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Journal of Global Entrepreneurship Research

Provided in Cooperation with:
Springer Nature

Suggested Citation: Wongnaa, Camillus Abawiera; Seyram, Anthony Zu Kwame (2014) : Factors influencing polytechnic students' decision to graduate as entrepreneurs, Journal of Global Entrepreneurship Research, ISSN 2251-7316, Springer, Heidelberg, Vol. 2, Iss. 1, pp. 1-13,
https://doi.org/10.1186/2251-7316-2-2

This Version is available at:
https://hdl.handle.net/10419/161747

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Wongnaa and Seyram *Journal of Global Entrepreneurship Research* 2014, **2**:2
http://www.journal-jger.com/content/2/1/2

Journal of Global Entrepreneurship Research
a SpringerOpen Journal

RESEARCH Open Access

Factors influencing polytechnic students' decision to graduate as entrepreneurs

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Abstract

The existence of supply–demand gaps in graduate output not only contributes to the problem of graduate unemployment but also undermines the efficiency of public investment in tertiary education, and therefore the issue needs to be addressed. Because of this, it is critical to focus on graduates and understand which factors affect their intentions to start-up a business in the future. This paper examines the factors that influence polytechnic students' decision to graduate as entrepreneurs. The study used primary data which was collected from 250 students randomly selected from the Kumasi polytechnic. It employed descriptive statistics and the probit model to analyse the factors influencing the decisions by polytechnic students to graduate as entrepreneurs. The results of this study show that personality factors (extraversion, neuroticism, agreeableness), support from family members and friends, occupation of parents, entrepreneurship education, gender and access to finance have significant positive effect on polytechnic students' decision to graduate as entrepreneurs while students care about public remarks on their decisions has a significant negative effect.

Keywords: Polytechnic students; Decision to; Entrepreneurs; Probit model

Background

Choo and Wong (2009) defined entrepreneurial intention as the search for information that can be used to help fulfill the goal of venture creation. They added that intention is the single best predictor of entrepreneurial behaviour. Intentionality is defined by Vasaleinen and Pihkala (2009) as a conscious state of mind that directs attention towards a specific objective. It is seen that behavioural intention results from attitudes and becomes an immediate determinant of behaviour (Pihie, 2009). Mazzarol et *al.* (1999) noted that starting a business is not an event, but a process which may take many years to evolve and come to fruition.

According to Gree and Thurnik (2003), entrepreneurship has been recognized as one of the tools that drive the economy of a country. Turker and Selcuk (2009) pointed out that entrepreneurial activities are not only the incubator of technological innovation, but they also provide employment opportunities and increase competitiveness. According to Maas and Herrington (2006), entrepreneurship is a significant component of the solution to a nation's development issues. Herrington et *al.* (2009) noted that given the failure of the formal and public sector to absorb the growing number of job seekers in a nation, increasing attention had focused on entrepreneurship and new firm creation and its potential for contributing to economic growth and job creation.

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According to Dhliwayo (2008), there are too many graduates for few graduate jobs. With a rapidly growing economy desperately in need of skilled labour, unemployment, ideally, among graduates is supposed to fall. However, this is not the case as unemployment has risen among young and better-educated people. Increased enrolment at tertiary institutions has put more graduates into the labour market. However, there has not been an increase in the rate at which graduates are employed. Unemployment has increased as the deepening economic recession has led to massive corporate downsizing. This is not good news for an average university or polytechnic graduate who finds it difficult to get a job. One of the ways to solve graduate unemployment is graduate entrepreneurship. Graduate entrepreneurship is a process taken by a graduate to start a business in terms of an individual career orientation (Rwigema and Venter, 2004). Studies on the entrepreneurial intention of graduates such as Turker and Selcuk (2009) and Ismail et *al.* (2009) have focused mainly on developed countries. Barbosa and Moraes (2004) argue that studies carried out in developing countries are also very important and may reach different conclusions from those carried out in developed countries. The existence of supply–demand gaps in graduate output not only contributes to the problem of graduate unemployment but also undermines the efficiency of public investment in tertiary education, and therefore the issue needs to be addressed (Boateng and Ofori, 2002). Though most tertiary institutions in Ghana now have modules in entrepreneurship as part of their course structure, the negative attitude of graduates towards self employment appears not to have changed and graduate self employment continues to decline while graduate unemployment keeps rising. Meanwhile the introduction of entrepreneurship courses in especially polytechnics in Ghana stems from efforts at reducing graduate unemployment in the country through making graduates see self employment as an alternative to wage employment. Factors other than entrepreneurship education may or may not promote graduate self employment. This paper therefore aims at quantifying the effects of the factors (entrepreneurship education inclusive) that influence polytechnic students' decision to graduate as entrepreneurs using Kumasi Polytechnic in Ghana as a case study.

