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Impact of Education and Skill Development on Financial Literacy for Sustainable Agricultural Entrepreneurship in the Brahmaputra Valley of India

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Abstract

Financial literacy is an important component in determining the managerial and entrepreneurial capabilities of an agricultural entrepreneur. This study examines the influence of education level and skill development training on financial literacy among agricultural entrepreneurs in the Brahmaputra valley of India. Cross-sectional primary data were collected from 320 agricultural entrepreneurs through field surveys. Both descriptive and inferential statistical tools were applied to analyse the relationship between educational attainment and skill development training pursued, with selected dimensions of financial literacy, namely financial decision-making skills, future planning abilities for agri-enterprises, and adoption of financial technology. The Chi-square results show that both educational level and skill development training pursued by agricultural entrepreneurs significantly enhance their financial literacy. By strengthening financial capabilities among the agricultural entrepreneurs, the study contributes to several sustainability development goals like poverty reduction (SDG 1), promotion of health and well-being (SDG 3), educational quality (SDG 4), gender equality (SDG 5), economic growth (SDG 8), inequality reduction (SDG 10), and responsible production and consumption (SDG 12). The study recommends placing greater emphasis on providing financial education and promoting more entrepreneurial training programs for sustainable agri-entrepreneurial development in Brahmaputra valley.

1 Introduction

In India, the agricultural sector has gradually transformed from subsistence-based farming to entrepreneurial activities. Entrepreneurship development in the agricultural sector creates a dynamic class of farmers who are well-equipped with the necessary business skills to run their farm and non-farm-based enterprises, and enhance their income-generating opportunities [1]. As the agricultural sector has become increasingly competitive, agricultural entrepreneurs are tasked not only with production-oriented activities, but also with pricing, borrowing, record-keeping, risk management, marketing, and digital transactions [2]. Therefore, the impact of education and skill development training on enhancing agripreneurial capabilities has gained significant attention from policymakers.

Capital alone is insufficient for entrepreneurial success, and microbusiness owners often lack financial knowledge and skills required to make effective utilisation of financial capital [3]. Consequently, the entrepreneurship development training was designed to include vocational, financial, managerial, and soft-skill training [4]. Among several entrepreneurial competencies, financial literacy has emerged as an important prerequisite. The OECD International Network on Financial Education provided a broader working definition of financial education, particularly for potential entrepreneurs [5]. To put it simply, financial literacy is the combination of awareness, knowledge, skills, attitudes, and behaviour, required to make sound financial decisions and improve financial well-being [2, 5, 6].

The concept of financial literacy extends beyond the knowledge of financial products and includes the ability to make sound financial judgments that result in maximum utility [7]. It can be considered as a form of human capital, enabling individuals to manage their wealth efficiently, access financial

opportunities, and improve their financial well-being [8]. Financial literacy also helps in achieving several sustainable development goals like poverty reduction (SDG 1), improvement of well-being (SDG 3), quality of education (SDG 4), gender equality (SDG 5), economic growth (SDG 8), inequality reduction (SDG 10), and responsible production and consumption of resources (SDG 12) [9, 10]. For agricultural entrepreneurs in particular, financial literacy does not only mean basic money management, but includes budgeting, tracking costs and revenue, understanding basic banking services, credit access and repayment, debt management, risk evaluation, and making informed business decisions [11–13]. In rural areas, low financial literacy limits their access to financial resources and their ability to use the resources productively [7, 14]. In this sense, education and skill development training are important pathways for strengthening financial capability and entrepreneurial performance [15, 16].

The state of Assam provides an important setting to study this issue because of its wider rural population and robust agricultural base. However, many rural-based entrepreneurs are constrained by the lack of financial awareness, inaccessibility to formal finance, low digital literacy, and dependence on informal sources of finance [2, 17]. Although the government and banking institutions have taken measures to boost financial literacy in Assam, [17] observed a significant gap between financial literacy programmes offered by banks and what agricultural entrepreneurs actually receive in Assam. Thus, it is necessary to study how the educational background of agricultural entrepreneurs and training exposure impact their financial literacy.

