

# UNDERGRADUATE STUDENTS' WILLINGNESS TO START OWN AGRIBUSINESS VENTURE AFTER GRADUATION: A GHANAIAN CASE

Martin Bosompem, Samuel K. N. Dadzie and Edwin Tandoh

## ABSTRACT

*Agriculture and related businesses in Ghana for the past decades have been the preserve for the smallholder, aged and illiterate farmers. Meanwhile, hundreds of students graduate in Agricultural Sciences from the universities over the years. This study seeks to investigate potential determinants of the entrepreneurial spirit of agricultural students to do self-employed businesses in the agricultural sector. A survey of 165 undergraduate students of agriculture in the University of Cape Coast, Ghana was undertaken to examine factors that influence their decision to enter into agribusiness as a self-employment venture after graduation. The results show that the majority of the students were males (87%) and approximately, 67% were willing to enter into agribusiness*

---

**Entrepreneurship Education: New Perspectives on Entrepreneurship Education**  
**Contemporary Issues in Entrepreneurship Research, Volume 7, 75–105**  
Copyright © 2017 by Emerald Publishing Limited  
All rights of reproduction in any form reserved  
ISSN: 2040-7246/doi:10.1108/S2040-724620170000007009

*after school. The factors that students perceived to be hindrance to entering into agribusiness was the market competition of agro-products with imported products, unstable prices of agro-products, absence of insurance policy for agribusiness and unfavourable land tenure arrangement in Ghana. Correlation analysis showed negative and significant relationship between students' willingness to enter agribusiness as a self-employment venture and the following personal characteristics: (1) level of education of mother, (2) level of education of guardian other than parents, (3) students who live in farming communities and (4) students who undertake farming activities at home. There were also positive and significant relationships between students' willingness to enter agribusiness and the following: (1) availability of market for agro-products, (2) accessibility of market for agro-products and (3) accessibility of transportation facilities for agribusiness. Regression analysis showed that (1) level of education of mother, (2) students living in farming communities, (3) accessibility of transportation facilities for agribusiness and (4) accessibility of market for agro-product were the factors that best predict undergraduate agricultural students' willingness to enter into agribusiness as a self-employment venture after graduation. To motivate students to take agribusiness as self-employment after graduation, the study suggests the development of comprehensive and sustainable long-term policy to inspire and attract the youth into agribusiness; creation of conducive environment to minimise risk and constraints associated with agribusiness in Ghana.*

**Keywords:** Agribusiness in Ghana; graduate entrepreneurship; agricultural entrepreneurship

## INTRODUCTION

Agribusiness has been identified as critical to jumpstart economic transformation in Africa through the development of agro-based industries that bring much-needed jobs and incomes (Byerlee, García, Giertz, Palmade, & Gurcanlar, 2013). Agriculture (production agriculture) and agribusiness are projected to be a US\$ 1 trillion industry in Sub-Saharan Africa (SSA) by 2030 (compared to US\$ 313 billion in 2010). Hence, World Bank report recommended agribusiness to be at the top of the agenda for economic

transformation and development in Africa. Agricultural production is the most important sector in most African countries, averaging 24% of GDP for the region and agribusiness input supply: processing, marketing, and retailing add about 20% of GDP (Byerlee et al., 2013).

In Ghana, Agriculture employs 56% of the labour force and accounts for 24.6% of GDP (Ghana Economy, 2013). Ghana's agribusiness focuses mainly on farm-level production neglecting other aspects of the value chain, especially processing and storage. Also, agricultural production in Ghana is mainly done by school drop outs, illiterates and very few people of high academic standing going into agribusiness. One of the factors identified by the Ministry of Manpower, Youth and Employment in Ghana as contributing to youth unemployment is the shrinking of public sector employment opportunities coupled with a relatively slow growth of the private sector and self-employment (Ministry of Youth and Sports, 2010).

In recent years, graduate unemployment has become a critical issue in Ghana leading to the formation of Unemployed Graduates' Association of Ghana. Three of the key issues identified as the causes of graduate unemployment are (1) inadequate practical training during course of study to be employable in the public sector, (2) lack of entrepreneurial skills to start their own businesses and (3) unfavourable conditions to start their own businesses. Acheampong (2004) observed that graduates from the universities throughout Ghana show a negative attitude towards agribusiness and that agricultural graduates prefer 'white-collar' jobs to starting a career in agribusiness. Similarly, Okorley, Kwarteng, and Owens (2006) reported that most agricultural science students in tertiary institutions in Ghana were willing to be employed in NGOs, non-agricultural manufacturing industries and banks rather than to go into agribusiness or start their own businesses.

To motivate graduates (especially in agricultural and allied disciplines) to be employable, start their own business (entrepreneurs) and have positive attitude towards agricultural businesses, the School of Agriculture in the University of Cape Coast in Ghana mainstreamed entrepreneurship into its undergraduate curriculum since 2005. Results from a follow-up study revealed that undergraduates in the programme perceived their entrepreneurial competencies to have improved after going through the modified curriculum and have positive attitudes towards agribusiness (Bosompem, Annor-Frempong, & Achiaa, 2013).

This portrays the relevance of the entrepreneurial education as it can serve as a catalyst of enhancing the spirit of going into business as self-employed job after graduation. Positive graduate entrepreneurial intentions are critical in Ghana to help improve employment rate and job creation necessary for

economic transformation. Graduate entrepreneurial intentions have been investigated in several studies based on trait theory (Boyd & Vozikis, 1994), environmental theory (Ahmed et al., 2010) and contingency theory (Shaver & Scott, 1991). Our focus in this study picks on the relevant factors based on the context consistent with environmental and personal background and demographic profiles of agricultural undergraduate students.

To this end, this study aims investigating the potential determinants of the entrepreneurial spirit of undergraduate students of agricultural sciences to start self-employed businesses in the agricultural sector in the growing economy of Ghana. The chapter posits that factors such as personal and background characteristics as well as the potential reasons from the perceived nature of agribusiness in Ghana can influence the graduates' willingness to start their own business enterprises in agriculture and allied industries. We, thus, agree to the assertion that a good entrepreneurial environment leads to sustainable economic progress and the necessity to shift from a managed economy to entrepreneurial economy (Audretsch, Max, & Pawan, 2009) in addition to improvement in the entrepreneurial competency of individuals. Moreover, few studies have investigated the determinants of undergraduates' intentions to enter into agribusiness after graduation in Ghana.

## LITERATURE REVIEW

The review covers issues on concepts of graduate entrepreneurship and education, agricultural entrepreneurship, and development and agribusiness in Ghana as well as the determinants of students' willingness to start self-employment after graduation.

### *Graduate Entrepreneurship and Education*

Lundstrom and Stevenson (2005) distinguished between two (2) streams of research when it comes to defining entrepreneurship. Whiles one stream defined entrepreneurship as what entrepreneurs do (mostly in management literature), the other focuses on economic dynamics and or societal phenomenon emphasising the relationship between entrepreneurs and their environment (economic, political, societal phenomenon etc.). There is a growing recognition that entrepreneurship is critical to economic prosperity

(Baumol, Litan, & Schramm, 2007). The concept of entrepreneurship is believed to hinge on three main school of thoughts reviewed by Godin, Clemens, and Veldhuis (2008). These were (1) the German tradition, (2) the Chicago tradition and (3) the Austrian tradition.

The German tradition is based on the work of Joseph Schumpeter who viewed entrepreneurship as the process of combining resources in new and different ways to bring ideas to the market that leads to economic change. The Chicago tradition is based on the work of Frank Knight. In contrast to the German tradition, the Chicago tradition concept of entrepreneurship opined that there are some people who have unique characteristics that make them entrepreneurs. These individuals with certain personal attributes take action to bring new products and services to the market in the face of uncertain outcomes. The Austrian tradition is based on the work of Israel Kirzner. Kirzner views entrepreneurship as the process whereby people become alert to opportunities previously unnoticed by others and use these opportunities to bring ideas to the market, in the face of uncertain outcomes. Common features of the three key schools of thought on entrepreneurship are enterprise, innovation, process, risk-taking, spectrum of entrepreneurial action and economic change in entrepreneurship. The combination of these features has been identified by Godin et al. (2008) as the first step towards developing a reasonable consensus and ultimately a unified conceptual framework of entrepreneurship.