Methods

Study area and data collection

The study was carried out in the Kumasi Polytechnic in Ghana. Kumasi Polytechnic was established in 1954 to provide high calibre skilled tertiary and middle level manpower with reference to manufacturing, commerce, science and technology and to act as a catalyst for technological development. It is a spectacularly beautiful institution which is located at the heart of the Garden City of West Africa, the capital city of the Ashanti Region of Ghana (Kumasi). It has within the period of its existence become an important centre for the training of people not only for Ghana but also for other African countries. The polytechnic is currently organised into the following faculties, schools and institutes: Faculty of Engineering, Faculty of Built and Natural Environment, Faculty of Medicine and Health Sciences, Faculty of Applied Sciences, Faculty of Creative Arts and Technology, Faculty of Business and Management Studies, Institute of Entrepreneurship and Enterprise Development, Institute of Distance and Continuing Education and School of Graduate Studies, Research and Innovation.

Both primary and secondary data were used. Primary data was mainly cross-sectional. It was collected from 250 Higher National Diploma (HND) students of the Polytechnic using well structured questionnaires. Students in the 2011/2012 academic year were considered. Stratified sampling and simple random sampling techniques were employed in the selection of respondents from the faculties with students. The polytechnic has a total student population of 8,445 with approximately 12% in the Faculty of Engineering, 7% in the Faculty of Built and Natural Resources, 6% in the Faculty of Applied Sciences, 61% in the Faculty of Business and Management Studies, 4% in the Faculty of Medicine and Health Sciences, 4% in the Faculty of Creative Arts and Technology and 6% in the Institute of Entrepreneurship and Enterprise Development (Rector's Report, 2013). These percentages constituted the proportions of the total sample size that were selected from the respective faculties. The names of students were collected from the various faculties. The questionnaires were completed by the students themselves. Finally, secondary data was obtained from the internet, academic journals and the libraries. Data was analysed using version 3.1 of the computer based Econometric Views software (E-Views).

Analytical framework

The student's decision to graduate as an entrepreneur is dichotomized, involving two mutually exclusive alternatives. The student either thinks of graduating as an entrepreneur or does not. Models for estimating such phenomena in which the dependent variable is binary have been propounded (Madala, 2005; Asante et *al.*, 2011). The framework for such analysis has its root in the threshold theory of decision making in which a reaction occurs only after the strength of a stimulus increases beyond the individual's reaction threshold (Hill and Kau, 1981). This implies that every individual when faced with a choice has a reaction threshold influenced by several factors (Madala, 2005; Asante et *al.*, 2011). This yields a binary dependent variable, y_i which takes on the values of zero (not graduating as an entrepreneur) and one (graduating as an entrepreneur). The probability (P_r) of observing a value of one is:

$$P_r\left(y_i = \frac{1}{x_i\beta_i}\right) = 1 - F\left(-x_i\beta_i\right)\cdot \tag{1}$$

where F is a cumulative distribution function. It is a continuous, strictly increasing function that takes a real value and returns a value which ranges from 0 to 1. y_i is the dependent variable (That is whether or not polytechnic students are willing to graduate as entrepreneurs), x_i is a vector of explanatory variables (Factors influencing polytechnic students' decision to graduate as entrepreneurs) and β_i are parameters. Then, it follows that the probability of observing a value of zero is:

$$P_r\left(y_i = \frac{0}{x_i\beta_i}\right) = F\left(-x_i\beta_i\right)\cdot \tag{2}$$