2 Literature Review

Several studies have emphasised the role of socioeconomic determinants in the financial capability of entrepreneurs. The financial literacy among the youth is considerably low and is shaped by education, age, gender, family background, income, and social group [18]. Similarly, [19] believe that parental education, household resources, and academic abilities strongly influence financial literacy among the youth. However, the agricultural students in Nigeria perceive agriculture as an employment rather than an enterprise due to financial constraints, weak practical training, and social perceptions [20]. Thus, entrepreneurial education is an essential element because businesses operate within an uncertain, competitive, and dynamic environment [21].

Previous studies have demonstrated the significance of education on financial literacy. For instance, the study conducted by [22] argues that education plays an important role in determining whether and how entrepreneurs plan their ventures. According to [23] education and training programmes leads to sustainable farming practices, climate smart agriculture, reduces gender inequality, efficient management of resources, and better marketing opportunities. Similarly, several studies show that highly educated entrepreneurs can better understand the financial concepts, increase their confidence in using formal financial sources, and improve their decision-making abilities for the business [12, 15, 24]. These entrepreneurs exhibit higher financial literacy than salaried employees, further indicating financial literacy as an important human capital supporting entrepreneurial decision-making [13]. Entrepreneurs with higher levels of financial literacy are able to access external finance, assess financial risks and

improve enterprise sustainability, thus contributing towards sustainable business performance [25]. Thus, education functions as human capital, which helps in financial planning and enhances decision-making abilities of entrepreneurs [19, 26].

Similarly, skill development training also contributes towards the financial capability of the agricultural entrepreneurs. Training programmes like workshops, field exposure, and experiential learning significantly contribute to entrepreneurial development and entrepreneurs' loan management abilities [3, 27]. Additionally, [4] observed that training programmes significantly influence the financial literacy of the members of Self-Help Groups (SHGs). A similar study conducted by [16] in Bosnia and Herzegovina found that these training programmes enhance the financial practices among young entrepreneurs.

In agribusiness contexts, [15] reported that agricultural and skill development trainings have considerably helped the agricultural entrepreneurs in their agripreneurial performance, communication, future planning of the enterprise, and project management [15, 28]. However, evidence from African universities further reveals that their agricultural entrepreneurship curricula often lacked innovative and experiential teaching competencies [29]. This suggests that while education and skill development training improves the agripreneurial performance, its effectiveness depends on practical and hands-on learning approaches.

Studies have also pointed out the growing importance of digital literacy and financial technology. Entrepreneurs are highly required to inculcate the ability to understand online transactions, digital payment services, and technology-enabled financial services [6, 11, 30]. [6] found that financial technology boosts the influence of financial literacy on financial decision-making for the rural population. The use of digital financial inclusion is expected to alleviate the financial constraints and supplement the influence of formal education on the entrepreneurial choice of rural residents [26]. In India, with the government's push for digital financial inclusion, the country has witnessed a gradual shift towards financial management practices [7]. The effective utilization of financial inclusion enables the entrepreneurs and disadvantaged communities to make informed financial decisions and thereby contribute towards sustainability goals like poverty reduction, economic growth and reduced inequalities [31].

These studies have shown that targeted financial awareness programmes can significantly change the financial behaviour of people. For example, [32] found that short training programmes have helped improve the saving habits, budgeting skills, and the use of financial services among individuals. Financial literacy enhances greater financial resilience, helping individuals to cope during financial difficulty [33]. Financial inclusion, on the other hand, improve the well being of the marginalized vendors by providing them with better access to financial services [34]. In today's changing work environment, entrepreneurial success depends not only on technical knowledge, communication, teamwork, problem-solving, and adaptability but also on financial literacy as an important skill set [35, 36].

Although previous literature shows that education and skill development training improve financial literacy, their impact depends on delivery, relevance, content, and participation [4, 27]. Much of the

literature focuses on the financial literacy of rural households or on general entrepreneurship. Relatively, fewer studies have examined the relationship between education, skill development training, and financial literacy of the agricultural entrepreneurs [13], particularly in Assam. Building on the above discussion, the present study aims to analyze the impact of educational attainment and skill development training on the financial literacy of the agricultural entrepreneurs in Assam, particularly on financial decision-making, future agribusiness planning, and adoption of financial technology.

