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MORE AGREEMENT, LESS COMMITMENT: A RASCH-BASED EXPLORATION OF ATTITUDES TOWARD AGRI-ENTREPRENEURSHIP

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ABSTRACT

Youth unemployment remains a significant issue in Ghana, despite agriculture's potential for innovation, job creation, and economic growth. However, few youths view it as an attractive entrepreneurial path. Using a descriptive survey design, the study investigated university students' attitudes towards agri-entrepreneurship. The study comprised third and fourth-year agriculture students at the University of Cape Coast. The total population of third and fourth-year students was 352. The census method of data collection was used to ensure all students were included. Of the 352 questionnaires distributed, 210 were returned fully completed, yielding a response rate of 60%. Attitudes towards agri-entrepreneurship were analysed using the Partial Credit Rasch Model in Jamovi version 2.6.26. Overall, students held positive attitudes, valued agriculture, were willing to train, and sought information. However, items reflecting deep personal commitment were less endorsed, with threshold analysis revealing disordered upper categories, suggesting hesitation to strongly agree. Three latent trait groups emerged: low (basic awareness), moderate (practical understanding without strong commitment), and high (deep interest), suggesting complex interactions among attitude, subjective norms, and perceived behavioural control, as per the theory of planned behaviour. The results highlight a gap between awareness and genuine motivation, highlighting the need for strategies to boost emotional engagement and providing valuable guidance for policymakers and higher education leaders in designing curricula and policies that encourage university graduates to pursue agri-entrepreneurship after graduation. The current study advances methodological practice by demonstrating the value of Item Response Theory in entrepreneurship research. It enriches the theoretical dialogue (Theory of Planned Behaviour) by demonstrating that the differences in students' latent traits or attitudes toward agri-entrepreneurship result from the interaction between attitude, perceived behavioural control, and subjective norms in the Ghanaian context.

KEYWORDS: Agricultural entrepreneurship, attitude, latent trait, Partial Credit Model (PCM), higher education.

JEL CLASSIFICATION: I23, Q13 & C38.

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INTRODUCTION

Agriculture remains one of the largest sectors driving global economic development, significantly contributing to food security, job creation, and poverty reduction (Fuglie et al., 2024; Nyamekye et al., 2021). In many low- and middle-income countries, agriculture not only employs a large proportion of the population but also serves as a foundation for industrial growth and innovation, primarily through entrepreneurship (Food and Agriculture Organisation, 2024). In Ghana, for example, agriculture accounts for approximately 24.5% of the country's Gross Domestic Product (GDP). It employs more than 30% of the labour force, which includes a significant number of young people (Ghana Statistical Service, 2024a, 2024b). Despite this critical role, the country faces a growing challenge of youth unemployment, which also affects graduates from agricultural programmes. Several studies have documented this concerning trend, showing that government efforts alone, such as creating public sector jobs, are no longer sufficient in addressing the unemployment problem (Baliyan et al., 2020; Sinyolo & Mudhara, 2018).

To overcome this challenge, experts have emphasised the importance of equipping agricultural graduates with entrepreneurial skills, enabling them to create their own jobs and potentially employ others. Thakur, Prajapati, and Rupapara (2017) argue that the pressures of globalisation and economic liberalisation make entrepreneurial skills essential for survival and success in the agricultural sector. Similarly, Okoro et al. (2022) and the United Nations Development Programme (2024) have called for more substantial support for entrepreneurship development as a practical solution to youth unemployment. Entrepreneurship generally refers to identifying and capitalising on opportunities to create innovative products, services, or strategies that lead to business success (Shane & Venkataraman, 2000). Entrepreneurs play a crucial role in recognising the needs of consumers and finding effective ways to meet those needs by providing relevant goods and services (Maina, 2013). In the context of agriculture, this means that graduates who become entrepreneurs can help modernise farming, improve food supply, and contribute to economic growth while reducing unemployment.

Given that, there has been a growing global recognition of the role of entrepreneurship in transforming agriculture from a largely subsistence activity into a modern, market-oriented sector. International organisations, such as the Food and Agriculture Organisation (FAO), the World Bank, and the United Nations Development Programme (UNDP), have spearheaded programmes aimed at promoting agripreneurship, especially among young people. These initiatives aim to provide access to finance, capacity-building, technology adoption, and value chain development, encouraging young people to view agriculture as a viable business opportunity rather than a fallback option (UNDP, 2024). For example, the FAO's Youth in Agribusiness Initiative offers mentorship, training, and startup support to young people across various regions, enabling them to innovate and sustain their livelihoods through agriculture.

In the African context, several countries have launched targeted policies and programmes to integrate entrepreneurship into agricultural development strategies. The African Union's Agenda 2063 and the Comprehensive Africa Agriculture Development Programme (CAADP) highlight the pivotal role of youth-led agribusinesses in promoting food security, employment, and economic growth across the continent (African Union, 2023). National initiatives, such as Nigeria's Youth Farm Lab and Kenya's Ajira Digital Program, provide young graduates with practical skills, funding opportunities, and market access to foster agribusiness innovation (Okoro et al., 2022).