Given such a specification, we determine the parameters for estimating this model using the maximum likelihood estimation approach. The dependent variable is an unobserved latent variable that is linearly related to y_i by the equation:

$$y_i = \beta_i x_i + u_i\cdot \tag{3}$$

Where u_i is a random disturbance term. The observed dependent variable is determined by whether y_i exceeds a threshold value or otherwise:

$$y_i = \begin{cases} 1 \; if \; y_i^* > 0 \\ 0 \; if \; y_i^* \leq \; 0 \end{cases} \tag{4}$$

Where y_i^* is the threshold value for y_i and is assumed to be normally distributed. Common models for estimating such parameters include probit (standard normal), logit (logistic) and tobit (extreme value) (Madala, 2005; Asante et *al.*, 2011).

The model

The study adopted the probit model because of its ability to constrain the utility value of the decision to graduate as an entrepreneur variable to lie within 0 and 1, and its ability to resolve the problem of heteroscedasticity. The other advantages of the probit model include believable error term distribution as well as realistic probabilities. Following from Madala (2005) and Asante et *al.* (2011), the probit model adopted for the study is specified as:

$$\begin{aligned} P_i &= P\left(y_i^* < y_i\right) \\ P_i &= P\left(y_i^* < \beta_0 + \beta_i x_{ji}\right) = F(y_i) \\ P_i &= F(y_i) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{Zi} e \frac{s^2}{2} ds \end{aligned} \tag{5}$$

where P_i is the probability that an individual will make a certain choice (graduate as an entrepreneur or not); s is a random variable normally distributed with mean zero and unit variance; y_{i} is the dependent variable (decision to graduate as an entrepreneur or not); y_i^* is the threshold value of the dependent variable. To obtain an estimate of the index, Z_{i} , the inverse of the cumulative normal function is used:

$$y_i = F^{-1}(P_i) = \beta_0 + \beta_i x_i + \; u_i \cdot \tag{6}$$

The parameters β_0, β_1, β_2, β_3, … … .,β_∞ of the probit model do not provide direct information about the effect of the changes in the explanatory variables on the probability of a polytechnic student graduating as an entrepreneur. The relative effect of each explanatory variable on the likelihood that a polytechnic student will graduate as an entrepreneur (marginal effect) is given by:

$$\frac{\partial P_i}{\partial x_{ij}} = \beta_{ij} f(Z_i) \tag{7}$$

where

P_i is the mean dependent variable whose value is given in the probit results as:

$$f(Z_i) = F^{-1}(P_i) \tag{8}$$

$$Z_i = \beta_0 + \beta_1 \; \mathrm{X}_1 + \beta_2 \mathrm{X}_2 + \beta_3 \mathrm{X}_3 + \cdots\ldots\ldots + \beta_k \mathrm{X}_{\mathrm{k}} \tag{9}$$

$f\,(Z_i)$ = Density function of the standard normal variable and is given by:

$$f(Z_i) = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}Z^2} \cdot \tag{10}$$

The empirical model is specified as:

$$\begin{aligned} \mathrm{DTGE}_i = {} & \beta_0 + \beta_1\mathrm{SEX} + \beta_2\mathrm{PEEA} + \beta_3\mathrm{WSEC} + \beta_4\mathrm{COVI} + \beta_5\mathrm{AGE} \\ & + \beta_6\mathrm{SUFRF} + \beta_7\mathrm{ACTF} + \beta_8\mathrm{OCCUP} + \beta_9\mathrm{SCFPR} \\ & + \beta_{10}\mathrm{NEURO} + \beta_{11}\mathrm{EXTRA} + \beta_{12}\mathrm{OPEN} + \beta_{13}\mathrm{AGREA} \\ & + \beta_{14}\mathrm{CONSC} + u_i \end{aligned} \tag{11}$$

Where

DTGE= Decision to graduate as an entrepreneur, measured as a dummy (1 for decision to graduate as an entrepreneur and 0 otherwise). This is the dependent variable.