Teaching entrepreneurship in schools (*including the universities*) seems to have come about as a result of these three (3) schools of thought, especially the Australian and aspect of the Chicago traditions. For example, if entrepreneurs are seen to possess certain characteristics and competencies (examples are risks bearing, initiative taking, desire, generosity, good people judgement, perseverance, market awareness, creativity etc. Gautam, 2007; Le-LaBrasseur, Blanco, & Dodge, 2002; McClelland, 1961) that make them successful in the quest to start and run their own businesses (the Chicago tradition), then those desirable qualities can be taught and studied in school. Hence, teaching entrepreneurship programmes in school could inspire students to have the confidence to start their own businesses and become aware of opportunities previously unnoticed by them (the Australian tradition).

#### *Agribusiness and Graduate Entrepreneurship in Ghana*

Graduate entrepreneurship can broadly be defined as the 'interaction between the graduate as the product of university education and business

start-up in terms of an individual's career-orientation and mindset towards self-employment' (Nabi & Holden, 2008, p. 546). The emphasis of this definition evolve around the believe that starting up or trying to start up a business represents an aspect of entrepreneurship.

Over the last decade, governments in Ghana have implemented several initiatives purported at developing entrepreneurial competencies of youth in the country including graduate from the university. The initiatives included the Skills Training and Employment Placement (STEP) programme established in 2003 and the National Youth Employment Programme (NYEP) established in 2006 and restructured into the Ghana Youth Employment and Entrepreneurship Agency (GYEEDA) in 2012 (Ortsin, 2012). Currently, the government of Ghana has set up the Youth Enterprise Support (YES) and the Graduate Enterprise Development Initiate (GEDI). The GEDI is an initiative of the Export Trade, Agricultural and Industrial Development Fund (EDAIF) to support graduates (from tertiary institutions) between the ages of 18 and 35 to set up and manage new enterprises in non-traditional export trade and agro-based processing to feed local industries as well as aiding manufacturing industries. This programme which is closely aligned to the mandate and tenet of EDAIF is premised on the fact that some of these graduates have the potential of becoming successful entrepreneurs if given the needed support. The YES initiate, however, targeted all youth irrespective of the educational background including graduates from tertiary institutions. Entrepreneurial education backed by government policy is very essential for fostering cultural attitude and preparing young people for future careers (Lundstrom & Stevenson, 2005). However, entrepreneurship education programmes developed in response to government policy initiatives have been found to be generally narrow in focus and generally lack adequate evaluations of their effectiveness (Pittaway & Cope, 2007).

Graduate entrepreneurship was rare in Ghana until the early 2000 when graduate unemployment became an issue in Ghana. In other words, graduate entrepreneurship and teaching entrepreneurship in tertiary institutions arose because of graduate unemployment. From Ghana's independence in 1957 till the late 1990s, even though youth unemployment was common, graduate unemployment barely existed because there were enough jobs both in the public and the private sectors to absorb few graduates who came from the only three (3) main public universities in Ghana. For example, a survey of over 900,000 unemployed and underemployed youth taken in 2001 in Ghana, only 2% were graduates (Nsawah-Nuamah & Amankrah, 2003). Most of the curricula in the universities in Ghana

focused on producing graduates to fill the vacant positions in the job market; hence, their curricula lacked entrepreneurship courses and programmes. By the mid-2000, graduate unemployment was common leading to the formation of Unemployed Graduates Association of Ghana (UGAG) with over 2,300 graduates joining the association by the mid of 2011. By July 2012, the leadership of UGAG claims that their membership exceeds 70,000 even though some have dismissed them as political activists (Ortsin, 2012). By the mid-2000; most universities started mainstreaming entrepreneurship into their curricula in both the business and non-business programmes. The University of Cape Coast, School of Agriculture, for example mainstreamed entrepreneurship as a course in its Bachelor of Science (Agriculture) curriculum to inspire the undergraduate to start their business after graduation.

In 2010, the government developed youth policy for Ghana which identifies entrepreneurial development as one of the instruments that can propel and accelerate socio-economic development. Hence, the policy emphasised, among others, the need to mainstream entrepreneurship into school curricula including the universities (Ministry of Youth & Sports, 2010). These recent initiatives by the government and universities gave birth to graduate entrepreneurship in Ghana; hence, graduate entrepreneurship is an emerging trend in Ghana.

Agribusiness has been described as the manufacturing and distribution of farm supplies; production operations on the farm; and the storage, processing and distribution of the resulting farm commodities and items' (Davis & Goldberg, 1957). Agribusiness scholarship emphasises an integrated view of the food system that extends from research and input supply through production, processing and distribution to retail outlets and the consumer (King, Boehlje, Cook, & Sonka, 2010). Hence, this study considered agribusiness as products or services created along the agriculture value chain from manufacturing and distribution of farm suppliers through farming to the delivery of the end product to the consumer. In Ghana, most agribusinesses concentrate on production agriculture (farming) with very few engaged in other sectors of the value chain. Even those in farming have low level of education and are aged. Majority of farmers in Ghana are over 50 years old (Bosompem, Kwarteng, & Ntifo-Siaw, 2011; Dankwa, 2002; La-Anyane, 1985) Graduate entrepreneurs in Agribusiness are few. Okorley et al. (2006) reported that most agricultural science students in tertiary institutions in Ghana were willing to be employed in NGOs, non-agricultural manufacturing industries and banks rather than go into agribusiness or start their own business. Bosompem et al. (2013) observed

that more than half (51%) of undergraduate in Agriculture were not willing to start their own agribusiness after graduation.

*Determinants of Students' Willingness to Be Self-Employed in Agribusiness*

Wärneryd (1988) characterized factors that determine entrepreneurial intentions as demographic profile (to include age, sex, previous experience, influence of role model); personality traits (which also include self-efficacy, confidence, autonomy, locus of control, risk taken tendency, professional attraction); and contextual that include education and environment. These factors, among others, have largely been investigated in empirical research across the globe to determine how they affect entrepreneurship intentions of individuals. A critical look at the literature suggests that three underpinning theories might have informed the various empirical investigations. One of such theories is the trait theory of entrepreneurship (Boyd & Vozikis, 1994). The intent of the theory is that entrepreneurial intentions are dictated by some particular traits, namely high need for achievement, risk-taking propensity, tolerance for ambiguity, innovativeness, intuition, internal locus of control and pro-activeness. Environmental theory approach also discusses external factors beyond the control of individuals as potential determinants of the willingness to start up their own businesses. According to the theory, cultural phenomenon, education and experience, and family background are some of the environmental factors that influence entrepreneurial intentions (Ahmed et al., 2010). The third theory is the contingency theory of entrepreneurship which suggests that situations and/or contingencies force people to become entrepreneurs. Accordingly, Shaver and Scott (1991) asserted that people get motivations for becoming entrepreneurs in certain compelling situations.

Researches on willingness to start businesses have mostly been based on intention models such as theory of planned behaviour by Ajzen (1991) and Shapero's and Sokol's (1982) model of Entrepreneurial events (focus on the social and cultural environment). The fundamental underpinnings of the planned behaviour model assume that intentions to start a business will lead to action in terms of actually starting up a business. The Entrepreneurial events model also posits that intentions to start a business are related to attitudes towards entrepreneurship in terms of perceived desirability of entrepreneurship as a career option and perceived feasibility in starting up a business. Therefore, negative information, events, or displacements

are said to often lead to entrepreneurial events, however, the particular action taken depends upon (1) perceptions of desirability (values) and (2) perceptions of feasibility (Nabi & Holden, 2008; Shapero & Sokols, 1982). Ayanda et al. (2012) reported in Nigeria that the majority of university agricultural students (72%) did not want to go into agribusiness. More than half (57%) preferred to work in banks and international organisations.