In Ghana, agricultural entrepreneurship has gained increasing policy attention as part of strategies to tackle youth unemployment and revitalise the agricultural sector. Institutions such as the University of Ghana, the Kwame Nkrumah University of Science and Technology (KNUST), and the University of Cape Coast (UCC) have introduced dedicated agribusiness programmes and entrepreneurship modules to equip students with both technical and business skills. At the national policy level, flagship initiatives

such as the Ghana CARES 'Obaatanpa' Programme and the YouStart Initiative have been launched to promote youth-led businesses by providing startup capital, training, and mentorship. These programmes aim to bridge the gap between academic training and real-world entrepreneurial opportunities, enabling graduates to create sustainable businesses within the agricultural value chain.

Despite these policies and academic efforts, studies report that Ghanaian agricultural students tend to have a preference for public sector jobs or pursue postgraduate studies, which they view as a second choice (Okorley et al., 2006; Quansah et al., 2024). This means that students do not view entrepreneurship as the primary goal of their training, but rather as a fallback option. This is because the study reveals that, although students recognised the value of agribusiness, they did not intend to pursue it. In other words, they agree more than they act. This corroborates studies in Nigeria (Ikuemonisan, Abass, Feleke, & Ajibefun, 2022), Botswana (Baliyan, Oitsile, & Motlhabane, 2018), Bangladeshi (Pervez et al., 2024), and India (Barman, Das, Borah, Deka, Saikia, Deka, ... & Borah, 2025) which report that although students had positive attitudes towards the field in practice, they did not translate that into behavioural intension or action. The nature of students' positive attitudes suggests that existing agricultural-related programmes may not be targeting the deeper dimensions of students' emotions and motivation, which are key elements in fostering commitment (Franke & Lüthje, 2004; Sancho et al., 2022).

The Ghanaian phenomenon is even more challenging due to specific social and economic factors. Several students come from rural, low-income households where farming is often viewed as the only viable option, rather than a cherished vocation (Abujaja et al., 2025; Twumasi et al., 2019). Additionally, entrepreneurship is often perceived as a risky and unappealing option (Robinson, Stimpson, Huefner, & Hunt, 1991). These views are reflected in a context where there is a lack of mentorship, low entrepreneurial capital or startup capital, and limited real-world entrepreneurial experience, which in turn suppresses the desire to pursue entrepreneurship, even among those with a positive attitude (Boye et al., 2024). This highlights the need to understand university students' attitudes in Ghana more comprehensively, as this understanding may reveal their thoughts on agripreneurship and their intentions to translate these thoughts into observable actions.

1 STUDY RATIONALE AND THEORETICAL CONSEQUENCES

Ghana's high unemployment rate remains a significant concern. Studies show that up to 50% of graduates from universities and polytechnics are unemployed two years after national service, with 20% still jobless after three years (Ofori & Aryeetey, 2011). The 2025 Annual Household Income and Expenditure Survey (AHIES) revealed that youth unemployment persisted as a significant challenge: in 2024, the unemployment rate for ages 15-24 averaged 32.0 percent, and for ages 15-35 averaged 22.5 percent, with seven in ten unemployed persons falling within the youth category. (GSS, 2025). The problem is more severe among females and rural populations (GSS, 2025). The challenge lies not only in addressing the current pool of unemployed graduates but also in absorbing new labour market entrants. Persistent joblessness remains a significant weakness in Ghana's economy (Amofah et al., 2024; Ofori & Aryeetey, 2011), negatively impacting rural livelihoods. Agricultural entrepreneurship could help reduce unemployment (Ntshangase, 2016); however, Ghana's education system still primarily prepares students for formal employment rather than developing entrepreneurial skills.

Conversely, the extant literature has found that students' attitudes towards agricultural entrepreneurship are a significant determinant of their level of participation (Al-Jubari, 2019; Cera et al., 2020; Miriti, 2021; Otchengco & Akiate, 2021). These studies suggest that certain environmental and contextual factors shape these attitudes (Gohmann, 2012; Parmar et al., 2022). For example, Parmar et al (2022) found that financial, cultural, marketing, and technological challenges have a significant negative impact on female business entrepreneurs. The findings from earlier studies closely align with the Theory of Planned

Behaviour (TPB) proposed by Ajzen (1991). This theory explains that people's intentions to perform a particular behaviour are shaped by three key factors: attitudes, subjective norms, and perceived behavioural control. Attitudes refer to how positively or negatively an individual feels about performing the behaviour; subjective norms relate to perceived social pressures (e.g., "Do my friends and family think I should do this?"); and perceived behavioural control refers to how much control or confidence an individual believes they have in performing the behaviour. Applied to agricultural entrepreneurship among university students, TPB suggests that students are more likely to start agribusinesses if they view agriculture positively (e.g., profitable, innovative, sustainable), feel supported by important people in their lives (e.g., family, lecturers, peers), and believe they have the necessary skills and resources (e.g., capital, training).