SEX= Sex of student, measured as a dummy (1 for male and 0 for female).

PEEA= Prior experience in entrepreneurial activities, measured as a dummy (1 for prior experience in entrepreneurial activities and 0 for otherwise).

WSEC= Whether or not students have entrepreneurship education, measured as a dummy (1 for students who have already taken an entrepreneurship course and 0 for those who are yet to take the course).

COVI= A student's conviction that starting and running one's own firm is a suitable employment alternative for him/her, measured as a dummy (1 for student's conviction that starting and running one's own firm is a suitable alternative for him/her and 0 otherwise).

AGE= Age of student, measured in years.

SUFRF= Support from family members and friends, measured as a dummy (1 for support from family and friends and 0 otherwise).

ACTF= Access to finance, measured as a dummy (1 for having access to finance and 0 otherwise).

OCCUP= Occupation of parent, measured as a dummy (1 for students whose parents are entrepreneurs and 0 otherwise).

SCFPR= Students care for public remarks, measured as a dummy (1 for students who care about the reaction of the public when they decide to go into business after school and 0 otherwise).

NEURO= Neuroticism, measured as a dummy (1 for emotionally stable individuals and 0 otherwise).

EXTRA= Extraversion, measured as a dummy (1 for an extrovert student and 0 otherwise).

OPEN= Openness, measured as a dummy (1 for an opened individual and 0 otherwise).

AGREA= Agreeableness, measured as a dummy (1 for agreeing with others and 0 otherwise).

CONSC= Conscientiousness, measured as a dummy (1 for individuals who are always highly motivated to accomplish a goal and 0 otherwise).

Results and discussion

Descriptive analysis

The results show that out of 250 students of Kumasi Polytechnic, only 36.8% have interest in graduating as entrepreneurs (Table 1). Similar study done by Gerald (2006) on Javanese students' intention to be entrepreneurs also found that out of 194 respondents, 30.4% stated their intention to be entrepreneurs. The implication is that few tertiary students are willing to graduate as entrepreneurs. Table 1 also shows that 68%

Table 1 Socioeconomic characteristics of Kumasi polytechnic students

Characteristic	Frequency	Percentage (%)
Decision to graduate as an entrepreneur		
Yes	92	36.8
No	158	63.2
Total	250	100.0
Sex		
Male	170	68.0
Female	80	32.0
Total	250	100.0
Prior Experience in Entrepreneurial activities		
Yes	88	35.2
No	162	64.8
Total	250	100.0
Taken an entrepreneurship Course		
Yes	91	36.4
No	159	63.6
Total	250	100.0
Student's conviction		
Yes	100	40.0
No	150	60.0
Total	250	100.0
Age		
≤20	72	28.8
21 – 30	152	60.8
≥30	26	10.4
Total	250	100.0
Occupation of parents		
Self employment	175	70.0
Wage employment	75	30.0
Total	250	100.0
Family and friends support		
Yes	115	46.0
No	135	54.0
Total	250	100.0
Access to finance		
Yes	109	43.6
No	141	56.4
Total	250	100.0
Students care for public remarks		
Yes	195	78.0
No	55	22.0
Total	250	100.0

Source: Field Survey data 2012.