3 Methodology

The Brahmaputra Valley Zone of Assam comprises 30 districts, each of which falls under four agro-climatic zones. For the present study, four major districts have been selected from the four agro-climatic Brahmaputra Valley Zones: Sivasagar from the Upper Brahmaputra Valley Zone, Kamrup Rural from the Lower Brahmaputra Valley Zone, Sonitpur from the North Bank Plain Zone, and Nagaon from the Central Brahmaputra Valley Zone. The selection of districts is based on the highest number of registered agricultural entrepreneurs and their association with different categories of agriculture and allied sectors. Registered agricultural entrepreneurs in four Brahmaputra zones who have been running their business for at least three years were selected for the study.

The information regarding the registered agricultural entrepreneurs was collected with the help of the baseline survey conducted by the World Bank initiative Assam Agribusiness and Rural Transformation Project (APART) during the financial year 2020-21, and the District Industries and Commerce Centres (DICC) from the four districts. APART was able to identify 4521 registered agricultural entrepreneurs in different agricultural value chain in Assam. But the targeted population for the study includes all the registered agricultural entrepreneurs from those four districts. Thus, the population of the present study is 1889. Thereafter, 320 registered agricultural entrepreneurs were identified using Cochran's formula. A proportionate stratified random sampling technique was used, and the sample was proportionately distributed based on the concentration of registered agricultural entrepreneurs in each district. Following formula was applied for sample selection for the four districts:

$$\text{Sample from each Stratum} = \frac{Member\ from\ the\ stratum}{Total\ population} \times \ Desired\ Sample\ Size$$

Thus, the sample distribution for the present study was: Sonitpur (78), Kamrup Rural (80), Nagaon (95), and Sivasagar (67). A structured interview schedule was formulated for collecting primary data. Along with other closed-ended questions, the agricultural entrepreneurs were asked to indicate their perception by providing scores: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Financial literacy were measured using three statements. Cronbach's Alpha was utilized to check the reliability of the statements. The statements showed a Cronbach's Alpha of 0.926, which was more than the acceptable threshold of 0.70.

The classification, tabulation, and analysis of the collected data were done in IBM SPSS Statistics 20. To explore agricultural entrepreneurs' education level, skill development training, and financial literacy,

descriptive statistical tools like frequency distribution, mean, and standard deviation were utilised. Inferential statistics like Pearson's Chi-square test of independence were employed to assess the association between the education level, skill development training pursued, and their financial literacy.

Based on the above discussion, the following null hypotheses have been formed:

H_{01}: There is no significant association between education level and financial decision-making skills of the agricultural entrepreneurs.

H_{02}: There is no significant association between education level and future planning abilities of the agricultural entrepreneurs for agri-enterprises.

H_{03}: There is no significant association between education level and adoption of financial technology among the agricultural entrepreneurs.

H_{04}: There is no significant association between skill development training and financial decision-making skills of the agricultural entrepreneurs.

H_{05}: There is no significant association between skill development training and future planning abilities of the agricultural entrepreneurs for agri-enterprises.

H_{06}: There is no significant association between skill development training and adoption of financial technology among the agricultural entrepreneurs.

4 Results

Table 1 highlights the details of the level of education and skill development training pursued by the agricultural entrepreneurs in Assam. It reveals that a majority of the agricultural entrepreneurs, i.e., 45.6%, have attained primary level education, followed by graduates (25.6%), and those having secondary level education (24.1%). However, among the 320 agricultural entrepreneurs, only 3.4% had post-graduation degrees. The dominance of primary level education among the agricultural entrepreneurs indicates that education is not an important pre-requisite for participation in agripreneurial activities. However, the participation of graduates reflects a growing interest of educated individuals in agricultural entrepreneurship.

In terms of skill development training, 165 out of 320 (51.6%) agricultural entrepreneurs had received training, and the remaining 48.4% did not. Furthermore, among those 165 agricultural entrepreneurs, a majority of them, i.e., 30.3% have attained training in basic agricultural and horticultural activities, 28.5% have received training in allied sectors of agriculture in animal/plant/soil/food sciences, 23% have received training in managing agribusinesses, 10.9% have received training on allied sectors of agriculture like animal husbandry, dairy, fishery, etc. However, the remaining 7.3% have received training in other non-agricultural activities. The table further reveals that these training courses were provided for

a duration of at least one year, as 97% of agricultural entrepreneurs have reported having less than a year of skill development training.

Table 1 Profile of Agricultural entrepreneurs' Education and Skill Development Training.