Existing research consistently emphasises the influence of attitudes, perceived behavioural control, and subjective norms on entrepreneurial intentions, though with differences in how these factors translate into entrepreneurial behaviour. For example, Duong (2023) discovered that while students may express entrepreneurial intentions, the move to actual start-up activity is often weak, especially when significant barriers are perceived. This aligns with the findings of Barrientos-Báez et al. (2022), who reported that although young people generally view entrepreneurship competencies positively and feel a sense of vocational calling, they often lack confidence in their own abilities and self-efficacy. Likewise, Devkota et al. (2022) emphasised the importance of personal qualities, such as creativity and leadership, for entrepreneurial success, alongside the role of technology and education in fostering entrepreneurship. These findings align with Tomski's (2019) observations that motivations for entrepreneurship often stem from desires for financial security, independence, and freedom, suggesting that intentions are influenced not only by internal beliefs and skills but also by external incentives and perceived opportunities. In the African context, these dynamics are especially evident in relation to agricultural entrepreneurship. Boateng et al. (2014) and Pande (2015) noted that although students recognise agriculture's potential, structural challenges, such as land acquisition difficulties, high input costs, limited access to technology, and long periods before profitability, deter active participation. These barriers are particularly pronounced in resource-poor settings, where access to credit is limited and borrowing costs are high, making agriculture a less attractive option for entrepreneurs.

However, an important insight from TPB is that attitudes and perceptions are not uniform across individuals due to the nature of interaction between attitudes, subjective norms, and perceived behavioural control. This is consistent with the claim by Van Gelderen et al. (2008), who posited that intention alone is often the result of a delicate interaction among attitude, social norms, and perceived control. Moreover, students come from diverse cultural and geographic backgrounds and will therefore hold different degrees of either positive or negative attitudes toward agri-entrepreneurship. These differences result in a latent trait: an unobservable psychological characteristic (in this case, attitude toward agripreneurship) that varies in intensity across students. Capturing this latent trait requires more than simply counting "agree" or "disagree" responses (Bond & Fox, 2013). Based on this, the Partial Credit Model (PCM) was used to examine how strongly each student holds an attitude (referred to as a person's ability or trait level) and how difficult it was for them to agree with each item (item difficulty). This is particularly important because rating scales, such as Likert scales (e.g., Strongly Disagree to Strongly Agree), are widely used in educational and psychological research to measure attitudes and opinions. Though they are easy to administer and understand, they come with several challenges (disordered categories, misinterpretation of scale labels by respondents, etc) that can affect the accuracy and usefulness of the results, especially when measuring constructs as complex as a person's attitude. While studies have reported students' attitudes toward entrepreneurship (Gogoi & Gogoi, 2023; Rai et al., 2022), only a few (Gil-Soto et al., 2020) have examined the depth and quality of these attitudes using Rasch methodology. The current study specifically sought to examine the latent attitudes of university students toward agri-entrepreneurship.

2 METHODS AND MATERIALS

2.1 Design

This study employed a descriptive survey design to examine university students' attitudes toward agri-entrepreneurship. Such a design helps collect systematic information to describe a phenomenon, focusing on what, how, when, and where it occurs rather than cause-and-effect (Asenahabi, 2019). Quantitative data were gathered using a structured four-point Likert scale (strongly disagree to strongly agree), providing a snapshot of students' latent attitudes at a single point in time. Data were collected from agriculture students, allowing patterns of endorsement to be identified and students to be categorised by agreement levels. The findings provided a foundation for future research and interventions.

2.2 Population and sample size

The study comprised third and fourth-year agriculture students at the University of Cape Coast. The total population of third and fourth-year students was 352. The study focused exclusively on third and fourth-year students because they have had more exposure to entrepreneurial concepts and agricultural practices through coursework and co-curricular activities. Their experiences with internships, fieldwork, or business simulation projects would have further shaped their perspectives on agri-entrepreneurship as a career path. The census method of data collection was employed to include all students. This method was appropriate because it was possible to cover all students, given the size of the target population, and there would be no sampling error since every member of the target population was involved in the study. Out of the 352 questionnaires distributed, 210 were returned fully completed, resulting in a response rate of 60%. The response rate is consistent with findings from Holtom et al. (2020), who reported a trend of 48% to 68% across survey studies from 2010 to 2020. Among the 210 respondents, 77.1% were male and 22.9% were female, showing a higher male participation. Most respondents (43.3%) were aged 20–24, while approximately 6.7% were aged 35 or older.