Table 1 Socioeconomic characteristics of Kumasi polytechnic students *(Continued)*

Neuroticism		
Emotionally stable	130	52.0
Emotionally unstable	120	48.0
Total	250	100.0
Extraversion		
Extrovert students	145	58.0
Introvert students	105	42.0
Total	250	100.0
Openness		
Open	135	54.0
Not open	115	46.0
Total	250	100.0
Agreeableness		
Agrees	143	57.2
Disagrees	107	42.8
Total	250	100.0
Conscientiousness		
Motivated to accomplish	103	41.2
Weakly motivated	147	58.8
Total	250	100.0

Source: Field Survey data 2012.

of the sampled students of Kumasi Polytechnic are males and 32% are females. 35.2% of the students had prior experience in entrepreneurial activities while 64.8% do not have any such experience. Most applicants admitted into tertiary institutions are people who just completed their senior high school education. These could constitute the 64.8% of the respondents with no experience in entrepreneurial activities. Such students did not have enough time to acquire any work experience, let alone entrepreneurial activities. The 35.2% of students with prior experience in entrepreneurial activities could represent mature students and such students might have worked as entrepreneurs before coming to the polytechnic. It is also clear from Table 1 that 36.4% of the sampled students had already taken an entrepreneurship course as part of their curriculum while 63.6% are yet to take such a course. Every Higher National Diploma (HND) student of Kumasi Polytechnic is expected to take at least one semester of entrepreneurship course before he/she graduates. Some departments allow their students to take this course in the second year while others allow their students to take it in the third year. The 63.6% of respondents represent all first years and some second years that are yet to take an entrepreneurship course. Only 40% of the students had a conviction that starting and running one's own firm is a suitable alternative to wage employment. This could imply that most of the students (60%) are of the opinion that a polytechnic graduate can only make a living only when he/she works for a salary. Most of the respondents (60.8%) are within the age range of 21 years to 30 years, 28.8% are below 20 years while 10.4% are above 30 years. This is normal because the mature student population is always lower as compared to those who enter directly from the senior high schools. Most students admitted for any academic year are normally exactly

or a little above 19 years of age so by the time they complete their HND programme, they will be at least 21 years old. This could explain why most of the respondents were within the ages of 21 to 30 years. A lower percentage of the respondents (46%) said they would get support from their family members and friends if they wanted to graduate as entrepreneurs while the remaining 54% said they would never be encouraged by their family members and friends to graduate as entrepreneurs after their tertiary education (Table 1). This might be due to how some parents think entrepreneurial or venture creation activities are for school drop-outs and they do not understand why their wards should opt for self employment after their tertiary education. Again, this could also be as a result of the conventional trend of job search after school, to which many families and friends have come to imbibe as a culture, thus any departure from this by graduates could be misrepresented as a failure. A lower proportion of the respondents (43.6%) said they will go into venture creation activities after school if they are supported financially while the remaining 56.4% said unavailability of financial support will not be the reason why they will not want to graduate as entrepreneurs. This means that even if such graduates are motivated financially, they would not go into business but will prefer wage employment. Exactly 70% of the students interviewed said their parents are self employed while the remaining 30% said their parents are wage employed. The results show that few students have their parents working in either the public service or private sector firms. This could indicate the fact that there are few jobs in the country to absorb the many graduates the country's universities and polytechnics produce annually. This worrying trend may account for the numerous efforts by some tertiary institutions to introduce varied entrepreneurship education modules aimed at solving the problem of rising unemployment rates among graduates. Students whose parents are self employed will likely be more motivated to graduate as entrepreneurs than those whose parents are into wage employment. This is because students of such parents have the opportunity to learn business management and its related skills from their parents than those whose parents are into wage employment. A greater percentage of the respondents (78%) said they consider the reaction or remarks of the people around them very relevant in their choice of whether or not to graduate as entrepreneurs. The results show that most polytechnic graduates wish to be employed in public or private sector to earn monthly salaries, and thus feel shy to appear not to be working for salaries. Such graduates will obviously not graduate as entrepreneurs because of what they think people around them will say about them.

