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Factors That Influence University Students' Intention to Become Agriculture Entrepreneurs

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***Abstract*:** The present research analysis seeks to understand the variables affecting university students' intentions of becoming agricultural entrepreneurs with a significant focus on Pakistan. With the world's population expected to rise and food demand expected to increase, it is essential to involve youth in agriculture. The study examines the moderating role of subjective norms, social values, entrepreneurial education, and agricultural education on students' Intention to engage in entrepreneurship. The research method used in this study was a survey method, and the target population was agrarian students, out of which 300 students participated. Data analysis involves descriptive and inferential statistics, while Cronbach's alpha determines reliability. Findings reveal a significant positive relationship between all the independent variables and students' entrepreneurial intentions. The hypothesis test further validates the results, showing that perceived behavioral control, subjective norms, social values, and formal and informal education affect the students' Intention to engage in agricultural entrepreneurship. The study's results highlight the need to promote youth entrepreneurship through supportive policies and tailored educational initiatives. The authorities are urged to design measures to help students acquire more entrepreneurial competencies and social capital, encouraging young people to participate in agricultural entrepreneurship.

Keywords: Agricultural Entrepreneurship, Entrepreneurial Education, Social Values, Subjective Norms, Agricultural Education

1. Introduction

In 2050, with the global population on the rise and estimated to be around 9. 7 billion, mainly due to population increase significantly in developing nations, there is a demanding increase in food requirements. According to the FAO, world food consumption is expected to rise between 59% to 98% by 2050, a rate that requires a 70% increase in food production. To address this challenge, there is a need to involve the youths in agriculture, especially in the use of technologies that can be used to mitigate the effects of climate change (Feldt et al., 2019; IFAD, 2014). At the same time, during the economic crisis, freelance work and business became effective solutions for graduates' unemployment, especially in large-scale countries such as China and Pakistan. As Otache (2019) noted, this shift towards self-employment in agroindustry is evident and thus has consequences for the individuals involved and the economy.

The agricultural sector includes the production of crops, livestock farming, and aquaculture for seafood production. It still holds its place as a significant sector with the potential of generating many employment opportunities. This sector comprises farming, animal rearing, fishing, food and non-food processing, plantations, and others across the

globe (De Silva, 2011). The various activities within the fisheries and agro-based industries and the new agribusiness companies, such as parasite farming, worm rearing, herb farming, mushroom farming, etc., have gained much public attention (De Silva, 2011).

As earlier noted, there is a general agreement on the centrality of youth labor in the rejuvenation of the agricultural sector because of their disposition towards the use of innovation (Daudu et al., 2009). However, there is a global disengagement of youth in agriculture even though they need to be encouraged to practice agriculture, especially in Asian, African, and Latin American countries (Leavy & Hossain, 2014; Ojebiyi et al., 2015; Swarts & Aliber, 2013). Some reasons include perceived job stability and higher compensation outside agriculture, as highlighted in Tafere and Woldehanna (2012). Understanding this, many organizations in different parts of the world are now focusing on the engagement of the youth in agriculture through research and dialogue, which is essential for supporting agrarian economies (Filmer & Fox, 2014; Noorani, 2015). Such youth regeneration policies and programs that should be adopted for the future of farming should reflect the regions' view of youth, as seen in the different countries and regions (Hamilton et al., 2015; Naamwintome & Bagson, 2013).

Young people, especially those from generations Y and Z, are considered agents of change and innovation in the agriculture sector; they are the future of the agriculture sector (Edginton et al., 2008). However, the restricted availability of productive assets, particularly land, significantly hinders their participation. Other negative perceptions of farming discourage young people from venturing into farming, especially in developing countries such as Pakistan, where agriculture is considered less valuable than other sectors (Jubithana-Fernand, 2009). Nonetheless, agriculture in Pakistan has the potential to grow tremendously, but it is regarded as a labor-intensive industry that needs to pay more. Thus, young, educated people avoid it. However, Pakistan has a large arable land area and a well-developed canal system, making agriculture a robust industry unaffected by global recession recessions, such as COVID-19. The vast area of agriculture, from the cultivation of crops to the rearing of animals, makes it a sector that can give employment (Pakistan Bureau of Statistics, 2019).

However, agriculture in Pakistan is not as developed and popular as other sectors of the economy, such as manufacturing and commerce, because of low pay and perception of hardship related to farming, which does not attract educated youth (Pakistan Bureau of Statistics, 2019). To counter this, the government of Pakistan has come up with measures like Kisan cards and subsidies for the youth, as well as training in the processing and marketing of products to encourage the youth to take up farming (Pakistan Bureau of Statistics, 2019). Media support is also vital in marketing opportunities in agriculture and changing the mindset of the youth. The government is aware of the sector's significance and wants to foster the involvement of youths in agriculture, which is vital given the scarce supply from other fields (Pakistan Bureau of Statistics, 2019). However, the impact of these measures in reversing the trend of youth disinterest and poor entrepreneurship in agriculture has yet to be ascertained.

This research aims to establish the various factors that lead people, especially the youth, to venture into farming and establish agri-businesses. It explores the factors affecting early-stage agricultural entrepreneurs, focusing on the need for industry-level factors such as perceptual and social capital. Thus, it aims to identify the motivation behind youth, especially Pakistani students, to engage in agricultural ventures.