It should be noted that even though there is a relationship between intention to start, and actual starting up of businesses (Davis, 1989), fewer individuals actually start their businesses even though they might have indicated their initial intention to do so (Nabi & Holden, 2008). About 33% of students in the United Kingdom indicated that their intention to start their businesses after graduation (Robertson & Wilkinson, 2005). Harding (2007) had reported that only between 3% and 4% graduates actually started their own businesses after graduation in the United Kingdom.

Relevant to the current study context, we focused on undergraduates' personal and background or demographic profiles as well as their perceived desirability of the nature of agribusiness environment in Ghana as predictors of intention to start their own agribusiness after graduation. A related study by the researchers had focused on the perceived entrepreneurial traits and competencies (trait theory of entrepreneurship) as predictors of willingness to start their own agribusinesses after graduation (Bosompem et al., 2013).

### *Personal and Background Characteristics as Predictors of Self-Employment*

A number of studies have explored personal and background characteristics of individuals that influence their willingness to be self-employed in different kind of businesses, including agribusinesses. These include, age, sex, educational background, place of birth and residency (rural or urban), and the extent of exposure to agriculture, and parental role models (Kristiansen & Indarti, 2004; Rosa & Dawson, 2006; Rosa, Jayatilaka, & Kodithuwakku, 1997).

#### *Age*

Age has been found to have either negative or positive impact on individual's propensity to be self-employed. The rationale behind the positive impact of age on self-employment has been attributed to the fact that the amount of financial capital needed to start and sustain own business increases with age (Blanchflower, 2004; Parker, 2009, 2004;

Stefanović & Stošić, 2012). Stefanović and Stošić (2012) reported that financial and social capital of individuals, as well as their work experience, increase with age, which intern impact positively on the probability of the aged starting their own businesses. Another argument is that since self-employment offers greater ability to control the content and pace of the work, older people are more likely to opt for self-employment than the younger ones (Parker, 2009). The rationale on the negative impact of age on self-employment, on the other hand, hinges on the fact that since the elderly have greater risk aversion, their probability of choosing self-employment reduces with age (Parker, 2009).

The positive and negative impact of age on entrepreneurship means that the possibility of self-employment increases with age, however, the desire to start decrease with age. Therefore, age increases with self-employment rates to a certain level, after which further increase in age leads to lower self-employment rates (Levesque & Minniti, 2006; Stefanović & Stošić, 2012). For example, Stefanović and Stošić (2012) observed that the majority of self-employed in the Republic of Serbia (2004–2011) were between the 50 and 54 years categories. From the age groups from 15–19 up to the 50–54 years, self-employed increases with age. After the 50–54 age group, self-employment decreased. A survey by Kristiansen and Indarti (2004) among Indonesian and Norwegian students also found that age (also sex and educational level) was not a significant predictor of their intention to start agri-business after graduation.

### *Gender/Sex*

Although the number of women in self-employment is increasing throughout the world, they are still outnumbered by male entrepreneurs. According to Minniti, Arenius, and Langowitz (2005), women are less likely to be self-employed, especially in middle-income countries, with a ratio of 75%. It has been argued that self-efficacy is a factor that contributes to the attitudinal differences towards entrepreneurship among males and females. Individual's perceptions of their skills and abilities reflect in their self-efficacy or self-confidence (Wilson, Kickul, & Marlino, 2007). Bandura (1997) concluded that high self-efficacy enhances willingness to do a task that is expected of people. Females are noted to have lower self-efficacy in terms of problem solving and quantitative skills and money management (Marlino & Wilson, 2003). Minniti and Nardone (2007) buttressed this argument by asserting that women would be more willing to start their own businesses if they believe in themselves having the skills and abilities to achieve success. Perhaps, it is in light of this that most women have less

entrepreneurial intentions than their male counterparts (Kirkwood, 2009; Kourilsky & Walstad, 1998; Marlino & Wilson, 2003; Minniti & Nardone, 2007).

Women's risk-taking ability (Minniti & Nardone, 2007) is considered as another vital factor that explains differences in the entrepreneurial intentions between males and females. Being less risk tolerant is seen as a consequence of fear of failure (Arenius & Minniti, 2005). This has the potential to negatively influence entrepreneurial decisions. Women have been perceived to have less risk tolerance than males (Buttner & Rosen, 1988; Menzies & Tatroff, 2006) and that might give credence as to why males outnumber females in the entrepreneurial world. Roper and Scott (2009) found in their study of relationship between gender and perceived financial barriers among women that women were more likely to have a fear of financial barriers when starting a business. Wilson, Marlino, and Kickul (2004) concluded from their study that females' willingness to start their own businesses were more influenced by social and relational motivations such as being respected, helping others and providing jobs; however, in the case of their male counterparts, they were more motivated by the autonomous nature of entrepreneurship. Their study corroborate with the findings of Marlino and Wilson (2003) which suggests that most middle and high school girls perceived business as 'hard, complicated and risky', and thus were less enthused to start their own businesses.

Application of entrepreneurial intention models to compare students' attitudes towards entrepreneurship had also revealed strong desirability of males towards entrepreneurship compared to females (Veciana, Aponte, & Urbano, 2005); they found that males were more serious about creating new ventures. El Harbi, Anderson, and Mansour (2009) explored the entrepreneurial intentions of young males and females in Tunisia: entrepreneurial intentions were found to vary with gender and are grounded on traditional social norms. Rosa et al. (1997) reported among undergraduates in Sri Lanka that men were twice as likely to have agribusiness idea (males: 59% versus females: 28%); much more likely to find a career in one's own agribusiness very attractive (males: 40% vs. females: 29%); and much more likely to find self-employment in agribusiness to be the most preferable career option (males: 27% vs. female: 13%). A survey of 3,420 university students from about 10 countries showed that female students were less willing to start their own businesses after graduation compared to their male counterparts (Dabic, Daim, Bayraktaroglu, Novak, & Basic, 2012).

### *Place of Residency*

People from rural schools and students whose parents have agriculture as career and those whose parents lived in farms are more likely to accept a career in agriculture than their urban counterparts. Hassebrook (2003) reported that agricultural communities in the United States often have higher rates of self-employment than those in urban communities with the rural agricultural communities having two to three times self-employment rates than urban or metro communities. It stands to reason that undergraduates who are already living in rural communities or have lived there for a considerable number of years are more likely to inter into self-employment in agribusiness than those living in urban centres.

### *Parental Role Models*

Parental role model has been found to increase the likelihood that individuals become self-employed. Hence, growing up in an entrepreneurial family offers the opportunity to learn from the self-employed parent serving as a role model. This is based on the social cognitive theory and behavioural perspectives; hence, individuals tend to learn from others who are role models for them (Bandura, 1986; Carr & Sequeira, 2007; Dyer & Handler, 1994; Mancuso, 1974). Therefore, early exposure to parental role models in the family business influences children's attitude towards becoming self-employed themselves. Tarling, Jones, and Murphy (2016) reported that parental business role models had positive influence on younger family members from an early age helping these younger ones to become nascent entrepreneurs in later years.

A study on 461 alumni from 8 German universities also showed that parental (both paternal and maternal) role models increased the likelihood that family offspring become self-employed; hence both maternal and paternal role models have a significant direct influence on the offspring's decision to become self-employed. The effect of paternal role models was found to be contingent on the openness of those individuals whereas the effect of maternal role models did not (Chlosta, Patzelt, Klein, & Dormann, 2012). Rosa et al. (1997) reported that father's occupation and education showed significant relationship with students' willingness to start agribusiness after graduation. Students whose fathers are self-employed in agribusiness.

These imply that undergraduates who have stayed with parents who were into self-employment agribusiness are more likely to start agribusiness after graduation because of the influence they received by being mentored by their parents.

*Parental Educational Level*

Parental educational level has also been found to have effects on the individuals' career choice in future mediated by age. Results from the Columbia County Longitudinal Study, which began in 1960 with all 856 third graders in a semi-rural county in New York State who were later re-interviewed along with their parents; at ages 19, 30 and 48 showed that Parents' educational level when the child was younger (8 years old) significantly predicted educational and occupational success for the child 40 years later (Dubow, Boxer, & Huesmann, 2009).