Table 1 further presents the results of personality traits of the respondents likely to affect their intention to graduate as entrepreneurs. The results show that 52% of the respondents are emotionally stable (low neuroticism) while 48% are emotionally unstable (high neuroticism). 58% of the students who were interviewed are extroverts while 42% are introverts. Extraversion (extrovert or introvert) illustrates the extent to which people are assertive, dominant, energetic, active, positive emotions and enthusiastic (Costa and McCrae, 1992).

Also 54% of the respondents are open while 46% are not. Openness is the tendency to be creative, curios, adventurous and receptive to new experience (Singh and De Noble, 2003). The study also found that 57.2% of Kumasi Polytechnic students easily agree on issues with the people around them while 42.8% are controversial. Agreeableness assesses one's tendency to be compassionate and cooperative rather than

suspicious towards others. Finally an individual's degree of organization, persistence, hard work and motivation in the pursuit of goal accomplishment is called conscientiousness. The study revealed that 41.2% of the respondents are always strongly motivated to accomplish tasks while 58.8% of them are always weakly motivated.

Factors affecting polytechnic student's decision to graduate as entrepreneurs

From the results in Table 2, a likelihood ratio (LR) statistic of 53.24589 with a Chi-squared (X^2) distribution at 15 degree of freedom was highly significant at 1% level. This means that at least one of the variables in the model has a significant effect on polytechnic students' decision to graduate as entrepreneurs and that the explanatory variables jointly influence the students' decision to graduate as entrepreneurs. Extrovert students will 0.23% more likely graduate as entrepreneurs than introvert students and is significant at 1% level (Tables 2 and 3). People who score high on extraversion tend to be cheerful, like to be with people and large groups, and seek excitement and stimulation. People who score low on extraversion prefer to spend more time alone and are characterized as reserved, quiet and independent. Entrepreneurs must interact with a diverse range of constituents including venture capitalists, partners, employees and customers. Thus, an argument can be made that extraverted individuals would tend to develop positive views of entrepreneurship. Emotionally stable students (low neuroticism) will 0.39% more likely graduate as entrepreneurs than students with high neuroticism traits and is statistically significance at 1% level (Tables 2 and 3). Individuals who have high neuroticism trait tend to experience a number of negative

Table 2 Probit regression coefficients of factors influencing Polytechnic students' decision to graduate as entrepreneurs

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	−0.01423	0.00929	−1.5318	0.4588
EXTRA	0.008796	0.00997	−0.8822	0.0078
NEURO	0.015063	0.01105	1.36364	0.0009
AGREA	0.019291	0.02876	0.67071	0.0408
AGE	0.026662	0.08396	0.31755	0.7508
WSEC	0.763873	0.02566	29.774	0.0301
SUFRF	0.004345	0.01264	0.34374	0.0006
SEX	0.20303	0.03704	−5.4818	0.0451
SCFPR	−0.01385	0.01232	1.12411	0.0005
ACTF	0.020016	0.01315	1.5225	0.0168
PEEA	0.18022	0.02223	8.10856	0.2569
OPEN	0.013206	0.02955	−0.4469	0.4589
OCCUP	0.18964	0.03582	5.29389	0.0015
CONSC	0.03662	0.018	2.03468	0.4586
COVI	0.052193	0.01715	−3.044	0.4569
LR statistic (15 df)	53.24589	McFadden R-squared	0.32555	
Probability(LR stat)	0.000546			
Obs with Dep = 0	158			
Obs with Dep = 1	92			

Note: (***) Indicates significance at the 1% level. (**) Indicates significance at the 5% level. (*) indicates significance at the 10% level.
Source: Field Survey data 2012.