1.1 Research Objectives

a) To establish the factors that determine the university students' intentions to engage in agricultural entrepreneurship in Pakistan.
b) To test the mediating effect of subjective norms, social values, entrepreneurship education and agricultural education on entrepreneurial intention.
c) To analyse the effectiveness of the government policies and support programs on youth engagement in agricultural business.

1.2 Research Questions

This paper aims at answering the following research questions:

a) In what way does the university students' perception of subjective norms and social values influence their intentions towards entrepreneurship in agriculture?
b) How is entrepreneurship education connected to agricultural education and students' intentions to pursue agricultural entrepreneurship?
c) How far the government policies and programs are successful to promote youth engagement in agricultural business in Pakistan?

2. Literature Review

2.1 Subjective Norms and Agriculture Entrepreneurship

According to Abdullah and Sulaiman (2013) and Ridha and Wahyu (2017), perceived subjective norms and social factors are the most influential factors in the entrepreneurial Intention of agricultural students. Shidiq (2020) identified personal characteristics and perceived behavioral control as the key determinants of agricultural students' entrepreneurial aspirations. Maity and Sahu (2020) emphasize subjective norms in determining the attitudes toward entrepreneurship, especially among women entrepreneurs. Grande (2011) outlines the issues of social capital and its consequences for rural practitioners, and the concept of bonding and bridging social capital by Williams (2022) reveals the role of social capital in promoting entrepreneurial ventures. According to Ajzen (1991), subjective norms and personal standards are essential determinants of intentions, as evidenced by previous research on social perceptions and other crucial people's youth's choice of agriculture among the youths (AKPAN, 2019; Consentino et al., 2023). Wijerathna et al. (2015) also reported that subjective norms and attitudes influenced university agriculture students' entrepreneurial intentions in Indonesia and Sri Lanka, respectively. While Fizer (2013) found out that parents and professors are the major influencing factors that forced students to study agriculture, Dlamini (1999) also established the roles of peers, family, and agriculture teachers in deciding the career choices of first-year students in Swaziland. These norms can either endorse or undermine careers in agriculture and influence perceptions of industry(Balzani & Hanlon, 2020). Based on this literature, the following hypothesis is proposed:

H1: There is a positive correlation between personal standards and the Intention of university students to become agricultural entrepreneurs.

2.2 Social Values and Agriculture Entrepreneurship

Mair and Marti (2006) differentiate between economic profit-oriented commercial ventures and social ventures, the latter focused on social benefits. According to Chatterjee et al. (2021) as well Akar and Dogan (2018), social values play an essential role in directing the focus of social entrepreneurs towards the needy society. The intention to become an entrepreneur is based on the theory of planned behavior by Ajzen (1991), which propels individuals towards creating new ventures, with principles and preparedness as essential components (Wang et al., 2017). As stated in Mair and Noboa (2006) SEI model, SEIs are developed based on empathy, ethical decision-making, and social support. However, demographic factors such as the gender of the participants and their undergraduate field of specialization also play a crucial role in the level of entrepreneurial spirit (Abdullah & Samah, 2014). According to the proposed hypothesis, it can be assumed that demographic factors substantially affect SEIs, as scholars like Ridha and Wahyu (2017) has suggested that subjective norms and social factors affect the Intention to participate in farming. Therefore, the research hypothesis of this literature is that demographic factors significantly influence SEIs, as this literature asserts.

H2: There is a significant relationship between university students' social values and their Intention to participate in entrepreneurship in the agricultural sector.

2.3 Entrepreneurship Education and Agriculture Entrepreneurship

Some reasons include the belief that entrepreneurship drives economic growth, employment, innovation, and changing financial systems and paradigms (Reynolds et al., 2004). It is, therefore, essential to understand the drivers and inhibitors of entrepreneurship to facilitate policy-making (Sieger et al., 2016), and to do so, there is a need for more sectorial research to ensure that human capital is not underutilized (Afandi et al., 2017; Arafat & Saleem, 2017), Entrepreneurship in the early stages of agriculture is necessary to study because of its nature and the growth opportunities for the market (Alsos et al., 2011). The last two are social factors, which influence agricultural entrepreneurship, and, as the experience shows, the support of families and their attitudes play a significant role (Seuneke et al., 2013). Education, motivation, and incentives such as entrepreneurial training, mentorship, and the provision of integrated market opportunities increase the levels of entrepreneurial ventures among graduates in agriculture (Sher et al., 2020). The study also established that a lack of formal education in marketing strategies could hinder agricultural entrepreneurship among African women (Kadzamira et al., 2024), and inadequate training harms employment (Nawaz & Siraji, 2009). Based on this literature, the hypothesis is proposed:

H3: There is a positive correlation between the level of entrepreneurship education and the willingness of university students to engage in agricultural entrepreneurship.