*Attitudes Towards and Nature of Agribusiness*

The capacity to innovate in agribusiness environment has been found to be affected by the dynamics of the business environments with rapid technological changes (May, Tate, & Worrall, 2011). The agribusiness environment, according to May et al. (2011), is mostly affected by the results of the policies by government and other major stakeholders in the agribusiness sector.

Okorley et al. (2006) identified major perceived risks that deter tertiary students in Ghana from entering into agribusiness as a self-employment venture after graduation. These included (i) availability and accessibility of market for agro-products and services, (ii) availability and accessible of transportation facilities for farming and agribusiness, (iii) availability and affordability of agrochemicals for farming, (iv) opportunity for post-harvest processing and storage for agro produce, (v) fair and guaranteed prices for agro-products and services, (vi) lack of insurance policies for farming and agribusiness, (vii) unfavourable land tenure system in Ghana among others.

## **METHODOLOGY**

The population for the study was undergraduates from Bachelor of Science (Agriculture) at University of Cape Coast, Ghana. The University of Cape Coast is one of the seven main public Universities in Ghana. It was established in 1962 to train skilled manpower for the Ghanaian educational sector. Due to the increased demand for human resources for the other sectors of the economy, the University has developed programmes in the

humanities, social sciences, agriculture, physical science, biological science among others to serve the various sectors of the Ghanaian economy. The University runs both undergraduate and graduates programmes in all the areas mentioned on full-time and part-time bases. The University of Cape Coast has a student population of over 35,922 as of 2012. The School of Agriculture has a B.Sc., Agriculture with entrepreneurship programme. The entrepreneurship course is conducted after three years of classroom instruction on campus, and designed to teach students in valuable agribusiness, experienced-based learning activities that portray the total setting surrounding agribusiness under supervision by lecturers and other stakeholders. The main aim of the course was to improve students' capacity in identifying business opportunities and starting up successful agribusiness enterprises after graduation.

The total sample of 190 B.Sc. Agriculture undergraduate (four-year programme) with entrepreneurship programme was taken out of 370 students in the third year ( $N=183$ ) and fourth/final year ( $N=187$ ). The study focused on third year and fourth (final year) undergraduates B.Sc., Agriculture students so as to ensure that selected undergraduates had gone through adequate courses in agriculture (animal, crop, soil sciences and agricultural engineering) and related courses (entrepreneurship, agricultural Economics and Extension, Marketing, field trips and internship programmes). Proportionate Stratified random sample was therefore used to select undergraduate to reflect their numbers in the third year ( $N=183$ ,  $n=94$ ) and fourth year ( $N=187$ ,  $n=96$ ), respectively. Moreover, the sample size determination table of [Krejcie and Morgan \(1970\)](#) was also considered.

A content validated questionnaire was used as the instrument for data collection. The questionnaire focused on the background characteristics of the students, the factors that affect their willingness to enter into agribusiness and their perceived nature and attitudes towards agribusiness and agriculture education in Ghana. Students' perceived nature of agribusiness and agriculture education was measured using a 5-point Likert-type scale ranging from 1 to 5 with 1 and 5 indicating students strongly disagreeing and strongly agreeing, respectively, with those statements. Cronbach's alpha reliability coefficient was used to determine the internal consistency of 12 Likert-type items measuring students' perceived nature of agribusiness. This yielded Cronbach's alpha 0.848 indicating that the instrument was reliable ([Pallant, 2010](#)). The 190 questionnaires were distributed to the respondents and 165 out of the 190 targeted samples responded indicating 87% response rate. With the help of Statistical Product and Services

Solutions version 16, frequencies, percentages, means, standard deviations, correlation coefficients and regression (binary logistic) were used for data analysis.

### *The Logit Model Specification*

The odds of an event occurring (i.e. an undergraduate student willing to start his own agribusiness after graduation) is the probability that the event occurred divided by the probability that the event did not occur (i.e. not willing to start his own agribusiness after graduation) (Acquah, 2013). Following Greene (2008), we explain that the probability  $y=1$  occurs varies according to the values of the explanatory variables and specified the relationship as below:

$$\log \left[ \frac{p(y=1)}{1-p(y=1)} \right] = \text{logit}[p(y=1)] = \beta_0 + \beta_j X \quad (1)$$

From Eq. (1),  $p(y=1)$  is given by  $p(y=1) = \frac{e^{\beta_0 + \beta_j X}}{1 + e^{\beta_0 + \beta_j X}}$  where  $\ln(p/(1-p))$  is the logit transform. This value is the log of the odds of the outcome (since  $\text{odds} = p/(1-p)$ ).  $\beta_0$  and  $\beta_j$  are parameters to be estimated and  $X_j$  is a vector of explanatory variables with index  $j$ .

Furthermore,  $\frac{p}{1-p} = e^{(\beta_0 + \sum \beta_j X_j)}$ , where  $p$  is the probability that  $y=1$  and  $1-p$  is the probability that  $y=0$ . and  $e$  is the exponential constant.

In the following empirical model specified equation,  $y=1$  defines undergraduates willingness to be self-employed after graduation or start own business;  $y=0$  define otherwise. The  $X$ 's define independent variables that explain the probability that undergraduates will be willing to start entrepreneurial business in agribusiness enterprise.

$$\text{logit}[p(y_i=1)] = \beta_{0i} + \beta_{i1-12} X_{i1-12} + \beta_{i13} X_{i13} + \beta_{i14} X_{i14} + \beta_{i15} X_{i15} + \beta_{i16} X_{i16} \\ + \beta_{i17} X_{i17} + \beta_{i18} X_{i18} + \beta_{i19} X_{i19} + \beta_{i20} \alpha X_{i20} + \varepsilon_i$$

The *dependent variable* was undergraduates willingness to be self-employed after graduation or start own business. This was measured as dummy with 1 and 0 indicating willing and not willing to start agribusiness, respectively.

*The independent variables* (determinants) were undergraduate perceived nature of agribusiness and personal/background characteristics. There were 12 items ( $X_1 - X_{12}$ ) on the perceived nature of agribusiness in Ghana (see Table 4) measured on the Likert-type scale ranging from 1 to 5, with 1 indicating strongly disagree on the statement/item and 5 indicating strongly agree on the item. These variables have been identified as critical constraint or factors that affect the agribusiness industry in Ghana (Okorley et al., 2006).

Eight personal characteristics of the undergraduates ( $X_{13} - X_{20}$ ) were used. These were:

$X_{13}$  = Sex of respondent (1 if male and 0 if otherwise)

$X_{14}$  = Level of respondents (1 if third year, and 2 if final (fourth) year)

$X_{15}$  = Age of students (years)

$X_{16}$  = Level of education of mother (in ordinal scale)

$X_{17}$  = Level of education of father (in ordinal scale)

$X_{18}$  = Undertake farming activities at home (1 if student undertake farming activities at Home, 0 if otherwise)

$X_{19}$  = Live in farming community (1 if live student live in farming community 0 if otherwise)

$X_{20}$  = Ever lived in a farming community before (1 if student ever lived in farming before and 0 if otherwise).

## RESULTS AND DISCUSSION

### *Personal Characteristics of Respondent*

From Table 1, the majority of the students (approximately 93%) aged between 20 and 30 years and few were (13%) females. This was in agreement with Vorkoh (1990) who stated that most university students are in their late teens to middle thirties, the most critical period for career decision-making. Shane (2008) reported that the highest rate of self-employment and business ownership is actually found among people between the ages of 45 and 64 years. Eighty-seven per cent of the respondents were males and a majority (58%) was in their final year.

**Table 1.** Personal Characteristics.

Age (Years)	<i>f</i>	%
Less than 20	1	0.6
20–25	115	69.7
26–30	38	23.0
Above 30	11	6.7
Total	165	100
Sex	<i>f</i>	%
Male	144	87.3
Female	21	12.7
Total	165	100
Level/year	<i>f</i>	%
300 (Third year)	69	41.8
400 (Final Year)	96	58.2
Total	165	100

Note:  $n = 165$ .