2.3 Instrument

2.3.1 Attitude towards agricultural entrepreneurship

Attitude toward agri-entrepreneurship was measured using a questionnaire adapted from Kolvereid (1996) and Liñán and Chen (2009). While the original instruments were designed to assess attitudes toward general entrepreneurship, the items in this study were modified to capture attitudes related explicitly to agricultural entrepreneurship. The adapted scale consisted of twelve (12) items, rated on a four-point Likert-type interval scale (0 – Strongly Disagree to 3 – Strongly Agree). Sample items include: "I feel that engaging in agri-entrepreneurship is a profitable venture"; "I find agri-entrepreneurship to be a challenging but rewarding career"; "I enjoy the idea of being self-employed in the agricultural sector", etc. The experts in the fields of agriculture, entrepreneurship, research methodology, psychology, and measurement established the validity of the instrument. The expert's comments helped subject the questions and the questionnaire as a whole to face and content validity tests (Dzakadzie & Quansah, 2023). The adapted scale had a reliability of 0.877. This implied strong internal consistency, as the Cronbach alpha value was above the threshold of 0.70 recommended by Peirce et al. (2016).

Regarding ethical considerations, an introductory letter was sent to the various departments selected to seek permission to conduct the study. Respondents were not coerced into answering questions they did not wish to answer. As no form of identification was requested from participants, confidentiality and anonymity were guaranteed. Respondents were provided with a letter of consent to take part in the study. This letter was sent to them as a courtesy to confirm that they had given informed consent to participate in the study. The researchers provided a brief overview of the research's importance to the participants.

The participants were given approximately 10 to 15 minutes to complete the questionnaire. On average, it took each respondent approximately 8 to 12 minutes to complete the questionnaire. The data collection process was completed in three weeks.

2.4 Data processing and analysis

The data analysis was performed using Jamovi version 2.6.26. The demographic data was analysed using frequency counts and percentages. Data on the latent attitudes of university students toward agricultural entrepreneurship were analysed using the Polytomous Item Response Theory (ie, PCM).

2.5 Model specification for PCM

The PCM is a unidimensional polytomous IRT model proposed by Masters (1982) that extends the dichotomous Rasch model to accommodate items with multiple ordered response categories, such as a 4-point Likert scale used in this study (e.g., 0 = Disagree, 3 = Strongly Agree). PCM allows responses to be awarded partial credit depending on the level of performance. Each item is characterised by a set of step parameters (also called thresholds), which represent the points along the latent trait (ability) continuum where the probability of scoring in one category or higher equals the likelihood of scoring in the previous category or lower. In other words, the PCM models the likelihood that a person with a given ability will score at or above a certain level on an item. The model expresses item difficulty and person ability in logits (log-odds units), which places both items and persons on the same measurement scale (Bond & Fox, 2015). Negative logit values typically indicate easier items (i.e., more likely to be endorsed, even by individuals with lower ability). In contrast, positive logit values denote more difficult items (less likely to be endorsed unless the person has a higher ability).

It is, however, important to note that "easy" and "difficult" are always relative to the set of items used in a study. For instance, in this study, item logit values ranged from -1.32 to -4.09; the item with a logit value of -1.32 was considered difficult within that set, even though it still fell on the negative side of the scale. This interpretation aligns with the Rasch principle that difficulty is judged comparatively among items, not in absolute terms (Bond & Fox, 2015).

2.5.1 Core Parameters

Person parameter (θ_η): Represents each student's latent attitude level toward agricultural entrepreneurship.

Item step thresholds (b_{ik}): Represent the location on the latent trait continuum where a student has a 50% chance of choosing category k over $k-1$.

Each item has its own set of thresholds $b_{i1}, b_{i2}, \ldots b_i, m_i$, allowing for item-specific scaling.

2.5.2 Statistical Basis

For a student (person) η responding to item i, with possible response categories $k=0,1,\ldots,m_i$, the PCM models the log odds of scoring in category k versus category $k-1$ as:

$$\text{In}\left(\frac{p_{\eta i}(x_{\eta i}=K)}{p_{\eta i}(x_{\eta i}=K-1)}\right) = \theta_\eta - b_{ik}$$

Where:

θ_η = latent trait (attitude) level of person η

b_{ik} = step (threshold) difficulty for item i's category k

The probability of person η selecting category k is:

$$P_{\eta i}(X_{\eta i}=k) = \frac{exp\left(\sum_{v=0}^{k}(\theta_{\eta}-b_{iv})\right)}{\sum_{h=0}^{mi} exp\left(\sum_{v=0}^{h}(\theta_{\eta}-b_{iv})\right)}$$

With the convention that:

$$\sum_{v=0}^{0}(\theta_{\eta}-b_{iv})=0$$

3 RESULTS

3.1 Students' underlying attitudes toward agri-entrepreneurship

A PCM was used to analyse university students' underlying attitudes toward agri-entrepreneurship. The goal was to assess how strongly students agreed with each item and how these items operated at different levels of the latent trait. A likelihood ratio test was performed to compare the fit of the Rating Scale Model (RSM) with that of the PCM. The results showed that the PCM provided a significantly better fit than the RSM, $\chi^2(30) = 368$, $p < .001$. This indicates that the assumption of uniform step thresholds across items (RSM) was not supported, and that the PCM, which allows thresholds to differ by item, was better suited to the data.