2.4 Agriculture Education and Agriculture Entrepreneurship

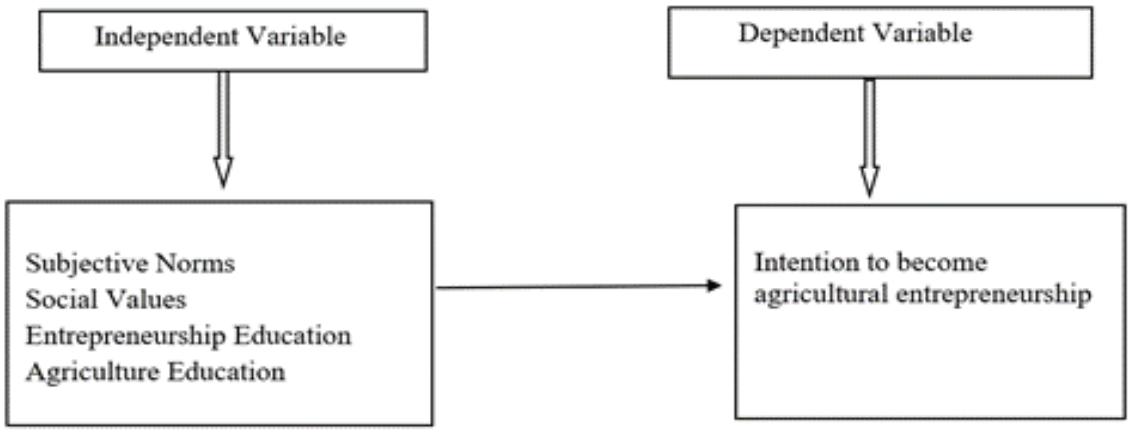
Li and Matlay (2006) stated that entrepreneurship and entrepreneurship education support economic development and improve business capabilities. Previously, the training for entrepreneurial activities was mainly on talent and skills, especially for farmers who shifted from mere producers to business people (McElwee, 2008). However, Agricultural entrepreneurship comes with its own challenges and market forces (Ndirangu & Bwisa, 2016). A study shows that entrepreneur education has a positive effect on the Intention of individuals to become an entrepreneur (Zhang et al., 2019), and the agriculturalists' commercial participation was significantly affected by entrepreneurship education by helping in sustainable agriculture and economic development (Yaseen et al., 2023). Nevertheless, there needs to be more business education in agriculture, which is a significant challenge in sector development (Nawaz & Siraji, 2009). To increase competitiveness and economic vulnerability, education, training, and technological knowledge must be improved (Hussain et al., 2022), and extension education programs have improved farmers' expertise and business acumen (Razzaghi Borkhani & Mohammadi, 2018). However, there is still a gap in the knowledge regarding the entrepreneurial learning process, making it necessary to conduct more studies that would assess the results and efficiency of entrepreneurship education, particularly in the sphere of agriculture (Hietanen et al., 2014). Agricultural education is positively related to the level of Intention on agricultural entrepreneurship, suggesting that community involvement and government efforts are crucial to motivating the youth to engage in agricultural entrepreneurship. Based on this literature, the following hypothesis is proposed:

H4: There is a positive relationship between agriculture education and university students' Intention to venture into agriculture entrepreneurship.

2.5 Theoretical Framework

Entrepreneurship intention research has used the theory of planned behavior (Shiri et al., 2017), based on Ajzen's model that attitude, perceived behavior control (PBC), and subjective norms influence the Intention of an individual to become an entrepreneur (Ajzen, 1991). According to Shapero and Sokol (1982), an individual's perception of the viability and desirability of the entrepreneurial career in the light of culture and social environment pushes toward this career. Newer models are, for example, the one that focuses on the behavioral goals and psychosocial antecedents (Ngai et al., 2015) and those that extend the TPB to increase prediction (Bergevoet et al., 2004). Despite its popularity in agricultural studies, the TPB has yet to be fully applied to the agronomic industry (Tiraieyari & Krauss, 2018). TPB has six constructs, namely subjective norms, attitude, behavioral Intention, perceived behavioral control, and behavior, which are vital in explaining human behavior and decision-making (Lalani et al., 2016) and help predict behavioral intentions in various settings including agriculture (Bagheri et al., 2019). Perceptions of control predict preparedness for action and, consequently, actual behavior, especially under challenging circumstances, which is why intentions are considered the most effective predictor of intended behavior (Ajzen, 2011).

Figure 1: Theoretical Framework



3 Research Methodology

3.1 Study Design

The study uses the correlational study design to analyze the relationship between the study variables so that the researcher does not interfere with the findings since it does not involve manipulation or an artificial environment. Several data collection methods are mentioned below: case studies, experimental surveys, grounded theories, and survey-based methodologies (George et al., 2003). Categorized under quantitative research, survey-based strategies are preferred because they offer an opportunity to gather diverse information concerning various aspects of an individual, personality, or behavior (Bell et al., 2022; Straits, 2008).

3.2 Data Collection and Sampling

Self-administered questionnaires are employed to obtain the responses, and the unit of analysis is the individual respondent, which enables an understanding of the views on a personal basis, drawing on the questionnaires borrowed from similar studies. In probability sampling, the population is infinite; hence, non-probability sampling is used. For this study, the target population is agricultural students. Regarding the measurement instruments, IAE is measured using a 10-item scale adopted by Abdullah and Samah (2014). Subjective Norms are assessed with six items from the same source, while Social Values are assessed with five items per Abdullah and Samah (2014). In the evaluation of entrepreneurial education, three items from Utami (2017) are used, and agricultural education is measured by five items adapted from Dyer et al. (1996).