### *Other Personal Characteristics of Undergraduates*

Table 2 also shows other personal and background characteristics of respondents: parental education and respondents' encounter with farming and agribusiness activity at home or their places of residency. Table 2 revealed that the majority (53%) of respondents' parent (mother) have had secondary education and with a sizable percentage (31%) with tertiary education. The majority of respondents' fathers (60%) have had tertiary education whilst 34% had attained secondary education. Since the majority of the respondents (about 92%) lived with either parents and about 59% had lived with both parents before, it stands to reason that if their parents are into self-employment (especially in agribusiness), the likelihood of the majority of them being influenced to start own businesses would be high. This is because parental role models have been found to increase the likelihood that individuals become self-employed (Tarling et al., 2016).

A greater percentage (52%) of the respondents reported that they do not live in farming communities, however, 53% of the respondents undertake

**Table 2.** Other Personal Characteristics of Respondents.

Level of Education of Parents/Guidance	No Formal		Primary		Secondary		Tertiary	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Mother <i>n</i> (160)	15	9.4	12	7.8	84	53.1	49	31.0
Father <i>n</i> (156)	7	4.5	2	1.3	53	34	94	60
Guardian <i>n</i> (9)	–	–	1		4		4	
Activities of students	Yes				NO			
	<i>f</i>	%	<i>f</i>	%	<i>n</i>			
Student live in farming community	81	49.1	84	51.9	165			
Student undertake any farming activity at home	87	52.7	78	47.3	165			
Student ever lived in a farming community before	118	71.5	47	28.5	165			

Note: *n* = 165.

some form of farming activity at home and 72% have ever lived in a farming community before. Since the majority of the respondents had lived in farming community before and also had undertaken some form of agribusiness at home, it is expected that their encounter with the farming communities is expected to boost their morale in choosing a career in agribusiness. Hassebrook (2003) had reported that students from agricultural communities are more likely to take self-employment in agriculture than those in urban communities.

#### *Undergraduates' Willingness to Start Own Agribusiness after Graduation*

Table 3 shows respondents' willingness to start agribusiness after graduation. The majority (67%) of the respondents were willing to start own agribusiness after graduation. Shane (2008) observed that students who study non-business-related topics (example agriculture) are more likely to start own business than people majoring in other fields. Hence, students who study agriculture are more likely to start their own business than people majoring in business.

However, Bosompem et al. (2013) found less than half (49.4%) of the agricultural-related undergraduates who were willing to start own

**Table 3.** Willingness of Students to Start Agribusiness after Graduation.

Willingness	<i>f</i>	%	<i>f</i> Males	<i>f</i> Females
Willing	110	66.7	95 (86.4%)	15 (71.4%)
Not willing	55	33.3	49 (13.6%)	6 (28.6%)
Total	165	100	144 (100%)	21 (100)

Note: *n* = 165.

agribusiness after graduation. Also, Okorley et al. (2006) found out that most agricultural science students in tertiary institutions in Ghana were willing to be employed in NGOs, non-agricultural manufacturing industries and banks rather than going into agribusiness. These were similar to the findings of Ayanda et al. (2012) who reported in Nigeria that the majority of university agricultural students (72%) did not want to go into agribusiness. More than half (57%) preferred to work in banks and international organisations. Pittaway and Cope (2007) noted that entrepreneurship programmes developed by universities, to some extent, help to raise awareness of self-employed opportunities available for students, however, there is little evidence that this can lead to the creation of new entrepreneurs.

Table 3 also revealed that more males (about 86%) than females (about 71%) were willing to start own business after graduation. The results agree with Rosa et al. (1997) who reported among undergraduates in Sri Lanka that men were likely to have agribusiness idea (males: 59% vs. females: 28%); much more likely to find a career in one's own agribusiness very attractive (males: 40% vs. females: 29%); and much more likely to find self-employment in agribusiness to be the most preferable career option (males: 27% vs. female: 13%) than females. Despite this, the results showed that the majority of the female undergraduates (71%) were willing to start their own agribusinesses after graduation and this indicates hope for female starting self-employment after graduation even though willingness to start own businesses does not necessarily translate to actual starting of businesses (Harding, 2007; Robertson & Wilkinson, 2005).

#### *Perceived Nature of Agribusiness in Ghana*

Table 4 shows undergraduate students' perceived nature of agribusiness environment in Ghana. The results of the study revealed that undergraduate students' perceived nature of agribusiness environment that negatively

**Table 4.** Undergraduate Students' Perceived Nature of Agribusiness in Ghana.

Reasons for Willingness	Mean	SD
Market for agro-product is accessible	3.27	1.03
Market for agro-product is available	3.21	1.03
Means of inputs are affordable	3.10	1.05
Transportation facilities for agribusiness are accessible	2.81	1.08
Means of controlling pest and disease is affordable	2.80	1.04
It is easy to manage risk in agribusiness/farming	2.65	1.12
Land tenure arrangements are secure	2.65	1.08
Opportunity for post-harvest processing is affordable	2.53	1.06
Land tenure arrangements are favourable	2.52	1.08
There is insurance in farming/agribusiness	2.48	1.23
Prices for agro-products are stable	2.38	1.14
Market competition of agro-products with imported product is favourable	2.32	1.12

*Note:*  $n = 165$ . Scale: 1 = strongly disagree, 2 = disagree, 3 = moderately agree, 4 = agree, 5 = strongly agree.

affect their willingness to enter into agribusiness as a self-employment venture were: market competition of agro-products with imported products (mean = 2.32 SD = 1.12), unstable prices of agro-products (mean = 2.38, SD = 1.14), absence of insurance in agribusiness (Mean = 2.48, SD = 1.23) and unfavourable land tenure arrangement (Mean = 2.52, SD = 1.08). On the other hand, accessibility of market for agro-products (mean = 3.27, SD = 1.03), availability of agro-products in the market (mean = 3.21, SD = 1.03) and affordability of inputs (mean = 3.10, SD = 1.05) were fairly existing and therefore can positively affect students' willingness to enter into agribusiness as a self-employment venture.

Intentions to start a business have been found to relate to attitudes towards entrepreneurship in terms of perceived desirability of entrepreneurship as a career option and perceived feasibility in starting up a business (Nabi & Holden, 2008; Shapero & Sokols, 1982). It stands to reason that the positive environmental factors that affect students' perceived feasibility in starting businesses (e.g. accessibility and availability of market for agro-products) would positively affect their willingness to start their own businesses. Conversely, other factors such as higher market competition of agro-products with imported products, unstable prices of agro-products,

absence of insurance in agribusiness and unfavourable land tenure arrangement is expected to negatively affect their intention to start own business after graduation.

For example, lack of agricultural insurance policy may affect students' willingness to start agribusiness since insurance is an important mechanism to effectively address the risk to output and income resulting from various natural and man-made events. [Bosompem et al. \(2013\)](#) and [Okorley et al. \(2006\)](#) had identified the risk involved in starting and maintaining own businesses as one factor deterring most tertiary students in Ghana to start agribusinesses after graduation.

*Relationship Between Students Willingness to Start Own Business After Graduation and Personal/Background Characteristics and Perceived Nature of Agribusiness in Ghana*

**Table 5** also shows the relationship between respondents' willingness to enter agribusiness, and personal characteristics/perceived nature of agribusiness in Ghana.

It was realized that there were negative significant relationships between students' willingness to enter agribusiness and the following personal characteristics: level of education of mother ( $-.217$ ), level of education of guardians other than parents ( $-.677$ ), student who lived in farming communities ( $-.208$ ) and students who undertake farming activities at home ( $-.170$ ). These imply that the higher the level of education of mother or guardian (other than parents), the less likelihood she will allow her wards to start their own agribusiness after graduation. Additionally, the longer students lived in farming communities and undertake farming activities at home the less likelihood they will start agribusiness after graduation. These results are quite surprising since the aforesaid factors have been found to have positive relationships with students' willingness to start own businesses. For example, students living in farming communities, parental business role models ([Tarling et al., 2016](#)) and educational level of parents ([Dubow et al., 2009](#)) have been found to have a positive influence on younger family members to become self-employed.