For PCM to be valid, its assumptions must be satisfied. Two approaches were employed to check unidimensionality. First, thresholds were checked: the variance explained by the Rasch dimension should be at least 20%, and the first residual eigenvalue should be below 2.0, indicating adequate unidimensionality (Linacre, 1994). Second, residual structure was visually inspected via scree plots and residual correlation patterns. A sharp decline occurred after the first component, and no strong residual clusters were observed, supporting the data's unidimensionality. These checks confirmed the instrument's unidimensionality for PCM.

Second, the model assumes local independence, meaning that after controlling for the latent trait, item responses should be independent of one another. This was addressed by ensuring the questionnaire items were clearly worded, non-redundant, and free from overlap. Third, the adequate sample size for PCM. According to Linacre (1994), a minimum sample size of 200 participants is generally sufficient to obtain stable Rasch/PCM estimates, particularly when items have 3–5 response categories. Boone, Staver, & Yale (2014) further affirm that sample sizes in the range of 200–250 are adequate for PCM calibration, providing a good balance between model fit accuracy and practical feasibility. Given these recommendations, the sample size of 210 was deemed both adequate and robust for the analysis.

Third, the model assumes monotonicity, which implies that the probability of endorsing higher response categories increases with higher levels of the latent trait. This assumption was met, as the estimated category response functions indicated that higher latent attitudes were consistently associated with an increased likelihood of endorsing higher response categories, in line with the theoretical expectations of the Partial Credit Model. Results are presented in Tables 1, 2, and 3.

Table 1 **Item endorsement estimates**

Item		Measure (Logits)	SE	Interpretation
1	I believe agri-entrepreneurship plays a vital role in economic development.	-1.98	0.11	Easy
2	I perceive agri-entrepreneurship as a profitable and sustainable career choice.	-2.40	0.11	Very easy
3	I am aware of the financial and technical support available for agri-entrepreneurs.	-2.03	0.11	Easy
4	I consider agri-entrepreneurship to be as important as other sectors of the economy.	-2.44	0.10	Very easy
5	I feel motivated to explore opportunities in agri-entrepreneurship.	-2.54	0.10	Very easy
6	I feel that engaging in agri-entrepreneurship would provide me with job satisfaction.	-2.68	0.10	Very easy
7	I find agri-entrepreneurship to be an exciting and fulfilling career path.	-1.32	0.10	Difficult
8	I believe agri-entrepreneurship can contribute to personal financial success.	-2.38	0.10	Very easy
9	I intend to start my own agricultural business in the future.	-3.29	0.10	Extremely easy
10	I am willing to participate in training programs related to agri-entrepreneurship.	-3.55	0.11	Extremely easy
11	I actively seek information about business opportunities in the agricultural sector.	-3.87	0.11	Extremely easy
12	I would consider applying for loans or grants to start an agricultural business.	-4.09	0.11	Easiest

**Negative logits indicate items that were easier to endorse
**SE – Standard Error

(*Source*: Data Procced, 2025)

Table 1 presents results on the latent attitude of university students towards agricultural entrepreneurship. Item difficulty estimates (logits) and standard errors (SE) were analysed to assess the degree to which each item was endorsed. The interpretation was done based on Linacre's (2002) interpretive benchmark for item difficulty using logits. The item with the lowest difficulty estimate was "I would consider applying for loans or grants to start an agricultural business" (Logit = -4.09, SE = 0.11). The majority of the respondents found it difficult to endorse the item "I find agri-entrepreneurship to be an exciting and fulfilling career path" (Logit = -1.32, SE = 0.10).

Table 2 **Category threshold parameters (selected items)**

Item	Item	τ1 (Cat. 0→1)	τ2 (Cat. 1→2)	τ3 (Cat. 2→3)
1	I believe agricultural entrepreneurship plays a vital role in economic development.	-25.0	11.61	13.42
7	I find agricultural entrepreneurship to be an exciting and fulfilling career path.	-28.4	9.18	11.12
11	I actively seek information about business opportunities in the agricultural sector.	-26.3	8.96	10.71

** τ – Threshold

(*Source*: Data Procced, 2025)

Table 2 illustrates the difficulty students experienced in transitioning from one response category to the next for three selected items. These category thresholds (τ1, τ2, τ3) help us understand how students used the rating scale when responding to the questions. For all three items, the first threshold (moving from Category 0 to 1) had very large negative values (e.g., τ1 = -25.0 for Item 1). The second and third thresholds (τ2 and τ3), which reflect movement from mild to stronger agreement (e.g., from Category 1 to 2 or 2 to 3), had positive values (ranging from about 8.96 to 13.42). Overall, the significant gaps between thresholds suggest that though students were quick to show some level of agreement, fewer reached the highest categories.