Source

Field Survey

Sl No.	Variables	Groups	Total (n=320)	Percentage (%)
1	Level of Education	No formal education	4	1.3
		Primary education to 10th pass	146	45.6
		Secondary education/12th pass/Diploma	77	24.1
		Graduation	82	25.6
		Post-graduation	11	3.4
2	Training	No	155	48.4
		Yes	165	51.6
3	Subject Area (if yes)	Agriculture, Horticulture and Forestry	50	30.3
		Animal/Plant/Soil/Food Sciences	47	28.5
		Agricultural Economics/ Agribusiness	38	23.0
		Sericulture/Pisciculture/Vermicomposting/ Floriculture/Poultry/Dairy	18	10.9
		Any others	12	7.3
4	Duration	Up to 1 year	160	97.0
		More than 1 year	5	3.0

Figure 1 displays the level of interest in financial knowledge among the agricultural entrepreneurs. The responses of the agricultural entrepreneurs were recorded in three categories: not interested, somewhat interested, and very interested. Agriculture, Horticulture and Forestry

Figure 1 Interest in Financial Knowledge shown by Agricultural entrepreneurs.

The figure reveals that out of a total of 320 agricultural entrepreneurs, 259 agricultural entrepreneurs are very interested in acquiring financial knowledge. On the other hand, 61 agricultural entrepreneurs are somewhat interested, and none of them reported a lack of interest. This indicates that a majority of

agricultural entrepreneurs expressed an increased awareness in learning and understanding financial management.

The perception of agricultural entrepreneurs regarding their financial literacy is highlighted further in Table 2. In terms of financial decision-making skills, a large proportion of agricultural entrepreneurs (75.6%) have reported having a neutral response. Collectively, 30 agricultural entrepreneurs have reported agreement, with 1.6% of them having strongly agreed that financial knowledge has improved their decision-making skills. Whereas 48 agricultural entrepreneurs expressed their disagreement. Similarly, regarding the agricultural entrepreneurs' perception of the influence of financial knowledge on better planning for the future of their agri-enterprises, 79.7% of them have reported having neutral agreement.

However, 7.8% and 1.3% of agricultural entrepreneurs have agreed that financial knowledge helps them in making better plans for the future of their agri-enterprise. Comparatively, 48 agricultural entrepreneurs have responded with disagreement. In the case of agricultural entrepreneurs adopting financial technology, a majority of agricultural entrepreneurs (78.4%) have a neutral response, only 29 agricultural entrepreneurs have agreed, and 40 agricultural entrepreneurs have disagreed to the impact of their financial knowledge on the adoption of financial technology.

Table 2
Level of Financial Literacy among the Agricultural entrepreneurs.

Source: Field Survey

Sl No.	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S.D.
1	Improvement in Decision-making skills	10 (3.1)	38 (11.9)	242 (75.6)	25 (7.8)	5 (1.6)	2.95	0.59
2	Better planning for the future of the Agri-enterprise	12 (3.8)	24 (7.5)	255 (79.7)	25 (7.8)	4 (1.3)	2.94	0.60
3	Adoption of Financial Technology	12 (3.8)	28 (8.8)	251 (78.4)	25 (7.8)	4 (1.3)	2.93	0.62
Note: Figures in parentheses represent percentages								

Table 2 also shows that a significant portion of agricultural entrepreneurs across the three variables have remained concentrated in the neutral category. Although the agricultural entrepreneurs have demonstrated an interest in financial knowledge (Fig. 1), a majority of agricultural entrepreneurs neither strongly disagree nor strongly agree with the influence of their financial knowledge on decision-making, future planning, and adoption of financial technology. This was further supported by the mean scores, which have remained within the range of 2.93 to 2.95. Low standard deviation further highlights that

most agricultural entrepreneurs share similar opinions on the importance of financial literacy on the agribusiness decision-making, future planning, and technology adoption.

The relationship between the education level and financial decision-making skills of the agricultural entrepreneurs are demonstrated in Table 3. The table reveals that a majority of the agricultural entrepreneurs across all the educational categories remained neutral in terms of financial decision-making abilities. Among the graduates (84.1%), secondary level (80.5%), and primary level education holders (79.5%) reported a neutral response.