Analysing the structural relationship between the primarily unobservable constructs is crucial in this research undertaking. This involves correlating the covariance of hidden constructs and experimental factors to understand the structural relations (Borsboom et al., 2003). An essential criterion in this analysis is the differentiation between formative and reflective indicators crucial for achieving meaningful relations in the structural model (Anderson, 1984). In this case, the study model is described as formative to reflective, while the items are said to define the latent variables. Data analysis encompasses various methods, including inferential statistics, correlation, regression analysis, and descriptive statistics, including frequencies, range, variance, mean, standard deviation, and mode.

3.3 Sampling Method

Instructions on completing the questionnaires were well stated to enhance the reliability and validity of the collected data. After the data collection procedure, the subjects were thanked for participating, which helped cultivate a good relationship with the participants. A quantitative approach was used to determine the data collection process, the scoring of questionnaires, and various tools for analyzing the collected data. The study sample arrived at 350 questionnaires administered to the participants, while 50 participants declined to participate. As a result, the response rate of the sample was estimated to be 86 percent. 40%, as the study's authors pointed out, the active contribution of the study's participants in the research process.

3.4 Data Analysis Procedure

In the present study, the data analysis process comprised four crucial steps. At first, through the use of SPSS, the normality of data was tested to determine its aptitude for subsequent analysis. Subsequently, reliability analysis for all the scales was done, and the Cronbach alpha of the scales was calculated to check multicollinearity. The third step included reporting the descriptive analysis and demographic characteristics of agricultural entrepreneurship, entrepreneurial education, agricultural education, perceived social value, and perceived subjective norms. In the next step, linear regression analyses were used to analyze the relationship between subjective norms, social value, entrepreneurial education, agricultural education, and agricultural entrepreneurship while considering demographic variables. Also, Pearson product-moment correlation was used to analyze the correlation between all the demographic factors and the study variables. In the last step, the skewness and kurtosis were also checked to determine whether the data in the distribution was normally distributed.

3.5 Regression Analysis

Inferential statistics is one of the two approaches used in analyzing data, the other being descriptive statistics. This method involves taking a population sample to get measurements that will help characterize the whole population by focusing on a small portion. Thus, the researcher can hypothesize about the importance of factors with reasonable confidence. Some examples of inferential statistical analysis procedures include confidence intervals and regression analysis.

Linear Regression Analysis is one of the techniques applied in inferential statistics to analyze the connection

between a dependent variable and one or more independent variables. In Simple Linear Regression Analysis, the focus is on the relationship between one dependent variable and one independent variable, described by the equation $y = \alpha + \beta x + \varepsilon$, where y is the dependent variable, x is the independent variable, α is the intercept, β is the slope, and ε is the error term.

As Utami (2017) pointed out, multiple regression analysis is used to determine the degree of impact of the independent variables on the dependent variable. This study examines the effect of perceived behavioral control, social norms, personal beliefs, and education on university students' decision to pursue entrepreneurship in agriculture. In this study, Multiple Linear Regression Analysis is employed to assess the impact of the aforementioned independent factors with the dependent variable as represented by the equation $y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \varepsilon$. The regression coefficients β show how much the dependent variable changes with a one-unit change in the independent variable. In contrast, the error term (ε) is assumed to be normally distributed with zero mean. The unstandardized regression coefficients (β) are shown in the " β " column, which can help understand the relationships between the variables (Utami, 2017).

4 Finding

4.1 Descriptive Statistics

Some of the descriptive statistics include frequencies, measures of central tendency and dispersion such as range, standard deviation, variance, maximum, minimum, standard error of the mean, percentile values such as quartiles, percentile, cut points for equal groups, distribution including skewness and kurtosis, etc. In the current study, six demographic variables are employed. These are gender, education level, background, agriculture business, and nature of their business. Frequencies concerning gender are as follows:

Table 1: Demographic and Background Characteristics of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	186	62.0	62.0	62.0
	Female	114	38.0	38.0	100.0
Education level	Graduation	124	41.3	41.3	41.3
	Master and above	176	58.7	58.7	100.0
Background	Rural	172	57.3	57.3	57.3
	Urban	128	42.7	42.7	100.0
Does your family own agriculture business?	Yes	162	54.0	54.0	54.0
	No	138	46.0	46.0	100.0
Choose one of the below mention agriculture businesses.	crops farming	61	20.3	20.3	20.3
	Livestock	67	22.3	22.3	42.7
	fishing farming	33	11.0	11.0	53.7
	seeds and pesticides	57	19.0	19.0	72.7
	Poultry	68	22.7	22.7	95.3
	mix farming	14	4.7	4.7	100.0

Source: author created

4.2 Data Normality

Skewness and kurtosis were conducted first to perform regression analysis. Hypothesis tests for normality show skewness should fall between -2 and +2 and kurtosis between -3 and +3. In the current study, skewness and kurtosis are within the acceptable range of -2 and +2, implying a normal data distribution. Further, standard probability plots were also employed to test the normality of the dependent and independent variables to check if the data fit for analysis.