Table 3 **Summary of latent trait levels based on item endorsement**

Trait Level	Logit Value	Freq (%)	Description	Sample Items
Low	≤ -1.00	41(19.52)	General awareness or agreement with basic positive views on agriculture	Items 9 – 12
Moderate	-1.00 and +1.00	132(62.86)	Agreement with the benefits of agricultural entrepreneurship, without commitment	Items 1–4 and Items 5 – 6
High	> +1.00	37(17.62)	Strong personal interest or intent to engage in agri-entrepreneurship	Item 7

(*Source*: Data Procced, 2025)

Table 3 summarises students' latent trait levels based on the kinds of items they endorsed. Analysis of the students' latent trait levels revealed that 19.52% exhibited a low trait level, indicating basic awareness and general agreement with agricultural entrepreneurship, such as willingness to participate in training or seek information (Items 9–12), but with minimal personal investment. The majority (62.86%) fell within the moderate trait level, showing agreement with the benefits of agricultural entrepreneurship (Items 1–6), reflecting a practical or theoretical understanding without strong personal commitment. Only 17.62%

of students reached the high trait level, characterised by endorsement of emotionally engaging items, such as viewing agricultural entrepreneurship as an exciting and fulfilling career (Item 7), suggesting a deep, internalised interest.

4 DISCUSSION

The Partial Credit Model analysis identified three latent trait groups: low, moderate, and high regarding students' attitudes toward agricultural entrepreneurship. Overall, students held positive views, valuing agriculture, showing a willingness to train, and seeking information. Most items were easy to endorse, reflecting basic awareness and interest. However, stronger agreement, such as finding it exciting and fulfilling, required higher latent traits, indicating that deep commitment was less common. Low-trait students showed only basic awareness, moderate-trait students had a practical understanding without a strong commitment, and high-trait students displayed a deep interest in the topic. These findings underscore the need to move students beyond surface-level agreement toward deeper emotional engagement and motivation.

The finding that students generally held positive attitudes toward agricultural entrepreneurship, particularly in recognising its value, expressing willingness to undergo training, and actively seeking information, is consistent with a growing body of literature across different contexts (Adefalu et al., 2021; Devi, 2015; Duong, 2023; Partonezhad et al., 2025; Pervez et al., 2024; Zampetakis et al., 2013). Similar patterns have been observed in broader African youth studies, where Adebayo & Kavoos (2016) reported that young entrepreneurs across the continent tend to display optimism, readiness to take risks, and independence when contemplating entrepreneurial ventures. This consistency in findings, despite differences in geography, culture, and resource availability, suggests that the drivers of entrepreneurial attitudes among youth may be shaped by universal aspirations, such as the desire for financial independence, innovation, and social mobility, rather than being strictly tied to local contexts.

In our view, the reasons behind these positive attitudes are multifaceted. In many agrarian economies, such as Ghana, agriculture remains one of the most accessible sectors for youth, offering relatively lower barriers to entry compared to manufacturing or high-tech industries (Ghana Statistical Service, 2024a). The sector's contribution to GDP, employment, and food security provides a strong foundation for youth to perceive it as a viable career pathway. Moreover, policy environments and institutional efforts, such as entrepreneurship training modules in universities and government initiatives like the Ghana CARES 'Obaatanpa' and YouStart programmes, further reinforce these attitudes by signalling public commitment to agribusiness development (United Nations Development Programme, 2024). The exposure students receive through these initiatives may explain their heightened awareness of training opportunities and financial support, as reflected in their readiness to seek information and participate in entrepreneurial development activities.

Conversely, the current study's findings contrast with several earlier studies that reported low entrepreneurial intention in agriculture (Boateng et al., 2014; Okorley et al., 2006; Pande, 2015; Quansah et al., 2024). One primary reason for this inconsistency lies in the financial realities of agricultural entrepreneurship. This is because previous studies frequently highlight the substantial capital investment required to establish viable agricultural ventures, which deters many students and graduates from pursuing agribusiness. For instance, Boateng et al. (2014) and Pande (2015) observed that even when students recognise agriculture's potential, the need for land acquisition, farm inputs, technology, and long gestation periods before profits are realised discourages them from starting agricultural enterprises. In resource-constrained environments, where access to credit is limited and interest rates are high, this challenge becomes particularly pronounced.