Positive responses regarding agreement and strong agreement were seen relatively higher among the agricultural entrepreneurs with secondary level, graduates, and post-graduate qualifications, compared to those having less than primary level education. This indicates that higher educational attainment helps in enhancing financial decision-making abilities among the agricultural entrepreneurs.

Table 3
Association between Education Level and Financial Decision-Making among Agricultural entrepreneurs.

Source: Field Survey

Sl No.	Level of Education	Improvement in Decision-making Skills					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1	No formal education	-	2 (50.0)	2 (50.0)	-	-	4
2	Primary education to 10th pass	5 (3.4)	14 (9.6)	116 (79.5)	11 (7.5)	-	146
3	Secondary education/12th pass/Diploma	1 (1.3)	6 (7.8)	62 (80.5)	6 (7.8)	2 (2.6)	77
4	Graduation	5 (6.1)	2 (2.4)	69 (84.1)	6 (7.3)	-	82
5	Post-graduation	1 (9.1)	-	6 (54.5)	2 (18.2)	2 (18.2)	11
	Total	12 (3.8)	24 (7.5)	255 (79.7)	25 (7.8)	4 (1.2)	320

Note: Figures in parentheses represent percentages

Similarly, the association between the education level and future planning abilities of the agricultural entrepreneurs is assessed in Table 4. In the case of better future planning for the enterprise too, a large

section of the agricultural entrepreneurs have responded to the neutral category across all the educational levels.

However, it is observed that there has been a relatively higher level of agreement among agricultural entrepreneurs having higher educational qualifications. For instance, the level of agreement among secondary-level, graduates, and post-graduate agricultural entrepreneurs was higher, despite having a comparatively lower number of agricultural entrepreneurs having higher education qualifications. This finding suggests that agricultural entrepreneurs with high education contribute positively towards the future planning of their agri-enterprise.

Table 4
Association between Education Level and Ability of Future Planning for the Agri-enterprise.

Source: Field Survey

Sl No.	Level of Education	Better planning for the future of the Agri-enterprise					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1	No formal education	-	2 (50.0)	2 (50.0)	-	-	4
2	Primary education to 10th pass	5 (3.4)	16 (11.0)	112 (76.7)	13 (8.9)	-	146
3	Secondary education/12th pass/Diploma	1 (1.3)	8 (10.4)	61 (79.2)	5 (6.5)	2 (2.6)	77
4	Graduation	5 (6.1)	2 (2.4)	69 (84.1)	6 (7.3)	-	82
5	Post-graduation	1 (9.1)	-	7 (63.6)	1 (9.1)	2 (18.2)	11
	Total	12 (3.8)	28 (8.8)	251 (78.4)	25 (7.8)	4 (1.2)	320

Table 5 further reveals the association between the education level and adoption of financial technology by the agricultural entrepreneurs of Brahmaputra valley. It suggests that agricultural entrepreneurs with higher educational qualifications are more inclined to adopt financial technology. Agricultural entrepreneurs with graduation and post-graduation degrees showed more inclination towards agreement and strong agreement. On the other hand, agricultural entrepreneurs having no formal education, primary-level, and secondary-level education showed a greater level of disagreement.

Table 5
Association between Education Level and Adoption of Financial Technology by the Agricultural entrepreneurs.

Source: Field Survey

Sl No.	Level of Education	Adoption of Financial Technology					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1	No formal education	-	2 (50.0)	2 (50.0)	-	-	4
2	Primary education to 10th pass	4 (2.7)	24 (16.4)	107 (73.3)	11 (7.5)	-	146
3	Secondary education/12th pass/Diploma	1 (1.3)	8 (13.0)	59 (76.6)	5 (6.5)	2 (2.6)	77
4	Graduation	4 (4.9)	2 (2.4)	68 (82.9)	7 (8.5)	1 (1.2)	82
5	Post-graduation	1 (9.1)	-	6 (54.5)	2 (18.2)	2 (18.2)	11
	Total	10 (3.1)	38 (11.9)	242 (75.6)	25 (7.8)	5 (1.6)	320

The findings, therefore, suggest that education enhances the awareness and usage of financial technology among the agricultural entrepreneurs. The subsequent tables demonstrate the relationship between the skill development training pursued by the agricultural entrepreneurs and their decision-making abilities, future planning abilities, and adoption of financial technology.