Table 2: Normality Tests for Variables

	Skewness	Kurtosis

Items	N	Minimum	Maximum	Statistic	Std. Error	Statistic	Std. Error
AEI 1	300	1.00	5.00	-.220	.141	-.725	.281
AEI2	300	1.00	5.00	-.279	.141	-.370	.281
AEI3	300	1.00	5.00	-.512	.141	-.062	.281
AEI4	300	1.00	5.00	-.329	.141	-.248	.281
AEI5	300	1.00	5.00	-.420	.141	-.219	.281
AEI6	300	1.00	5.00	-.225	.141	-.329	.281
AEI7	300	1.00	5.00	-.304	.141	-.573	.281
AEI8	300	1.00	5.00	-.304	.141	-.573	.281
AEI9	300	1.00	5.00	-.500	.141	-.542	.281
AEI10	300	1.00	5.00	-.532	.141	-.368	.281
SN1	300	1.00	5.00	-.403	.141	-.338	.281
SN2	300	1.00	5.00	-.566	.141	.103	.281
SN3	300	2.00	5.00	-.428	.141	-.439	.281
SN4	300	1.00	5.00	-.516	.141	-.116	.281
SN5	300	1.00	5.00	-.243	.141	-.722	.281
SN6	300	1.00	5.00	-.496	.141	-.505	.281
SV1	300	1.00	5.00	-.676	.141	-.190	.281
SV2	300	1.00	5.00	-.645	.141	-.150	.281
SV3	300	1.00	5.00	-.604	.141	.152	.281
SV4	300	1.00	5.00	-.477	.141	-.170	.281
SV5	300	1.00	5.00	-.465	.141	-.444	.281
EE1	300	1.00	5.00	-.703	.141	-.088	.281
EE2	300	1.00	5.00	-.795	.141	.227	.281
EE3	300	2.00	5.00	-.238	.141	-.837	.281
AE1	300	2.00	5.00	-.423	.141	-.646	.281
AE2	300	1.00	5.00	-.456	.141	-.312	.281
AE3	300	1.00	5.00	-.325	.141	-.565	.281
AE4	300	1.00	5.00	-.689	.141	.749	.281
AE5	300	1.00	6.00	-.446	.141	-.030	.281

Note: SN stands for Subjective Norms, SV for Social Values, EE for Entrepreneurial Education, AE for Agricultural Education, and AEI for Agricultural Entrepreneurship Intention.

4.3 Reliability Analysis

"Reliability, as a concept, can be defined as the stability of the measurement, or in other words, the extent to which an assessment tool yields the same results each time it is administered under the same circumstances with the same people." The scale's validity is tested using face, concurrent, construct, and criterion validity (Adams et al., 2014). Researchers employ the internal consistency approach using Cronbach's alpha to test for the scale's reliability. Cronbach's alpha measures internal consistency. Cronbach's alpha values range from 0 to 1, and Sekaran and Bougie (2016) opined that a 0. 5 value is poor. Thus, a value of 6 is considered acceptable, and above 0. 7 is good.

Table 3: Reliability Analysis

Sr. No.	Variables	Items	Reliability
1.	Agriculture Entrepreneurship Intention (AEI)	10	0.741
2.	Subjective Norms (SN)	6	0.608
3.	Social Values (SV)	5	0.778
4.	Entrepreneurial Education (EE)	3	0.780
5.	Agriculture Education (AE)	5	0.850

Source: author created

The scales used to measure the variables were: Intention towards Agriculture Entrepreneurship (AEI) with ten items from Abdullah and Samah (2014) scale ($\alpha = 0.741$), Subjective Norms with six items from Abdullah and Samah (2014) scale ($\alpha = 0.608$), Social Values with five items from Abdullah and Samah (2014) scale ($\alpha = 0.778$), Entrepreneur Education with three items from Utami (2017) scale ($\alpha = 0.780$), an and Agriculture Education with

five items from Dyer et al. (1996) scale (α = 0.850). These scales also revealed acceptable internal consistency reliability, thus assuring the measurements' validity.

4.4 ANOVA

Analysis of variance (ANOVA) is a statistical method that helps to compare the variance between a set of means to identify the significance of a model. It involves developing two hypotheses: the null hypothesis (H0) that the model is not significant, and the other one is the alternative hypothesis (H1) that the model is essential. The F-test, sometimes referred to as Fisher's Test, is used to determine the p-value (or Sig. value in tables) and is compared to an alpha level of 0. 05. If $p < \alpha$, then the null hypothesis H0 is rejected and the alternate hypothesis H1 is accepted, meaning the model is significant. On the other hand, if the p-value is more significant than α, H0 is accepted, and H1 is rejected, which means that the model is not significant. If the null hypothesis is rejected, the model is appropriate for the data. If the null hypothesis is accepted, the model is unsuitable for the data.

Table 4: ANOVA (Analysis of Variance)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	33.989	4	8.497	44.308	.000***
Residual	56.575	295	.192		
Total	90.565	299			

a. Predictors: (Constant), EE, SN, SV, AE
b. Dependent Variable: AEI

Note: ***, **, and * demonstrate significance levels at 1%, 5%, and 10%, respectively. SN stands for Subjective Norms, SV for Social Values, EE for Entrepreneurial Education, AE for Agricultural Education, and AEI for Agricultural Entrepreneurship Intention.

In our case, the ANOVA table indicates that sig. Value of 0.000. This value is less than α (0. 05), and therefore, we accept the null hypothesis that there is no significant difference in the overall mean scores between the two groups. Hence, we fail to retain H0 and accept H1, meaning our model is significant. This implies that the model is suitable for the data, and the coefficients between the variables are statistically significant. A sig. value of 0.000 denotes a very low significance level, meaning that the results are not likely due to chance.