**Table 5** showed no significant relationships between willingness to start agribusiness after graduation and the sex ( $-0.028$ ) and age of respondents ( $0.023$ ). The results on gender, even though not significant, show that women are less likely to start own business than men. [Reynolds and White \(1997\)](#) reported that men are almost twice likely to established own

**Table 5.** Relationship between Willingness to Start Agribusiness, and Personal Characteristics/Perceived Nature of Agribusiness in Ghana.

Willingness to Enter Agribusiness × Personal Characteristics	CC	Willingness to Enter Agribusiness × Perceived nature of Agribusiness in Ghana	CC
Level of education of mother	-.217**	Market for agro-product is accessible	.221**
Level of education of guardian	-.677*	Market for agro-product is available	.197*
Level of education of father	.080	Means of inputs are affordable	-.070
Student undertake any farming activity at home	-.170*	Transportation facilities for agribusiness are accessible	.175*
Student live in farming community	-.208**	Means of controlling pest and disease is affordable	.001
Student ever lived in a farming community before	.040	It is easy to manage risk in agribusiness/farming	-.006
Sex of respondent	-.028	Land tenure arrangements are secure	.037
Level of respondent	.032	Opportunity for post-harvest processing is affordable	.033
Age of student	.023	Land tenure arrangements are favourable	-.013
		There is insurance in farming/agribusiness	.057
		Prices for agro-products are stable	.040
		Market competition of agro-products with imported product is favourable	.025

Note:  $n = 165$ ; CC, Correlation Coefficient.

\* $p < 0.05$ .

\*\* $p < 0.01$ .

business as women. [Shane \(2008\)](#) asserted that women are less likely to initiate the process of starting their own businesses because they are less interested in being entrepreneurs. A survey of 3,420 university students from about 10 countries also showed that female students were less willing to start their own businesses after graduation compared to their male counterparts ([Dabic et al., 2012](#)).

There were positive and significant relationships between undergraduate students' willingness to start their agribusinesses after graduation and the following: markets for agro-products are accessible (.221), markets for agro-products are available (.197) and transportation facilities for agribusiness are accessible (.175). These also imply that availability and accessibility

of market for agro-products, as well as, accessibility to road and transportation facilities positively affect undergraduates' willingness to start their own agribusiness ventures after graduation.

*Predictors of Undergraduates' Willingness to Be Self-Employed in Agribusiness After Graduation*

Collinearity diagnostics was performed and tolerance (Pallant, 2010) was found not to be a problem (see appendix). The result of the analysis in Table 6 indicates that Cox Snell  $R^2$  and Nagelkerke  $R^2$  (pseudo- $R$  squares) were 0.273 and 0.349, respectively. These imply that between 27% and 35% of the variance in the willingness of undergraduate to start own agribusiness after graduation is being explained by independent variables. The following variables: (1) market for agro-products is accessible; (2) transportation facilities for agribusiness are accessible, (3) level of education of mother and (4) living in a farming community were best predictors for undergraduates' willingness to start agribusiness as a self-employment venture after graduation. The  $\chi^2$  test of the regression model was significant at alpha level 0.01 which indicates that the variables in the model have significant composite effect in explaining the willingness of students to start their own agribusinesses after graduation.

The test of beta coefficients of the predicting variables in the model shows that 'market for agro-product accessibility' and 'accessibility of transportation facilities for agribusiness' made positive significant contribution (i.e. Wald = 9.601 with  $p$ -value = 0.002\*\* and Wald = 4.898 with  $p$ -value = .027\*, respectively) in explaining students' willingness to do self-employed agribusiness. In the table, the odd ratios of 2.037 and 1.668, respectively, for the two significant variables (i.e. 'market for agro-product accessible' and 'transportation facilities for agribusiness are accessible') imply that an availability of accessible market for agro-product and transport facility is about two times more likely to positively influence an agricultural graduate decision to start up self-employed businesses in agricultural sector in Ghana.

Good transportation system farmers to work harder in the rural areas for increased production, since it adds value to their products, reduce spoilage and wastage. It helps them to move inputs and workers to farm as well as products to markets and agro-allied industry (Ajiboye & Afolayan, 2009). This will likely results in farmers getting better prices for produce than to sell at the farm gate.

**Table 6.** Logistic Regression Showing Predictors of Undergraduate Willingness to Enter into Agribusiness after Graduation.

Explanatory Variables		$\beta$	Wald	Sig	Odd Ratios
		Coefficient			
(X <sub>1</sub> – X <sub>12</sub> – Nature of Agribusiness)					
(X <sub>13</sub> – X <sub>20</sub> – Personal Characteristics)					
	Constant	-.735	.741	.389	.479
X <sub>1</sub>	Market for agro-product is accessible	.711	9.601	.002**	2.037
X <sub>2</sub>	Market for agro-product is available	.016	.006	.937	1.016
X <sub>3</sub>	Means of inputs are affordable	-.366	2.279	.131	.693
X <sub>4</sub>	Transportation facilities for agribusiness are accessible	.512	4.898	.027*	1.668
X <sub>5</sub>	Means of controlling pest and disease is affordable	-.121	.210	.647	.886
X <sub>6</sub>	It is easy to manage risk in agribusiness/farming	-.026	.015	.902	.975
X <sub>7</sub>	Land tenure arrangements are secure	-.118	.337	.561	.889
X <sub>8</sub>	Opportunity for post-harvest processing is affordable	-.132	.296	.586	.876
X <sub>9</sub>	Land tenure arrangements are affordable	.187	.545	.460	1.206
X <sub>10</sub>	There is insurance in farming/agribusiness	.001	.000	.996	1.001
X <sub>11</sub>	Prices for agro-products are stable	-.383	3.016	.082	.682
X <sub>12</sub>	Market competition of agro-products with imported product is favourable	.001	.000	.996	1.001
X <sub>13</sub>	Sex of respondent	-.320	.377	.539	.726
X <sub>14</sub>	Level of respondent	.028	.007	.934	1.028
X <sub>15</sub>	Age of student	.030	.278	.598	1.030
X <sub>16</sub>	Level of education of mother	-.322	4.880	.027*	.725
X <sub>17</sub>	Level of education of father	.093	.389	.533	1.097
X <sub>18</sub>	Undertake any farming activity at home	.501	1.969	.161	1.651
X <sub>19</sub>	Live in a farming community	-.304	4.462	.047*	.756
X <sub>20</sub>	Ever lived in a farming community before	.788	3.027	.082	2.199
<b>Model summary</b>					
	Cox Snell R <sup>2</sup>	0.273			
	Nagelkerke R <sup>2</sup>	0.349			
	$\chi^2$	29.558**			
	Sig. (p-value)	0.014			

Note: n = 165.

\*\* \*Significant at 0.01 and 0.05 alpha levels, respectively.

The results also show that living in farming community and level of education of mother negatively and significantly (Wald = 4.462 with  $p$ -value = .047\* and Wald = 4.88 with  $p$ -value = .027, respectively) affects undergraduates' decision to do self-employed agribusinesses.

The negative relationship of 'student living in farming community' is quite surprising since such students are expected to be exposed to more prospects and opportunities in doing agribusinesses especially beyond the farm gate and thus take comparative advantage venture into self-employed agribusiness enterprises. A tentative reason for the negative attitude may be that students who come from farming communities do not see much difference in farming methods taught at school and what they use at home, hence, do not attach great importance to agriculture programmes the study at university as reported by Riedmiller (1994). On the level of education of mother, if the assertions of Shane (2008) and Reynolds and White (1997) are true that women are less likely to establish their own businesses as men, then it is not surprising that they will discourage their wards to start own business but encourage them to work for others, especially if they are educated mothers. The results on level of education of mothers having negative impact on undergraduates' willingness to start own business after graduation is not consistent with available literature. Parental educational level has been found to have positive effect on the individuals' career choice in future (Dubow et al., 2009). However, since the positive effect of educational level is mediated by age (when the child was younger eight years old) (Dubow et al., 2009), it stands to reason that there is a possibility that most of the respondents did not stay with their parents at their earlier childhood or did not stay longer with parents, especially their mothers.