The association of the skill development training and the decision-making abilities of the agricultural entrepreneurs is examined in Table 6. Among the agricultural entrepreneurs who have undergone training, 12.1% have agreed, and 2.4% have strongly agreed that skill development training positively influences their decision-making abilities. Whereas agricultural entrepreneurs without training have shown a higher level of disagreement.

In addition, a significant proportion of agricultural entrepreneurs provided neutral responses, with positive responses higher among trained agricultural entrepreneurs. The findings suggest that skill development training positively contributes to the financial decision-making abilities of agricultural entrepreneurs.

Table 6
Association between Skill Development Training and Improvement in the Decision-making among Agricultural entrepreneurs.

Source: Field Survey

Sl No.	Skill Development Training	Improvement in Decision-making skills					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1	Trained	4 (2.4)	16 (9.7)	121 (73.3)	20 (12.1)	4 (2.4)	165
2	Untrained	8 (5.2)	8 (5.2)	134 (86.5)	5 (3.2)	-	155
	Total	12 (3.8)	24 (7.5)	255 (79.7)	25 (7.8)	4 (1.2)	320

Table 7 highlights the relationship between the skill level and future planning abilities of agricultural entrepreneurs for agri-enterprises. Among the trained agricultural entrepreneurs, 11.5% agreed and 2.4% strongly agreed on the positive influence of their training on their future planning abilities for agri-enterprises.

Table 7
Association between Skill Development Training and Ability of Future Planning for the Agri-enterprise.

Source: Field Survey

Sl No.	Skill Development Training	Better planning for the future of the Agri-enterprise					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1	Trained	4 (2.4)	18 (10.9)	120 (72.7)	19 (11.5)	4 (2.4)	165
2	Untrained	8 (5.2)	10 (6.5)	131 (84.5)	6 (3.9)	-	155
	Total	1 (1.3)	28 (8.8)	251 (78.4)	25 (7.8)	4 (1.2)	320

The percentage of agricultural entrepreneurs was comparatively lower among the untrained agricultural entrepreneurs. Most agricultural entrepreneurs, both trained and untrained, remained neutral. The findings suggest that training helps agricultural entrepreneurs develop better strategic and long-term planning abilities for their agri-enterprises.

Furthermore, Table 8 demonstrates the relationship between skill development training and the adoption of financial technology by agricultural entrepreneurs. The findings in table show that there has been a noticeable difference between the perceptions of agricultural entrepreneurs who have received training and those who have not. Trained agricultural entrepreneurs showed relatively more positive perceptions of the adoption of financial technology than untrained agricultural entrepreneurs. Although the majority of trained agricultural entrepreneurs (69.7%) remained neutral, 11.5% agreed and 2.4% strongly agreed, compared with untrained agricultural entrepreneurs. This indicates that training exposure positively contributes to the adoption of financial technology by agricultural entrepreneurs.

Table 8
Association between Skill Development Training and Adoption of Financial Technology by the Agricultural entrepreneurs.

Source: Field Survey

Sl No.	Skill Development Training	Better planning for the future of the Agri-enterprise					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1	Trained	4	23	115	19	4	165
		(2.4)	(13.9)	(69.7)	(11.5)	(2.4)	
2	Untrained	6	15	127	6	1	155
		(3.9)	(9.7)	(81.9)	(3.9)	(0.6)	
	Total	10	38	242	25	5	320
		(3.1)	(11.9)	(75.6)	(7.8)	(1.6)	

The study also attempted to conduct chi-square tests to examine the association between education level, skill development training, and financial literacy among agricultural entrepreneurs. Table 9 provides an overall summary of the chi-square results. The findings revealed that all hypotheses were statistically significant.

The education level of the agricultural entrepreneurs shows a statistically significant association with financial decision-making skills (χ^2 = 50.225, p-value = 0.000), future planning abilities for the agri-enterprises (χ^2 = 48.115, p-value = 0.000), and adoption of financial technology (χ^2 = 44.199, p-value = 0.000). Similarly, skill development training also shows a statistically significant association with financial decision-making skills (χ^2 = 17.367, p-value = 0.002), future planning abilities for the agri-enterprises (χ^2 = 14.563, p-value = 0.006), and adoption of financial technology (χ^2 = 10.937, p-value = 0.027). Since all hypotheses had a p-value less than the 0.05 significance level, all six hypotheses are accepted. These findings confirm that the education level and skill development training of the agricultural entrepreneurs significantly influence the financial literacy of the agricultural entrepreneurs.

