------------|--|----------------|
| <b>Poverty status</b>          | Whether or not the household is poor (non-poor = 1, poor = 0)  | Not applicable |
| <b>Perseverance</b>            | Level of perseverance competence with highest mean value of 5 (low = < 2.7, moderate = 2.7–3.5, high = >3.5) | +              |
| <b>Commitment</b>              | Level of perseverance competence with highest mean value of 5 (low = < 2.7, moderate = 2.7–3.5, high = >3.5) | -              |
| <b>Motivational</b>            | Level of perseverance competence with highest mean value of 5 (low = < 2.7, moderate = 2.7–3.5, high = >3.5) | +              |
| <b>Opportunity recognition</b> | Level of perseverance competence with highest mean value of 5 (low = < 2.7, moderate = 2.7–3.5, high = >3.5) | -              |
| <b>Social</b>                  | Level of perseverance competence with highest mean value of 5 (low = < 2.7, moderate = 2.7–3.5, high = >3.5) | -              |

It should be noted that the association between a given variable and the result of probability is determined by means of Marginal Effect (ME). The ME measures the change in probability that is related to continuous explanatory variables on the probability  $P(Y_i = 1 | X)$ . As opined by Gujarati (2006), the model is specified as:

$$\frac{\partial p_i}{\partial x_{ik}} = \phi(x'_i \beta) \beta_k \quad (3)$$

Hence, marginal effects were calculated and reported in this study following Amevenku et al. (2019), and we postulate that none of the five entrepreneurial constructs will have significant effect on household poverty. The definition and measurements of the variables included in the model are shown in Table 1.

## 4. Results

### 4.1. Distribution of respondents by level of entrepreneurial competencies

We employed the mean of the values of the responses on entrepreneurial competencies to classify the respondents based on the level of their entrepreneurial competencies. Based on the mean distribution, responses with <2.7, 2.7–3.5, and >3.5 for each of the constructs are classified as low, moderate, and high levels respectively. The results presented in Table 2 show that less than 5% of the respondents had low entrepreneurial competencies in perseverance, commitment, motivational, and opportunity recognition, while about 6% of them had a low level of social competence. While a little above 40% of the respondents had moderate level motivational, opportunity recognition, and social competencies, about 37%, and 29% reported they had moderate perseverance and motivational competencies, respectively. Above 60% of the sample possessed a high level of competencies in perseverance and motivation-related competencies. The level of commitment, opportunity, and social competencies of above 50% of the respondents was high.

**Table 2. Respondents' level of entrepreneurial competencies**

| Category<br>(n = 272) | Perseverance | Commitment  | Motivational | Opportunity<br>recognition | Social      |
|-----------------------|--------------|-------------|--------------|----------------------------|-------------|
| Low                   | 5 (1.84)     | 8 (2.94)    | 6 (2.21)     | 9 (3.31)                   | 17 (6.25)   |
| Moderate              | 100 (36.76)  | 110 (40.44) | 80 (29.41)   | 117 (43.01)                | 107 (39.34) |
| High                  | 167 (61.40)  | 154 (56.62) | 186 (68.38)  | 146 (53.68)                | 148 (54.41) |

Note: Figures in parenthesis are the percentages of respondents in each category

Source: Authors' estimates.

#### 4.2. Factor analysis output

The results of the various tests conducted to determine the suitability of the data to factor analysis are presented in Table 3. Out of the 11 items listed under each of perseverance and motivational competencies, only three each was extracted and used for regression analysis. Ten items were suggested under the commitment construct, only three were extracted. Opportunity recognition and social competencies had six and seven items, respectively, with only two each loaded significantly on the factors. The values of Kaiser–Meyer–Olkin Measure of Sampling Adequacy (KMO) ranged between 0.700 and 0.822, while the values of the Bartlett test were all significant at  $P < 0.01$ .

#### 4.3. Poverty status of respondents

Several studies have profiled/decomposed poverty based on variables of interest such as household socio-demographic characteristics, sector, and zone of residence among others. Given the focus of this study, we decomposed household poverty based on respondents' entrepreneurial competencies in the five constructs developed. Table 4 shows that 55.15% of the respondents were poor with a poverty gap of 0.128 and a poverty severity index of 0.422. World Bank reported that using \$1.90 a day poverty line, over half of Nigerians were poor in 2010 (World Bank, 2018). It was observed that poverty incidence among a large percentage of the farmers with a low level of competencies was perseverance (50%), commitment (59%), motivational (52%), opportunity recognition (61%), and social (59%). Also, 60% of the poor farmers reported a moderate level of perseverance, commitment (53%), motivational (65%), opportunity recognition (33%), and social (57%). Furthermore, the poverty incidence of farmers with a high level of perseverance, commitment, motivational, opportunity recognition, and social competencies stood at 64%, 25%, 33%, 22%, and 51%, respectively. Other indices of poverty also varied and co-moved with poverty incidence among respondents based on their levels of entrepreneurial competencies in each of the five constructs.