4.5 KMO and Bartlett's Test

This table provides two examples of tests that demonstrate the information's ability to be used to find structures. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is a computation that indicates how much our factors may alter due to concealed elements. Values close to 1. 0 indicate that a factor analysis may be helpful with our data. The factor analysis results are likely inconsequential if the value is below 0. 50. (IBM, 2020). Therefore, our value shows how factor analysis is relevant to our knowledge.

We cannot accept the null hypothesis that the variables are not correlated and accept the hypothesis that the variables described above are correlated because Bartlett's test of sphericity checks the assumption that the correlation matrix is an identity matrix. This means that little attributes of the centrality level, with values less than 0. 05, imply that a factor analysis using our data may not be helpful. Therefore, our rationale for the test shows that it is justified, given the structural quality of the data.

Table 5: KMO and Bartlett's Test for Sampling Adequacy

Tests Name	Tests Statistics
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.841**
Bartlett's test of sphericity	413.748
Df	10
Sig	.000***

Note: ***, **, and * demonstrate significance levels at 1%, 5%, and 10%, respectively.

4.6 Correlation Test

The findings showed a positive and robust relationship between the factors and agricultural entrepreneurship. The results further indicated a positive correlation between social value and agricultural entrepreneurial activities, r=0. 443, P<0. 01, and between subjective norms and agricultural entrepreneurial activities, r=0. 460, P<0. 01, proving that society's values and norms are critical in people's decision to venture into agricultural business. Entrepreneurial

education also exhibited a significant relationship (r= 0. 427, P<0. 01), suggesting that participants exposed to entrepreneurial knowledge are more likely to venture into agricultural enterprise. In addition, agricultural education was positively related to investment intention (r = 0. 525, P < 0. 01), suggesting that specialized education was crucial for developing entrepreneurial activities in agriculture. The effects of these factors provide evidence of the significance of subjective norms, social values, entrepreneurial education, and agricultural education in encouraging agricultural entrepreneurship, underlining the need for intervention and education to foster the development of entrepreneurship in the agricultural sector.

Table 6: Correlation of Latent Variables

Latent Variables	Mean	AEI	SN	SV	EE	AE
AEI	3.987	1				
SN	3.414	0.443**	1			
SV	3.512	0.460**	0.414**	1		
EE	3.900	0.427**	0.361**	0.418**	1	
AE	4.012	0.525**	0.490**	0.512**	0.438**	1

Note: ***, **, and * demonstrate significance levels at 1%, 5%, and 10%, respectively. Note: SN stands for Subjective Norms, SV for Social Values, EE for Entrepreneurial Education, AE for Agricultural Education, and AEI for Agricultural Entrepreneurship Intention.

4.7 Multicollinearity and Auto Correlation

The autocorrelation test tests whether errors associated with a series of observations, ordered by time, have a linear association (time series). An autocorrelation test is required if the examined data are time series. The Durban-Watson test is a commonly applied test for checking autocorrelation. The Durban-Watson test value is an index of statistics that has a value between 0 and 4. Autocorrelation coefficients close to 0 or 4 indicate more substantial positive and negative autocorrelation, respectively, while values closer to 2 suggest low autocorrelation.

Table 7: Multicollinearity and Auto Correlation for Predictor and Dependent Variable

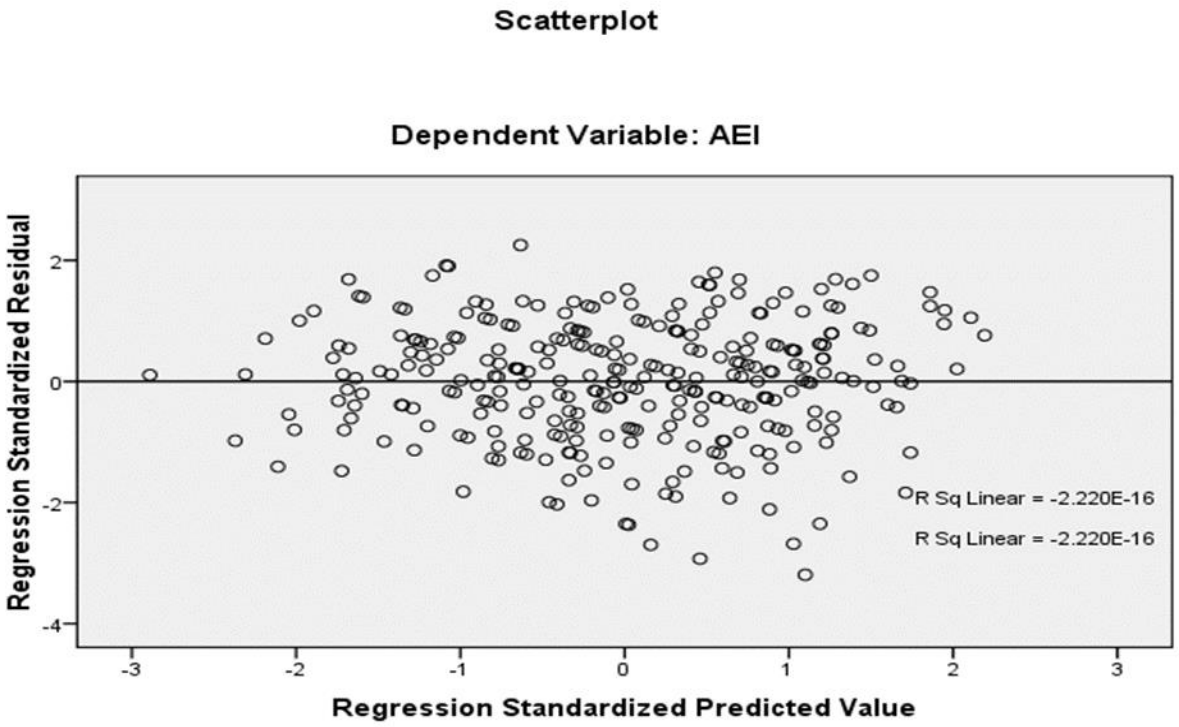
Predictor	Beta (Unstd)	P value	T value	Durbin Watson	Tolerance
SN	0.433	0.00***	10.199	1.052	0.81
SV	0.350	0.00***	14.894	0.999	0.75
AE	0.422	0.00***	10.649	1.000	0.78
EE	0.291	0.00***	17.118	0.898	0.64
Dependent Variable: AEI					