Table 9
Summary of the Chi-Square Results *Source*: Author's Compilation

Hypotheses	Independent Variable	Dependent Variable	Pearson Chi-square	Df	p-value	Result
H_{01}	Education Level	Financial Decision-Making Skills of the Agricultural entrepreneurs	50.225	16	0.000	Significant
H_{02}	Education Level	Ability of Future Planning for the Agri-enterprise	48.115	16	0.000	Significant
H_{03}	Education Level	Adoption of Financial Technology	44.199	16	0.000	Significant
H_{04}	Skill Development Training	Financial Decision-Making Skills of the Agricultural entrepreneurs	17.367	4	0.002	Significant
H_{05}	Skill Development Training	Ability of Future Planning for the Agri-enterprise	14.563	4	0.006	Significant
H_{06}	Skill Development Training	Adoption of Financial Technology	10.937	4	0.027	Significant

5 Discussion

This study attempted to analyze the impact of education level and skill development training on the financial literacy of the agricultural entrepreneurs in Assam. The findings of the study confirmed that an agripreneur's educational attainment and skill development training are significantly associated with their financial decision-making, future planning abilities for the agri-enterprise, and adoption of financial technology.

In a broader sense, the study observed that higher educational attainment was associated with better financial literacy, despite having a majority of agricultural entrepreneurs having a primary level of education. Agricultural entrepreneurs having secondary-level, graduate, and post-graduate qualifications showed relatively stronger financial decision-making skills, future planning abilities, and financial technology adoption. The Chi-square results further confirm that education level significantly influences all three dimensions of financial literacy. This finding is consistent with the study conducted by [12], [24], and [13], who revealed that higher education improves an entrepreneur's understanding of finance, enhancing their confidence in using financial services and engaging in more informed decision-making for the business. In this context, [8] argue that entrepreneurs with financial literacy are able to manage their financial resources more effectively and find ease in accessing financial opportunities. Higher

education of agricultural entrepreneurs will enable their ability in making better informed financial decisions.

The findings of the study also show that skill development training undertaken by agricultural entrepreneurs has a substantial influence on financial literacy. Agricultural entrepreneurs who participated in the skill development training have exhibited higher levels of agreement regarding the improvement in their financial decision-making skills, future planning abilities, and financial technology adoption. This finding supports the study of [4], who found that training programmes positively influence financial literacy, and with [16], who highlighted that business and financial training enhances financial knowledge and contributes to better financial management practices among the entrepreneurs. [3] argued that access to financial resources without knowledge and skills limits the entrepreneur in making effective utilization of the resources. Therefore, training serves as an important pre-requisite for translating financial knowledge into practical financial behaviour.

However, despite the positive associations, the study reveals that most agricultural entrepreneurs reported neutral responses across all three dimensions of financial literacy. Only a few agricultural entrepreneurs expressed strong agreement that financial knowledge had improved their financial decision-making skills, future planning abilities, and financial technology adoption. This suggests an existing gap between awareness and practical application of financial literacy. As demonstrated in the study conducted by [17], there is a substantial gap between financial literacy programmes claimed to be provided by banking institutions and those received by agricultural entrepreneurs in Brahmaputra valley. Likewise, studies by [14] and [7] observed that financial literacy remained low among the rural populations, despite the existence of financial literacy programmes. These findings suggest that while educational attainment and skill development training positively influence financial literacy, the effective utilization of such interventions will depend on their quality, delivery, content, and accessibility. Through Sen's Capability Approach and Human Capital Theory, [37] argues that financial literacy programmes can help advance economic development. By providing the entrepreneurs with appropriate knowledge and skills, financial institutions will be able to strengthen their entrepreneurial capabilities, foster sustainable agricultural development goals and enable them to make informed financial decisions which will contribute towards the achievement of sustainable development goals (SDGs) [23, 38].