#### 4.4. Effect of entrepreneurial competencies on farmers' poverty status

Table 5 presents the results of the effect of entrepreneurial competencies on household poverty. We determined robust standard error to control for the presence of heteroskedasticity among the model variables. As shown in the table, pseudo-R-squared was 0.0396 and the model was significant at 5%. The ME values for perseverance, and social were 0.218, and 0.257, respectively. While the ME of perseverance was positive and significant at 5%, the MEs of social competencies was negative and significant at 1% level.

#### 5. Discussion

This study shows that a majority of the respondents possessed a high level of perseverance, commitment, motivational, opportunity recognition, and social competencies with motivational competence being the highest. The proportion of respondents with a low level of social competence was higher than other competencies. In all, it can be stated that farmers in the study area possessed a high level of entrepreneurial competencies. This could be due to the fact that farmers have acquired entrepreneurial competencies over time to improve their well being because farming is a risky venture and it is also rain-fed (Demissie & Legesse, 2013). The results on commitment, motivational, and social competencies

**Table 3. Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) and Bartlett's Test of sphericity (Bartlett)**

| <b>Entrepreneurial competence</b> | <b>No of items</b> | <b>No of Extracted items (factors)</b> | <b>Determinant</b> | <b>KMO</b> | <b>Bartlett <math>\chi^2</math> Sig.</b> |
|-----------------------------------|--------------------|--|--------------------|------------|--|
| Perseverance                      | 11                 | 3                                      | 0.077              | 0.753      | 683.890                                  |
| Commitment                        | 10                 | 3                                      | 0.083              | 0.776      | 663.063                                  |
| Motivational                      | 11                 | 3                                      | 0.062              | 0.822      | 741.079                                  |
| Opportunity recognition           | 6                  | 2                                      | 0.413              | 0.741      | 236.887                                  |
| Social                            | 7                  | 2                                      | 0.138              | 0.700      | 530.553                                  |

Source: Authors' estimates.

**Table 4. Poverty status and profile of respondents based on their level of entrepreneurial competencies**

| Entrepreneurial competencies level | Perseverance<br>P <sub>0</sub> P <sub>1</sub> P <sub>2</sub> | Commitment<br>P <sub>0</sub> P <sub>1</sub> P <sub>2</sub> | Motivational<br>P <sub>0</sub> P <sub>1</sub> P <sub>2</sub> | Opportunity recognition<br>P <sub>0</sub> P <sub>1</sub> P <sub>2</sub> | Social<br>P <sub>0</sub> P <sub>1</sub> P <sub>2</sub> | Population<br>P <sub>0</sub> P <sub>1</sub> P <sub>2</sub> |
|------------------------------------|--|--|--|---|--|--|
| Low                                | 0.50 0.23 0.09   | 0.59 0.25 0.14   | 0.52 0.24 0.14   | 0.61 0.26 0.15  | 0.59 0.36 0.49   | NA   |
| Moderate                           | 0.60 0.26 0.14   | 0.53 0.24 0.13   | 0.65 0.23 0.24   | 0.53 0.23 0.13  | 0.57 0.25 0.14   | NA   |
| High                               | 0.64 0.23 0.14   | 0.25 0.18 0.13   | 0.33 0.24 0.17   | 0.22 0.15 0.10  | 0.51 0.20 0.11   | NA   |
| Population                         | NA   | NA   | NA   | NA  | NA   | 55.15 0.13 0.42  |

NA implies not applicable  
Source: Authors' estimates.

**Table 5. Probit regression results of the effect of entrepreneurial competences on household poverty status**

| Variable                | Marginal effect | Robust Std. Error | P> z  |
|-------------------------|-----------------|-------------------|-------|
| Perseverance            | 0.2178**        | 0.1061            | 0.040 |
| Commitment              | −0.2066         | 0.1194            | 0.083 |
| Motivational            | 0.0556          | 0.1176            | 0.636 |
| Opportunity recognition | −0.1755         | 0.1145            | 0.125 |
| Social                  | −0.2596***      | 0.0953            | 0.007 |
| Observations            | 272             |                   |       |
| Pseudo R -squared       | 0.0396          |                   |       |
| Wald chi2               | 13.35**         |                   |       |

Note: The dependent variable is the poverty rate.