Another factor contributing to the discrepancy is the perceived risk and volatility of the agricultural sector. Earlier studies, such as those by Okorley et al. (2006), have documented how students often view farming as highly vulnerable to unpredictable weather conditions, market price fluctuations, and pest or disease outbreaks. These risks make agricultural entrepreneurship appear less attractive compared to non-agricultural ventures, which are often perceived as more stable and profitable in the short term. This perception persists even among students from agricultural backgrounds; Parcel (2003) found that youth with farming heritage frequently prefer to venture into non-agricultural businesses, such as retail or services, which they associate with higher status and more predictable income streams. Furthermore, differences in time and policy context may also explain the inconsistent findings. For example, the current study, however, reflects a context where entrepreneurship education and agribusiness promotion have been integrated into university curricula and national policies, likely influencing students' attitudes more positively. Additionally, methodological differences between studies may have contributed to the observed variations. That is, earlier research often relied on traditional self-report surveys or descriptive analyses, which may have captured only surface-level attitudes. The present study's use of the Partial Credit Model (PCM), grounded in Item Response Theory, provided a complete picture of students' latent attitudes, revealing gradations in endorsement across multiple items and response categories. This methodological advancement uncovered optimism that previous scoring methods, which treated all responses equally, masked.

Moving beyond this initial awareness, the threshold analysis revealed meaningful differentiation in students' endorsement of items related to agricultural entrepreneurship, culminating in the identification of three latent trait groups: low, moderate, and high. These groups reflect varying degrees of attitudinal intensity, ranging from surface-level agreement to deep emotional and behavioural commitment. This suggests that while awareness is widespread, deep personal interest and long-term commitment remain limited to a smaller subset of students. At the foundational level, students tended to agree with the most basic statements about agricultural entrepreneurship, such as recognising its economic importance or expressing willingness to participate in training or access funding. These attitudes appear to be shaped more by cognitive acceptance and social expectation than by internal motivation. This group reflects the concept of attitude toward the behaviour as discussed by Ajzen (1991), where individuals may rate a behaviour as favourable but not strongly enough to translate that into intention or action. This pattern is consistent with the findings of Conner and Norman (2022). and Boateng et al. (2014), who observed that although many young people express general or passive support for agriculture, they are often reluctant to engage in it actively. Their hesitation is primarily tied to concerns about profitability, limited access to capital, and the perceived risks within the agricultural sector. Similarly, Duong (2023) reported that the movement from entrepreneurial intention to actual start-up activity is often weak, particularly when individuals perceive significant barriers. In essence, students may "agree in principle" with the idea of pursuing agri-entrepreneurship. However, they are not yet prepared to commit personal resources or take on the entrepreneurial risks required to succeed in the sector. This highlights the gap between positive attitudes and actual entrepreneurial behaviour, which is strongly shaped by contextual challenges and perceived constraints.

In contrast to the low-trait group, the moderate-trait group included students who endorsed statements reflecting a practical appreciation of agricultural entrepreneurship, including its benefits for job creation, sustainability, and personal satisfaction. However, their responses still stopped short of fully internalising agripreneurship as a desired life path. Their outlook appears to be influenced by education and exposure, rather than by a deep, value-driven motivation. This is consistent with the findings of Indrianti and Rostiani (2008), who showed that educational background plays a pivotal role in shaping entrepreneurial intention, and with Van Gelderen et al. (2008), who emphasised that intention alone is often the result of a delicate interaction among attitude, social norms, and perceived control. Students in this group may understand the logic and social value of agribusiness, but they are not yet emotionally invested in it. Their moderate attitudes could stem from barriers such as a lack of personal experience, absence of role

models, or unclear pathways for translating interest into enterprise, as also reflected in studies by Ahmed et al. (2010) and Herawati & Sambharakreshna (2015).

Taking this further, students with deeply internalised attitudes demonstrated strong affective and behavioural alignment with agricultural entrepreneurship. These students were the only ones who consistently endorsed the most difficult item: finding agriculture "exciting and fulfilling." Such a high level of endorsement implies a deeply internalised, affect-driven orientation toward agribusiness, a quality often associated with firm entrepreneurial intention. The findings align with the work of Zampetakis et al. (2013) and Devi (2015), who found that youth with highly favourable attitudes, particularly in terms of proactivity, independence, risk-taking, and creativity, are more likely to transition from mere interest to entrepreneurial action. Similarly, Ahmad (2014) concluded that attitude is the strongest predictor of entrepreneurial behaviour, particularly when the individual has developed both confidence and intrinsic interest in the field. The high-trait students reflect what Mohavedi et al. (2013) describe as having behavioural indicators such as diligence, mental toughness, and future orientation, all of which are essential for navigating the perceived risks of the agricultural sector. Importantly, this tiered pattern of endorsement affirms the value of utilising the Partial Credit Model (PCM) to differentiate between levels of latent traits. Rather than assuming a uniform positive attitude among all students, the PCM made it possible to detect gradations of readiness, highlighting how only a subset of the population is poised for entrepreneurial action. Whereas many may support agricultural entrepreneurship abstractly, only those in the high-trait group appear to possess the emotional commitment, behavioural traits, and motivational clarity needed to follow through. For curriculum developers and policymakers, interventions should not only raise awareness but also target the emotional and behavioural aspects of entrepreneurship, such as self-confidence, leadership, and risk tolerance, to move students from moderate to high attitudinal levels.