Table 3 Marginal effects of factors influencing students' decision to graduate as entrepreneurs

Variable	Coefficient	Marginal Effects
C	−0.01423	
EXTRA	0.008796	0.00227
NEURO	0.015063	0.00389
AGREA	0.019291	0.00498
AGE	0.026662	0.00688
WSEC	0.763873	0.19708
SUFRF	0.004345	0.00112
SEX	0.20303	0.05238
SCFPR	−0.01385	−0.00357
ACTF	0.020016	0.00516
PEEA	0.18022	0.0465
OPEN	0.013206	0.00341
OCCUP	0.18964	0.04893
CONSC	0.03662	0.00945
COVI	0.052193	0.01347

Z = 0.934751224, f(Z) = 0.258.
Source: Field Survey data 2012.

emotions such as anxiety, hostility and depression (Costa and McCrae, 1992). On the other hand, emotionally stable individuals are able to keep their composure under stressful situations and show a high level of self-esteem, relaxed and self-confident. These traits appear to be important for entrepreneurs. A polytechnic student who easily agree with others will 0.5% more likely graduate as an entrepreneur than students who easily disagree with others and is statistically significant at 5% level (Tables 2 and 3). An agreeable personality may facilitate an entrepreneur to build business networking that is crucial for a new venture. Individuals who are high on agreeableness can be characterized as trusting, forgiving, caring, altruistic and gullible. On the other hand, someone who is at the low end of agreeableness can be characterized as manipulative, self-centered, suspicious, and ruthless (Costa and McCrae, 1992).

Students whose family members and friends will be happy to see them graduating as entrepreneurs will 0.11% more likely graduate as entrepreneurs than those whose family members and friends will be unhappy to see them going into business after school and this is statistically significant at 1% level (Tables 2 and 3). Such students might have been encouraged by their parents and friends that graduating as an entrepreneur is a perfect alternative to wage employment which some parents seek for their wards. Parents, siblings, spouses all have something to say when an individual starts a venture. Sometimes they can be supportive, and sometimes they can be negative. Support from family and friends are critical particularly in shaping the perceived desirability of a particular business venture as well as providing financial assistance. It is very important for parents to welcome the idea of their wards wanting to graduate as self employed independent men and women since this will boost their morale to work harder towards it. Venture creation activities should not be seen to be for only school drop-outs but for everyone, so when a child shows interest in taking venture creation as a profession

after his/her Higher National Diploma (HND) programme, he/she should be mentored and supported by his/her parents. Students whose parents are entrepreneurs will 4.89% more likely graduate as entrepreneurs than those whose parents are into wage employment and this is statistically significant at 1% level (Tables 2 and 3). This is in line with the results of Carr and Sequeira (2007) who found that exposure to family business serves as an important intergenerational influence on intentions to become an entrepreneur. Family characteristics have implication on emergence of new business, recognition of opportunity, start up decisions and resource mobilizations (Aldrich and Cliff, 2003). Students with entrepreneurship education will 19.7% more likely graduate as entrepreneurs than those without entrepreneurship education and this is statistically significant at 5% level (Tables 2 and 3). The results corroborate those of Franke and Luthje (2004) who concluded that lack of entrepreneurial education leads to low level of entrepreneurial intentions of students. The work of Shepherd and DeTienne (2005) also proves the positive relationship between entrepreneurial knowledge and identification of entrepreneurial opportunities (Shepherd and DeTienne, 2005). Table 3 also shows that male polytechnic students will 5.24% more likely graduate as entrepreneurs than female polytechnic students and is significant at 5% level of probability. The results confirm the findings of previous studies: Mazzarol et *al.* (1999) stated that females are less likely to be founders of businesses than males. Brush et *al.* (2006) also discovered that the success rate for women entrepreneurs is very less and they face slower growth rate, low profits, and low sales. The findings of the current study also support the generally held perception that to be an entrepreneur is a purely masculine characteristic of the members of society (Ahl, 2006). Students with access to finance will 0.52% more likely graduate as entrepreneurs than those with no or little access to finance and this is statistically significant at 5% level of probability (Tables 2 and 3). The result is consistent with those of Chandler and Hanks (1994) who found that an individual with higher levels and varieties of resources tend to become more enthusiastic and ambitious and tend to do business compared to those with limited resources. Raijman (2001) also found that financial resources in the family have direct bearing on entrepreneurial intentions. From the foregoing, it is clear that availability of resources is very important for young graduates to start their businesses. Even though a graduate may have the zeal to start his/her own business after school, he/she may be crippled because of inadequate resources, especially capital. Students who care about public remarks on their intention to go into business after school will 0.36% less likely graduate as entrepreneurs than those who do not listen to what people around them say and this is statistically significant at 1% level (Tables 2 and 3). The negative significant effect of students care about public remarks on their decisions implies that if a student cares about what the general public will say in establishing his/her business, it will decrease the chances of him/her graduating as an entrepreneur. Students should therefore be encouraged not to listen to the public but should do what they want to do ones they think it is good. The general public should also be educated about the fact that it is not only school drop-outs who should go into business but even graduates. This is because some people are of the opinion that people should not go into business after graduating from a university or polytechnic. They erroneously see such graduates as those who were not academically good when they were in school.