The regression analysis also showed that age, sex and level of education of students were not significant predictors of the students' willingness to start their own agribusiness after graduation (see Table 6). The results agree with a survey by Kristiansen and Indarti (2004) among Indonesian and Norwegian students. They reported that age, sex and educational level were not significant predictors of the students' intentions to start their own agribusiness after graduation.

## CONCLUSIONS

The results of the study showed that majority of the students were males and have age between 20 and 30 years. We find most of the undergraduate

students are willing to enter into agribusinesses after graduation. Students perceived that some of the hindrances to enter into agribusiness are market competition of agro-products with imported products, unstable prices of agro-products, absence of insurance policy for agribusinesses and unfavourable land tenure arrangement in Ghana. We find that undergraduate students' willingness to enter agribusiness as a self-employment venture negatively correlates with level of education of mother, level of education of guardian other than parents, students who live in farming communities and students who undertake farming activities at home. We further find positive and significant relationships between students' willingness to enter into agribusiness and availability of market for agro-products, accessibility of market for agro-product as well as accessibility of transportation facilities for agribusiness. The regression results also proved that level of education of mother, student living in farming communities, accessibility of transportation facilities for agribusinesses and accessibility of market for agro-products were the best predictors of undergraduate agricultural students' willingness to enter into agribusiness as a self-employment venture after graduation. Age, sex and educational level of students are not significant predictors of students' willingness to start self-employment venture in agribusiness after graduation.

## **POLICY IMPLICATIONS**

1. To encourage undergraduate students to enter agribusiness as self-employment after graduation, the study recommends the development of comprehensive and sustainable long-term policies by government and other stakeholders to inspire and attract the youth and graduates into agribusiness.
2. There should also be creation of a conducive business environment to minimise risk and constraints associated with agribusiness in Ghana. These should include the development and construction of road and transportation facilities by government to distribute both agro-inputs and final agro-products to agribusiness and consumers, respectively.
3. There should also be a comprehensive agricultural insurance policy by the government to minimise the perceived risks associated with agribusiness in Ghana so that it will attract graduates into agribusiness.
4. A policy combine with both government and private initiative towards mechanisation of farms and agro-processing could encourage students

especially from farming communities to change perceptions and their willingness to enter into agribusiness.

5. Further research should be conducted to trace the evidence of graduates starting their own businesses after graduation. Other study should include business and students who are not offering agriculture and related studies in the universities.

## REFERENCES

- Acheampong, F. O. (2004). *The impact of intermediate means of transports (IMTs) on agricultural production and marketing in coastal Ghana: Evidence from a pilot IMT action research project*. Doctoral dissertation, Durham University.
- Acquah, D. H. (2013). *An introduction to quantitative methods*. German: Shaker Verlag Aachen.
- Ahmed, I., Nawaz, M. M., Ahmad, Z., Shaukat, M. Z., Usman, A., Rehman, W. U., ... Ahmed, N. (2010). Determinants of students' entrepreneurial career intentions: Evidence from business graduates. *European Journal of Social Sciences*, 15(2), 14–22.
- Ajiboye, A. O., & Afolayan, O. (2009). The impact of transportation on agricultural production in a developing country: A case of kolanut production in Nigeria. *International Journal of Agricultural Economics and Rural Development*, 2(2), 49–57.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Arenius, P., & Minniti, M. (2005). Perceptual variables and nascent entrepreneurship. *Small Business Economics*, 24(3), 233–247.
- Audretsch, D. B., Max, K., & Pawan, T. J. (2009). Introduction: Entrepreneurship and innovation in Germany and India. In *sustaining. entrepreneurship and economic growth* (pp. 3–6). New York, NY: Springer.
- Ayanda, I. F., Olooto, F., Motunrayo, A., Abolaji, G. T., Yusuf, O. J., & Subair, S. K. (2012). Perception of Kwara state university agricultural students on farming as means of future livelihood. *International Journal of AgriScience*, 2(11), 1053–1061.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W.H. Freeman Publishers.
- Baumol, W. J., Litan, R. E., & Schramm, C. J. (2007). Sustaining entrepreneurial capitalism. *Capitalism and Society*, 2(2), 1–36.
- Blanchflower, D. (2004). Self-employment: More may not be better. *Swedish Economic Policy Review*. working paper No. w10286.
- Bosompem, M., Annor-Frempong, F., & Achiaa, Y. (2013). Perceived entrepreneurial competencies of undergraduates and self-employment creation after graduation: Implications for youth policy in Ghana. *International Journal of Business and Management Studies*, 2(3), 355–365. ISSN: 2158-1479: Universitypublications.Net.
- Bosompem, M., Kwarteng, J. A., & Ntifo-Siaw, E. (2011). Towards the implementation of precision agriculture in cocoa production in Ghana: Evidence from the cocoa high

- technology programme in the eastern region of Ghana. *Journal of Agricultural Research and Development*, 10(1), 11–28.
- Boyd, N. G., & Vozikis, G. S. (1994). The influence of self-efficacy on the development of entrepreneurial intentions and actions. *Entrepreneurship Theory and Practice*, 18, 63–77.
- Buttner, E. H., & Rosen, B. (1988). Bank loan officers' perceptions of the characteristics of men, women, and successful entrepreneurs. *Journal of Business Venturing*, 3(3), 249–258.
- Byerlee, D., Garcia, A., Giertz, A., Palmade, V., & Gurcanlar, T. (2013). *Growing Africa: Unlocking the potential of agribusiness*. Washington, DC: The World Bank.
- Carr, J. C., & Sequeira, J. M. (2007). Prior family business exposure as intergenerational influence and entrepreneurial intent: A theory of planned behavior approach. *Journal of Business Research*, 60(10), 1090–1098.
- Chlosta, S., Patzelt, H., Klein, S. B., & Dormann, C. (2012). Parental role models and the decision to become self-employed: The moderating effect of personality. *Small Business Economics*, 38(1), 121–138.
- Dabic, M., Daim, T., Bayraktaroglu, E., Novak, I., & Basic, M. (2012). Exploring gender differences in attitudes of university students towards entrepreneurship: An international survey. *International Journal of Gender and Entrepreneurship*, 4(3), 316–336.
- Dankwa, J. B. (2002). *Factors affecting the adoption levels of cocoa technologies in the Ashanti Region of Ghana*. Unpublished Master's Thesis. Department of Agricultural Economics and Extension University of Cape Coast, Cape Coast, Ghana.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- Davis, J. H., & Goldberg, R. (1957). *A concept of agribusiness. Division of research. Graduate School ul'Business* (Vol. 195), Boston, MA: Harvard University.
- Dubow, E. F., Boxer, P., & Huesmann, L. R. (2009). Long-term effects of parents' education on children's educational and occupational success: Mediation by family interactions, child aggression, and teenage aspirations. *Merrill-Palmer Quarterly (Wayne State University Press)*, 55(3), 224–249.
- Dyer, Jr, W. G., & Handler, W. (1994). Entrepreneurship and family business: Exploring the connections. *Entrepreneurship Theory and Practice*, 19(1), 71–84.
- El Harbi, S., Anderson, A., & Mansour, N. (2009). The attractiveness of entrepreneurship for females and males in a developing Arab Muslim country; entrepreneurial intentions in Tunisia. *International Business Research*, 2(3), 47–53.
- Gautam, B. (2007). *Managing Entrepreneurship development*. New Delhi: Cerber Tech Publications.
- Ghana Economy (2013). *CIA world Factbook and other*. Retrieved from [http://www.theodora.com/wfbcurrent/ghana/ghana\\_economy.html](http://www.theodora.com/wfbcurrent/ghana/ghana_economy.html)
- Greene, W. H. (2008). *Econometric analysis* (6th ed.). Upper Saddle River, NJ: Prentice-Hall.
- Godin, K., Clemens, J., & Veldhuis, N. (2008). *Measuring entrepreneurship: Conceptual frameworks and empirical indicators*. Canada: Fraser Institute.
- Harding, R. (2007). *Graduate Entrepreneurship in the UK: Summary Report from GEM UK Data*. National Council for Graduate Entrepreneurship – NCGE, Birmingham.
- Hassebrook, C. (2003). Strategies to revitalize rural America. A compilation of articles from the Center for Rural Affairs Newsletter (pp. 1–3).
- King, R. P., Boehlje, M., Cook, M. L., & Sonka, S. T. (2010). Agribusiness economics and management. *American Journal of Agricultural Economics*, 92(2), 554–570.