CONCLUSIONS

This study applied the Partial Credit Model (PCM) to uncover the latent attitudes of university students toward agricultural entrepreneurship. The results revealed three distinct attitudinal groups: low, moderate, and high, highlighting that although most students recognised the value and potential benefits of agricultural entrepreneurship, only a few demonstrated deep personal commitment and enthusiasm for pursuing it as a career path. The threshold analysis further indicated challenges in how students used the rating scale, with higher response categories (e.g., "strongly agree") being rarely endorsed, suggesting a gap between general awareness and genuine entrepreneurial drive. These findings hold significant implications for education and policy. Universities and policymakers must go beyond creating awareness of agripreneurship; they must also foster its development and growth. The study also contributes to the literature by integrating the Theory of Planned Behaviour with Item Response Theory (specifically, the Partial Credit Model), demonstrating how advanced psychometric models can reveal subtle variations in attitudes that are often overlooked. This approach not only improved measurement validity but also provided a clearer basis for targeted interventions.

Based on these conclusions, the study makes the following practical and theoretical implications.

The findings of this study carry important implications for both research and practice in the field of agricultural entrepreneurship. On a practical level, the results reaffirm the need for attitude-focused interventions within entrepreneurship education. Many programmes currently concentrate on imparting technical and business knowledge, such as farm management, financial planning, and marketing. However, this study demonstrates that knowledge alone may not be enough to inspire action. For students to seriously consider agricultural entrepreneurship, programmes must also foster emotional engagement and aspirational appeal, helping students to see agriculture as innovative, modern, and capable of improving livelihoods, rather than as a purely traditional or subsistence activity. This means

integrating storytelling, role models, field visits, and mentorship into entrepreneurship curricula to make agricultural careers feel exciting and personally meaningful.

Second, the findings challenge the assumption that positive attitudes automatically translate into entrepreneurial behaviour. From a theoretical perspective, this study contributes to the literature by combining the Theory of Planned Behaviour with Item Response Theory (IRT), specifically the Partial Credit Model (PCM). The TPB explains why attitudes, norms, and control influence intentions, while the PCM provides a quantitative lens to uncover hidden patterns in how students endorse attitudinal statements. Modelling attitudes as a latent trait, PCM helped identify which aspects of agricultural entrepreneurship are easiest to endorse (e.g., recognising value), showing that students' agri-entrepreneurial readiness is not uniform but distributed across low, moderate, and high levels of latent traits. Furthermore, using PCM revealed issues with rating scale functioning (ie, disordered response categories), which are rarely detected in classical analyses. Together, this study not only advanced methodological practice by demonstrating the value of IRT in entrepreneurship research but also enriched the theoretical dialogue by showing how TPB and latent trait modelling together provide a comprehensive explanation of agri-entrepreneurial attitudes.

This study has four main limitations. First, it used data from only one group of students (ie, agriculture) in Ghana. While this provided valuable insights into their attitudes toward agricultural entrepreneurship, the findings cannot be easily applied to students in other fields or countries, where cultural, economic, and educational contexts may differ significantly. Second, it employed a cross-sectional design, measuring attitudes at a single point in time. Attitudes can change as students gain experience, training, or exposure to opportunities, so a follow-up over several years could reveal how these attitudes evolve and whether they lead to the establishment of agricultural businesses. Third, although the Partial Credit Model provided a deeper insight into students' attitudes, the attitude scale had problems with disordered response categories, suggesting that students struggled with higher options, such as "strongly agree." To address this limitation, future researchers are encouraged to collapse the four-point scale into a three-point scale (i.e., strongly disagree = "0", disagree = "1", and agree = "2"). This adjustment would reduce ambiguity, simplify the response process for students, and ensure that the categories function in an orderly manner. Lastly, the study focused on attitudes without thoroughly examining other Theory of Planned Behaviour factors, such as subjective norms and perceived behavioural control regarding agri-entrepreneurship, which future Rasch-based research could explore together.

RESEARCH ETHICS, INFORMED CONSENT, AND CONFLICT OF INTEREST STATEMENT

This study was conducted in accordance with the ethical standards of the authors' institutions and applicable national regulations and did not require formal research ethics committee approval, as it involved an anonymous questionnaire survey of adult university students and did not collect sensitive personal data. All participants received information about the purpose of the study, the voluntary nature of their participation, their right to withdraw at any time, and the assurance of confidentiality and anonymity; written informed consent was obtained from all participants before they completed the questionnaire. The authors declare no conflict of interest.

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