Conclusions

The results of the study showed that personality factors (extraversion, neuroticism, agreeableness), support from family members and friends, occupation of parents, entrepreneurship education, gender and access to finance have significant positive effect on Kumasi Polytechnic students' decision to graduate as entrepreneurs while students' care about public remarks on their decisions had a significant negative effect. Extraverted students will likely graduate as entrepreneurs implies that there is the need to design polytechnic education curricula to include measures aimed at transforming introvert students into extroverts. High neuroticism, which was found to have a negative effect on decision by polytechnic students to graduate as entrepreneurs calls for a concerted effort by school authorities in stabilizing the emotions of students so that they will be able to keep their composure under stressful situations and show high levels of self-esteem, relaxation and self-confidence. The study also found agreeableness to be positively related to new venture creation by polytechnic graduates. The implication is that students should be nurtured to learn to agree on pertinent issues when interacting with their peers and only disagree with reference to facts.

This study has also revealed that supports from family members and friends are crucial for tuning the minds of polytechnic students towards graduating as entrepreneurs. We further infer from this study that students from a business oriented family are more likely to graduate as entrepreneurs as compared to those of wage employment origin. This calls for the need for the formation of family businesses by all families irrespective of the occupation of the head of the family. The current research clearly states that lack of entrepreneurship education leads to low level of entrepreneurial intentions of polytechnic students and therefore government policy on polytechnic education curricula development should emphasize the need for the inclusion of entrepreneurship modules in programmes' syllabi. The study also establishes that male polytechnic students are more likely to graduate as entrepreneurs than female polytechnic students. This calls for efforts by stakeholders in polytechnic education in setting biased policy interventions to stimulate entrepreneurship among female students. In addition, students with higher levels of financial resources tend to become more enthusiastic and ambitious and wish to do business compared to those with limited resources. Government and other stakeholders in the venture creation regime are encouraged to mobilize and make business funds available for would-be entrepreneurs in the form of loans, support services and grants to polytechnic graduates who want to go into business to access. The negative effect of students care for public remarks about their decision to graduate as entrepreneurs calls for the need to encourage students not to worry about negative remarks from the people around them should they decide to graduate as entrepreneurs. The general public should also be educated on the fact that it is not only school dropouts who should go into business but businesses are for all.

Competing interests
The authors declare that they have no competing interests.

Authors' contributions
WCA participated in the data collection, literature review, designed the econometric probit methodology, performed the econometric and statistical analysis and helped in the drafting of the manuscript. ZKSA conceived the idea, participated in the data collection, literature review and the preparation of the manuscript. All authors read and approved the final manuscript.

Received: 17 July 2013 Accepted: 22 October 2013
Published: 17 February 2014

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doi:10.1186/2251-7316-2-2
Cite this article as: Wongnaa and Seyram: **Factors influencing polytechnic students' decision to graduate as entrepreneurs.** *Journal of Global Entrepreneurship Research* 2014 **2**:2.