

Article

Students' Perspectives on Entrepreneurship and Its Intention in India

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Abstract: The present study was carried out with the objective of understanding the stated interest of agricultural students in entrepreneurship and to provide an accurate research report for decision-makers, for developing entrepreneurship in India. In the present investigation, a two-stage sampling procedure was employed. In the first stage, cluster sampling was used to select the state agricultural universities (SAUs) in India. In the second stage, simple random sampling was performed to select student respondents from each SAU. Data were collected from 1797 agricultural students (second stage units) from 17 SAUs out of 74 (first stage units) studying a bachelor's/master's degree program and analyzed to infer outcomes related to entrepreneurship. Variables such as basic information, job interest, motivational factors, hurdles to becoming an entrepreneur, awareness about government schemes, and essential hard and soft skills were measured. Data were analyzed using frequencies, chi-square test (X^2), rank-based quotient (RBQ), and binary logistic regression (BLR) analyses. The survey results revealed that "entrepreneurship" was given a lower preference by the majority; as a result, there was less motivation for students from family members. However, about 78% of students showed interest in becoming an entrepreneur. Significant areas of entrepreneurial interest for the observed students included, in order are digital agriculture < input production < marketing < farming < advisory services < dairying < financial services < poultry < developing eLearning material for farmers < and other jobs. This study demonstrates the need for Career Development Centers (CDCs), government support, and awareness and incentives regarding entrepreneurship through effective policy interventions, to protect entrepreneurs from the potential risk of business losses. This research outcome substantially contributes to the Sustainable Development Goal (SDG-4, quality education), through the soft skill development of the students, resulting in innovative agri-entrepreneurs. The present research suggested some policy implications to promote entrepreneurship more widely, which may also help other developing countries to frame potential regulations for agricultural education and entrepreneurial activities.

Keywords: entrepreneurship; students' perception; entrepreneurial intentions; agricultural education; higher education



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1. Introduction

Entrepreneurship education (E.E.) has recently captured the attention of academics and policymakers [1] in the field of agricultural education in developing countries such as India, as it is vital for promoting entrepreneurial skills and knowledge [2] among students. Developing students' interest in entrepreneurship is critical in the present context because of its significant role in the country's economy, creating employment opportunities and innovations in agri-business [3] and equipping students with competencies [4]. Currently,

E.E. has also become an objective of academic research [5]. The dichotomy between low employment opportunities and high demand for agricultural education shows the need for alternate ways and means of career growth, and entrepreneurship stands out, as the traditional production-oriented agriculture is transforming into agribusiness. In the context of the many investigations on entrepreneurship development [6], we need an understanding of agriculture students' perceptions of entrepreneurship as the best career choice. Such investigations would help decision-makers to gain more insight into the honest opinions of individuals about becoming an entrepreneur. It also helps in providing knowledge on critical educational questions, such as do we need various types of educational trainings to achieve diversified goals through entrepreneurship or to enroll diversified students for entrepreneurship development? Entrepreneurial activity is, in fact, an intentionally planned behavior [7]. Students design their entrepreneurial career progression either based on their innate intentions or a planned approach. Educators need to answer questions such as do we need to differentiate between students who have already started showing an intention to become an entrepreneur and those who aspire to alternative paths?

However, observing entrepreneurial behaviors requires effort and time, as it needs to be well defined and requires detailed research. Additionally, such studies enable researchers to accurately distinguish between those who have turned their ideas into reality and those who have not or who remain dormant. In this manner, we can gain better insights into which factors are essential in entrepreneurial processes [8]. Studying sector-specific entrepreneurship helps us understand the phenomenon [9]. Entrepreneurial potential can be increased by identifying the interconnectedness between different societal needs and potential solutions [10], and it helps solve life's problems and develop a forward-looking and positive attitude toward risks [4,11,12]. Entrepreneurial activities are our future and the basis for our well-being [13].