6 Conclusion

The study confirms that both education and skill development training have a positive influence in strengthening the financial literacy of the agricultural entrepreneurs in Brahmaputra valley. In the light of the above discussion, the present study suggests an integration of financial education, financial training, digital literacy, along with general modules on agribusiness development. It further recommends policymakers, formal financial institutions, and other agri-entrepreneurship promotion institutes to provide need-based training (on financial products and services, financial technology, and financial risk management), particularly targeting the agricultural entrepreneurs having education below primary level. These initiatives will enable the agricultural entrepreneurs to enhance their financial decision-making

skills, future planning abilities benefiting their agribusinesses, and adopt financial technology. These interventions will strengthen the financial literacy among the agricultural entrepreneurs and eventually facilitate long-term financial sustainability of the agribusinesses in Assam.

Declarations

Ethics Approval and Consent to Participate

The study was approved by the Research Ethics Committee of Mizoram University, India. The research was conducted in accordance with the ethical standards of the 1964 Declaration of Helsinki and its subsequent amendments, as applicable to social science research. Participation in the study was voluntary, and written informed consent was obtained from all 320 participants prior to data collection. All respondents were adults aged 18 years and above.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Clinical trial

Not applicable

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Author Contribution

I.T. conceptualised the study, collected the data, developed the methodology, performed the formal analysis, and prepared the original draft of the manuscript. A.S. contributed to the conceptualisation and methodology, supervised the research, reviewed and edited the manuscript, and provided overall guidance throughout the study.

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Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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Figures

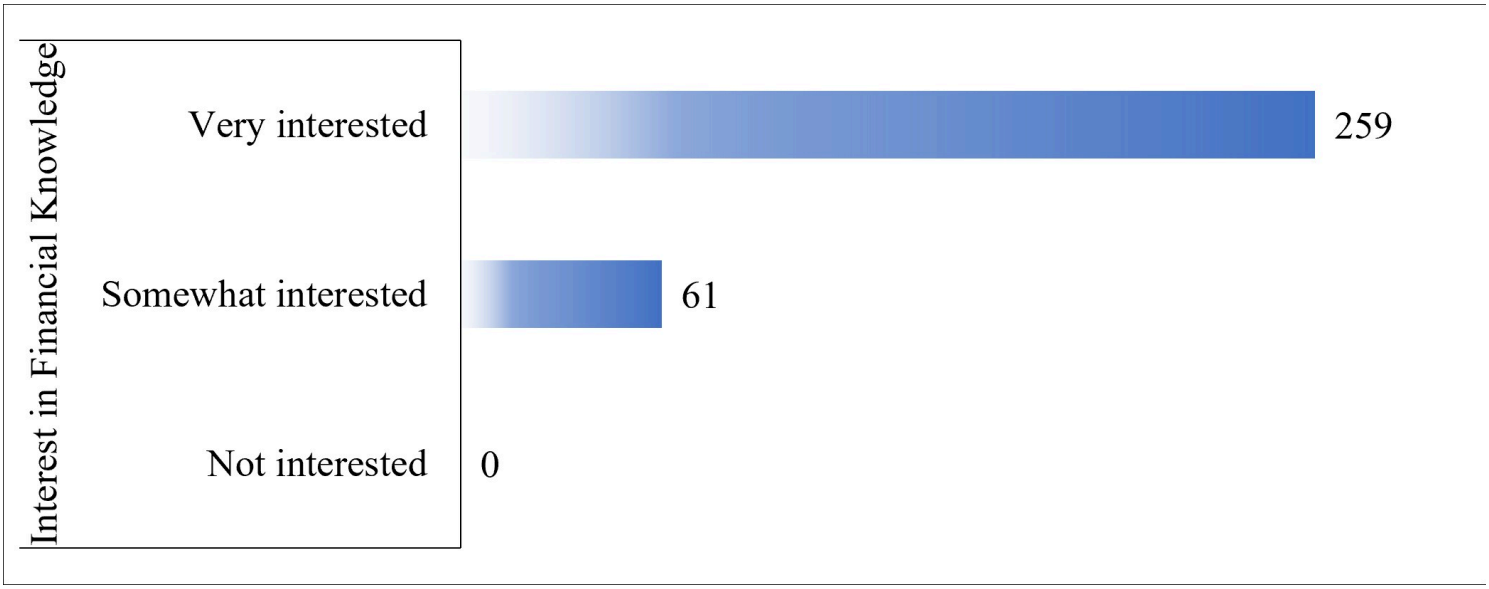


Figure 1

Interest in Financial Knowledge shown by Agricultural entrepreneurs.