- Kirkwood, J. (2009). Is a lack of self-confidence hindering women entrepreneurs? *International Journal of Gender and Entrepreneurship*, 1(2), 118–133.
- Kourilsky, M. L., & Walstad, W. B. (1998). Entrepreneurship and female youth: Knowledge, attitudes, gender differences, and educational practices. *Journal of Business Venturing*, 13(1), 77–88.
- Krejcie, R. V., & Morgan, D. W. (1970). Table for determining sample size from a given population. *Educational and Psychological Measurement*, 30(3), 607–610.
- Kristiansen, S., & Indarti, N. (2004). Entrepreneurial among Indonesian and Norwegian students. *Journal of Enterprising Culture*, 12(1), 55–78.
- La-Anyane, S. (1985). *Economics of agricultural development in tropical Africa*. London: Wiley.
- Le Brasseur, R., Blanco, H., & Dodge, J. (2002). Competencies of CEOs in technology-oriented SMEs an exploratory study of skills for survival & initial growth. *Journal of CCSBE, School of Commerce and Administration, Laurentian University*, 12, 26–32.
- Levesque, M., & Minniti, M. (2006). The effect of aging on entrepreneurial behavior. *Journal of Business Venturing*, 21(2), 177–194.
- Lundstrom, A., & Stevenson, L. A. 2005. Entrepreneurship policy: Theory and practice. In *International studies in entrepreneurship* (pp. 42–54). New York, NY: Springer Science and Business Media Inc.
- Mancuso, J. R. (1974). What it takes to be an entrepreneur: A questionnaire approach. *Journal of Small Business Management (Pre-1986)*, 12(4), 16.
- Marlino, D. L., & Wilson, F. (2003). *Teen girls on business: Are they being empowered?* Report, Simmons School of Management and the Committee of 200, Boston, MA.
- May, D. E., Tate, G. J., & Worrall, L. (2011). Understanding innovation in a dynamic agricultural business environment: A multivariate approach. *International Journal of Agricultural Management*, 1(1), 7–15.
- McClelland, D. (1961). *Achieving society*. Princeton, NJ: Van Nostran Co.
- Menzies, T. V., & Tatroff, H. (2006). The propensity of male vs. female students to take courses and degree concentrations in Entrepreneurship. *Journal of Small Business & Enterprise*, 19(2), 203–223.
- Minniti, M., Arenius, P., & Langowitz, N. (2005). *Global entrepreneurship monitor: 2004 report on women and entrepreneurship*. Centre for Women's Leadership at Babson College, Babson Park, MA.
- Minniti, M., & Nardone, C. (2007). Being in someone else's shoes: The role of gender in nascent Entrepreneurship. *Small Business Economics*, 28(2–3), 223–238.
- Ministry of Youth and Sports (2010). *National youth policy of Ghana. Towards an empowered youth, impacting positively on national development*.
- Nabi, G., & Holden, R. (2008). Graduate entrepreneurship: Intentions, education and training. *Education + Training*, 50(7), 545–551.
- Nsawah-Nuamah, N. N., & Amankrah, J. Y. (2003). *Report on a survey of unemployed and underemployed persons in Ghana, 2001: Ghana Statistical Service*.
- Okorley, E. L., Kwarteng, J. A., & Owens, M. (2006). Determinants of propensity of tertiary agricultural students in Ghana to enter agribusiness as a self-employment venture Ghana. *Journal of Agricultural Science*, 39(1), 41–50.
- Ortsin, K. A. (2012). *Ghana's newest entrepreneurial wave: A catalyst for private sector development and job creation?* Paper Presented At the 3rd Annual Conference on Regional Integration in Africa at Abidjan, July 4–5, 2012.

- Pallant, J. (2010). *SPSS survival manual: Step-by-step guide to data analysis using SPSS for windows (16)*. Sydney, Australia: Allan and Unwin.
- Parker, S. C. (2004). *The economics of self-employment and entrepreneurship* (pp. 113–117). New York: Cambridge University Press.
- Pittaway, L., & Cope, J. (2007). Entrepreneurship education a systematic review of the evidence. *International Small Business Journal*, 25(5), 479–510.
- Reynolds, P. D., & White, S. B. (1997). *The entrepreneurial process: Economic growth, men, women, and minorities*. Westport, Connecticut: Praeger Pub Text.
- Riedmiller, S. (1994). Primary school agriculture - What can it realistically achieve? *Entwicklung Landlicher Raum*, (3), 9–12.
- Robertson, M., & Wilkinson, D. (2005). *Student entrepreneurial intentions survey 2004-05*. Centre for Graduate Entrepreneurship in Yorkshire, Leeds.
- Roper, S., & Scott, J. M. (2009). Perceived financial barriers and the start-up decision an econometric analysis of gender differences using GEM data. *International Small Business Journal*, 27(2), 149–171.
- Rosa, P., & Dawson, A. (2006). Gender and the commercialization of university science: Academic founders of spinout companies. *Entrepreneurship and Regional Development*, 18(4), 341–366.
- Rosa, P., Jayatilaka, W., & Kodithuwakku, S. (1997, June). A potential supply of university educated agribusiness entrepreneurs: A Sri Lankan perspective. *Proceedings of the 42nd ICSB conference* (pp. 21–24).
- Shapiro, A., & Sokol, L. (1982). The social dimensions of entrepreneurship. In *Encyclopedia of entrepreneurship* (pp. 72–90). Englewood Cliffs, NJ: Prentice-Hall.
- Shane, S. A. (2008). *The illusions of entrepreneurship: The costly myths that entrepreneurs, investors, and policy makers live by*. New Haven, CT: Yale University Press.
- Shaver, K. G., & Scott, L. R. (1991). Person, process, choice: The psychology of new venture creation. *Entrepreneurship Theory and Practice*, 16(2), 23–45.
- Stefanović, S., & Stošić, D. (2012). Age and Education as a determinant of entrepreneurship. *FACTA UNIVERSITATIS-Economics and Organization*, 9(3), 327–339.
- Tarling, C., Jones, P., & Murphy, L. (2016). Influence of early exposure to family business experience on developing entrepreneurs. *Education + Training*, 58(7/8), 733–750
- Veciana, J. M., Aponte, M., & Urbano, D. (2005). University students' attitudes towards entrepreneurship: A two countries comparison. *The International Entrepreneurship and Management Journal*, 1(2), 65–182.
- Vorkeh, E. K. (1990). *Careers guide for Africa*. Worcester: Square One Publications.
- Wärneryd, K. E. (1988). The psychology of innovative entrepreneurship. In *Handbook of economic psychology* (pp. 404–447). Aachen, Dordrecht: Springer.
- Wilson, F., Marlino, D., & Kickul, J. (2004). Our entrepreneurial future: Examining the diverse attitudes and motivations of teens across gender and ethnic identity. *Journal of Developmental Entrepreneurship*, 9(3), 177–197.
- Wilson, F., Kickul, J., & Marlino, D. (2007). Gender, entrepreneurial self-efficacy, and entrepreneurial career intentions: Implications for entrepreneurship educational. *Entrepreneurship Theory and Practice*, 31(3), 387–406.

**APPENDIX: CHECK FOR COLLINEARITY**

Measure	Maximum	Minimum
Tolerance	0.690	0.394

*The Tolerance ( $X_k$ )* shows us how much the variance of the coefficient estimate is being inflated by multicollinearity. Tolerance ( $X_k$ ) close to 1 means there is little multicollinearity, whereas a value close to 0 suggests that multicollinearity may be a threat. The tolerance indicated that the study was not affected by multicollinearity (appendix [Pallant \(2010\)](#)).