\*\*\*, and \*\* represent 1%, and 5% levels of significance, respectively.

Source: Authors' estimates.

concur with the submission of Sinyolo and Mudhara (2017), but those on opportunity recognition and commitment competencies are in sharp contrast to the opinion of (Arellano & Delos Reyes, 2019).

At \$1.90/capita/day, the incidence of poverty was 55.15%. This is, however, higher than 38.0% recorded for the state in 2010 (National Bureau of Statistics (NBS), 2012). This is an indication that poverty in Nigeria rather than declining is on the increase. This could be attributed to the economic recession the country went into in 2016–2017 as well as farmers-herdsmen clashes and other security issues being experienced in the country. Surprisingly, the incidence of poverty was highest among respondents with a high level of perseverance competence. All the other poverty indices pointed in the same direction. Our analysis shows that all the poverty indices were lowest among respondents with a high level of commitment, motivational, and social competencies. The results further revealed that the highest poverty rate and severity index occurred among respondents with a moderate level of motivational and opportunity recognition competencies. Finally, on poverty decomposition, compared with respondents with a high level of social competence, our findings show that households with a low level of social competence had the highest level of the three poverty indices. The possible explanation could be that the various competencies helped farmers to diversify their investment portfolios with more rewards. Our findings resonate with the report of the study by (Sinyolo & Mudhara, 2017).

Furthermore, we found that about 4% of the variation in poverty status was explained by entrepreneurial competencies. This is rather too low but not uncommon in this type of cross-sectional study that involved humans (Adeyonu et al., 2019). Also, according to Gujarati and Porter (2009), in this type of function, the goodness-of-fit of the model is only second to the direction and magnitude of the parameter estimates as well as their level of significance. Rahman et al. (2015) also obtained low variation between entrepreneurial competencies and enterprise performance in Bangladesh. That said, a majority of the included variables had the expected sign with the exception of perseverance and motivational competencies and about 60% of them are statistically significant at varying levels. Thus, we fail to accept the hypothesis that all coefficients are equal to zero at a 5% level. The perseverance competence of respondents explained their household poverty status with a positive sign. A one-unit increase in perseverance competence of respondents increased the likelihood of being poor by 0.218. This may perhaps be due to the fact that farmers were engaged in diverse risky enterprises that did not yield positive outcomes for too long. The finding is contrary to the submission of (Sinyolo & Mudhara, 2017).

Finally, our analysis shows that a negative association exists between farmers' social competence and household poverty status. This means that a unit increase in social competence results in a decrease in the probability of being poor by 0.260. This may be because farmers benefited



from their social engagement with others. This is in line with the submission of (Sinyolo & Mudhara, 2017). Of the two significant explanatory variables, social competence had the greatest effect on the poverty status of the respondents in the study area.

## 6. Conclusion

This study focused on the association between farmers' entrepreneurial competencies and their household poverty status. Primary data collected from farmers in rural areas of Nigeria were subjected to descriptive analysis, factor analysis, FGT poverty indices, and probit model to achieve the purpose of the study using various statistical packages. Five constructs on a 5-point Likert scale were employed to capture the levels of respondents' entrepreneurial competencies. The international poverty line of \$1.90/capita/day was employed to determine household poverty status. Those above or on the poverty line were categorized as non-poor, while households below the poverty line are their poor counterparts. The findings indicate that poverty is still high among farming households in the study area and that farmers' entrepreneurial competencies explained their household poverty status. While perseverance competence had an increasing effect on household poverty status, social competence had a reducing effect. The findings suggest poverty reduction strategies that come directly from farmers' own initiative and their resilience which is rural focused regardless of other challenges that may exist. This can be achieved through farmers' joining credible associations in their domains to boost their social competence.

## Acknowledgements

The authors will like to thank Joshua Adewumi for collecting part of the data used for this study.

## Funding

We received no direct funding for this research.

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## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Citation information

Cite this article as: Does farmers' entrepreneurial competencies explain their household poverty status? Evidence from rural areas of Kwara State, Nigeria, Abigail G. Adeyonu, Olubunmi L. Balogun, Ifeoluwapo O. Amao & Timothy O. Agboola, *Cogent Economics & Finance* (2022), 10: 2071384.

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