Note: ***, **, and * demonstrate significance levels at 1%, 5%, and 10%, respectively. Note: SN stands for Subjective Norms, SV for Social Values, EE for Entrepreneurial Education, AE for Agricultural Education, and AEI for Agricultural Entrepreneurship Intention.

4.8 Heteroscedasticity Test

Heteroscedasticity is a test used to determine whether the residual variance inequality of a regression model holds for two observations. It is assumed that confounding variables (error) have constant residual variance, and thus, the regression formula is developed (the range of errors is roughly equal). When the residual variance is not continuous, the phenomenon of heteroscedasticity emerges. When there is no heteroscedasticity, the regression model will be correct.

Figure 2: Assumption of Heteroscedasticity test



Source: author created

4.9 Linearity test

This test checks whether a significant linear relationship exists between two or more variables. The results can then be used to decide on the most suitable regression models. The linearity of the link between the independent and dependent variables is tested. It is also important to note that the sig linearity value should be less than 0 for a direct linear relationship between the dependent and independent variables, 0.05.

Table 8: Linearity test for checking the relationship between the independent and dependent variables

Variable	Unstandardized Coefficients	Std. Error	T value	Sig.
Constant	1.089	.191	5.696	.000***
SN	.170	.053	3.189	.002***
SV	.134	.043	3.125	.002***
AE	.221	.047	4.672	.000***
EE	.180	.050	3.600	.000***

Dependent Variable: AEI

Note: ***, **, and * demonstrate significance levels at 1%, 5%, and 10%, respectively. Note: SN stands for Subjective Norms, SV for Social Values, EE for Entrepreneurial Education, AE for Agricultural Education, and AEI for Agricultural Entrepreneurship Intention.

Table 8 also reveals the linear relationship between the dependent and independent variables with sig. Value less than 0. 05. More specifically, the p-value results of subjective norms (0.002), social values (0.002), agriculture education (0.000), and entrepreneurial education (0.002) are all less than 0.05, indicating a significant contribution to agriculture entrepreneurship intention. The findings also show that for every unit increase in perceived subjective norms, perceived social values, agriculture education, and entrepreneurial education, there is a corresponding unit increase in the level of agriculture entrepreneurship intention 0.170, 0.134, 0.221, and 0.116, respectively. These results are in alignment with previous literature carried out by researchers who found that perceived subjective norms, perceived social values, agriculture education, and entrepreneurial education have a positive influence on the level of agriculture entrepreneurship intention (Safitri and Nugraha, 2022; Bakar et al., 2022; Talukder et al., 2024). Thus, we accept H1, H2, H3, and H4 to establish that these independent variables positively influence

agriculture entrepreneurship intention.

4.10 Path Analysis

The table shows the path analysis and the test of the hypothesis. All the hypotheses posed (H1, H2, H3, and H4) are supported with beta coefficients varying between 0. 291 and 0. 433, which shows the closeness of the relationship of the variables being analyzed. The S. E. is relatively low, and all the p-values are less than 0. P< 0. 001, which implies high levels of statistical significance. T-values are also high, varying from 10. 199 to 17. 118, and thus adding more credence to the relationships. The analysis of the results implies that the paths postulated in the study are significant, pointing to a high degree of association between the variables.

Table 9: Path Analysis and hypothesis testing

Hypothesis	**Beta**	**S. E**	**P value**	**T value**
H1	0.433	.189	0.00***	10.199
H2	0.350	.149	0.00***	14.894
H3	0.422	.157	0.00***	10.649
H4	0.291	.141	0.00***	17.118

Note: ***, **, and * demonstrate significance levels at 1%, 5%, and 10%, respectively.

4.11 Model Summary

The R-squared (Coefficient of Determination) shows the variation in the dependent variable, which is caused by the independent variable and varies from 0 to 1, with a higher value being better for the model. In this case, the R-squared value equals 0. 347 indicates 34%. The model quality of the current research is moderate, with the ability to account for 34% of the variation in the dependent variable by the independent variables. For multiple linear regression, the Adjusted R-squared value is 0.367, which means that 36% percent of the variance in the dependent variable is explained by the independent variables, evaluating the model's goodness more precisely. The independent variables, also called predictors, are Subjective Norms (SN), Social Values (SV), Entrepreneurial Education (ED), and Agriculture Education (AE), and the coefficients of these predictors show how much the dependent variable will change if the predictor changes by one unit.

Table 10: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.613[a]	.375	.367	.43793
Predictors: (Constant), EE, SN, SV, AE				

Source: author calculated

4.12 Hypotheses

The results further confirmed all four hypotheses, which imply a positive correlation between AEI and four variables. However, in line with hypotheses H1 and H4, AEI is positively related to Entrepreneurial Education, which means that the level of education that exposes individuals to entrepreneurial activities increases the Intention to engage in agricultural entrepreneurship. Furthermore, there is a positive relationship between AEI and Social Values (H2), meaning that people with strong Social Values will be more inclined to engage in agricultural entrepreneurship. Last, AEI directly correlates with Agricultural Education, meaning that increasing formal education in agriculture will increase the interest in entrepreneurship. The above study results imply that educational and personal factors are essential in developing agricultural entrepreneurship intentions.

Table 11: Hypotheses Summary

Hypothesis	Path	Result
H1	SN → AEI	Supported
H2	SV → AEI	Supported
H3	AE → AEI	Supported
H4	EE → AEI	Supported

4.13 Discussion

This study also noted that subjective norms were highly influential in predicting Pakistani students' Intention to take

up agriculture. This supports earlier studies that indicated that subjective norms were a determinant of youth engagement in agriculture. Consequently, the following factors have been identified as drivers of LPO: Age (Agarwal et al., 2009; Okun & Sloane, 2002), Gender (Amiry et al., 2015), and Personality (Tiraieyari & Krauss, 2018). Hofstede's theory for the collectivist culture is that perceived subjective norms mainly affect people through good relationships with other individuals (Brewer & Venaik, 2011). Older young people, particularly those with higher education, are less likely to be influenced by the opinions of others and, therefore, when making a decision, may be less concerned with what others will think. The results of the present investigation indicate that to become an effective agricultural entrepreneur; one requires constant appreciative understanding, a positive attitude, and a do-it attitude to farm labor. It also reveals that in such a challenging environment, anyone who wants to set up an agricultural business needs to enhance their EE through appropriate task expectations, self-organization, clear expert feedback, and demonstration of acceptable behavior. Furthermore, more than the ability to evaluate opportunities is needed, the planning facet of agriculture education can help improve a person's alertness to ensure the sustainability of agricultural businesses. This implies that anyone with a passion and desire to start agribusiness should build their ability to evaluate and compare the prospects of an agricultural business through case analyses and simulations, versatility in skills within the rural setting, and flexibility of employment opportunities.

According to our findings, policies and enlightening tutorials should be offered to the experienced group to rekindle their passion, increase their self-confidence, improve their skills, sustain their flexibility, define their mission, and maintain their integrity to support the agricultural entrepreneurial attitude.

Moreover, career counselors and entrepreneurship educators could help people without start-up experience create their EE and entrepreneurial alertness using strategies that include activities such as challenging and time-bound goals. Furthermore, they should ensure that work demands and expectations are appropriate, promote heuristic learning through experience and case-based activities, provide constructive feedback, and identify successes promptly. Finally, our results were exceptionally high and significant for social values and subjective norms. The findings suggest that being acquainted with other entrepreneurs and having invested in other people's businesses were significantly associated with the propensity to start a new venture. Further, we also realized that social capital was a significant determinant in predicting new agricultural entrepreneurship. Thus, the findings reveal that people are more likely to start their businesses in the agriculture sector if they think the prospects are good in their community.

5 Conclusion

This research aimed to expand the knowledge on farmer entrepreneurship, focusing on the parts played by cognitive and social capital in defining start-up orientation. The importance of integrating the traditional TPB theory is also evident in this paper, which extends an understanding of how subjective norms, social value, entrepreneurial education, agricultural education, and agricultural entrepreneurship influence the intention to become an agricultural entrepreneur. AEI concerning the interaction of the combined predictors of EE and the differences in participants' EEs between those with prior entrepreneurial experience and those who do not have such experience. These are attitude to entrepreneurship, alertness to opportunities, perceived value of engaging in entrepreneurship, and perceived norms or standards. We do not say that this research offers a comprehensive theory of agricultural EI or embraces all the potential research areas at the level of the specific practitioner. Therefore, the findings support the proposition that EE needs to be considered an essential component in a multiple-factor model and that for experienced entrepreneurs, the key driver to action is entrepreneurial attitude. In contrast, for novice entrepreneurs, it is EE and entrepreneurial alertness.

Governments should improve their ability to identify overlooked opportunities, one of the entrepreneurial attributes. They must educate those willing to engage in agricultural business on the importance of doing so and design strategies to enhance the perception of opportunities in agriculture. Endorsement in competency and specialization increases the risk of establishing a farm business, suggesting capacity building and training requirements in the countryside. The diffusion of networks between incumbents and new entrants can help alleviate risks and foster knowledge exchange.

The government should establish frameworks enabling cross-pollination and resource exchange among different groups to develop and support an entrepreneurial culture. They should also invite successful business people to address government institutes and ensure that these speeches are aired, making information on start-ups accessible.

The government should also improve social capital among entrepreneurs, especially in education. Given the government's control over educational institutions, it is easier to address the development of social capital at the

national and regional levels.

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