Agricultural entrepreneurship encompasses the application of entrepreneurial principles and innovative strategies within the realm of farming. It entails locating and pursuing prospective agricultural businesses, which might encompass both conventional farming methods and indirectly connected non-farming enterprises. Agricultural entrepreneurship in the context of farming entails the introduction of fresh concepts, methods, and techniques, to boost output, effectiveness, and sustainability. This might entail using precision farming techniques; adopting advanced agricultural practices; producing inputs, marketing; agro-advisories; digital agriculture (resource management using artificial intelligence); financial services; raising poultry, dairy, and fish; and researching niche markets for agricultural products. Collectively, farming and agricultural entrepreneurship are intertwined. Agricultural entrepreneurship includes the entrepreneurial attitude and techniques used within the agriculture sector to improve farming practices, explore new opportunities, and drive economic growth. The demand for entrepreneurship is the essential feature of multifunctional agriculture and to address how agribusinesses deal with rural development [14]. Pindado and Sánchez [15] define agricultural entrepreneurship as an individual's decision to start a new business in the agriculture sector. Agricultural entrepreneurship and entrepreneurial intentions are positively influenced by gender [16], academic institution [17], and the learning environment [18–20]. However, age is not an influencing factor on entrepreneurial intentions [21–25]. Furthermore, the student's family background and financial status are the most significant factors in encouraging graduates to become entrepreneurs. In early life, children's minds are strongly influenced by their parent's work involvements. Parental roles within a family business will influence children's attitude towards becoming self-employed themselves [26]. Some innovative companies believe in revolution, with great novelty, opportunities, and challenges, and ultimately work for market progress [27]. Nevertheless, such opportunities attract entrepreneurial aspirants who think innovatively and believe in a revolution through business [28]. Agriculture students are often interested in the best career options and have dilemmas about career questions: Are there good jobs for us? Where? How to attend the interview? Which field is better? How to proceed? Who

will advise? How will life be after graduation? etc. Therefore, creating job opportunities or the placement of agricultural graduates in various sectors immediately after graduation or motivating graduating students to become entrepreneurs in agriculture business is pivotal to dealing with unemployment and agricultural education loss [29].

Nevertheless, students need professional excellence in soft skills (leadership quality, communication skills, interview skills, teamwork, etc.) that significantly contribute to the personality that drives a successful entrepreneur. Therefore, there is a great necessity for improving educational quality, through the quality of faculties and that will ultimately help achieve sustainable development goals (SDG-4: equitable quality education). Quality education results in professional and skilled students who are ready for industry or entrepreneurship. Educational institutions must focus on providing such high-quality education, in order to contribute to SDGs. Generally, the state agricultural universities have a placement unit for provisioning job opportunities for students after the completion of their degree program. The new concept of the career development center (CDC), developed by the National Agricultural Higher Education Project (NAHEP), Component 2 undertaken at ICAR-National Academy of Agricultural Research Management (NAARM), has established CDCs in five universities in India. This new concept of a CDC integrates alumni connection, capacity building, and entrepreneurship, along with job placements, in order to transform the agri-students' attitude, from job seeking to job giving. This concept was developed based on consensus (the experiences of previous efforts). The present study also highlights the success story of CDC activities and their importance in developing agri-entrepreneurs in India.

There is a significant gap between our understanding of entrepreneurship education and the intension of students to become an entrepreneur, even though students interact with many agri-business entrepreneurs and skilled people/experts to learn implementation techniques and achieve profits and other goals. Entrepreneurship initiative through various approaches is highly influenced by the perception of the individual and has remained primarily undertheorized, especially from the perspective of agriculture. Thus, collecting and analyzing students' opinions and perceptions regarding entrepreneurship is necessary. Our study addresses three research questions: Do students choose entrepreneurship as their best career option? What are the hurdles in the way of students becoming entrepreneurs? What are the essential hard and soft skills required for entrepreneurship, as per students' opinions? Our aim at the outset was to evaluate agriculture students' intentions towards entrepreneurship and provide an accurate research report for decision-makers, for developing entrepreneurship in India.

2. Materials and Methods

2.1. Data Sampling

In the present investigation, a two-stage sampling procedure was employed. In the first stage, cluster sampling was used to select the state agricultural universities (SAUs) in India. In the second stage, simple random sampling was performed to select student respondents from each SAU. To fulfil the objectives, data were collected from 1797 agricultural students (second stage units) from 17 SAUs (first stage units) studying a bachelor's/master's degree program and analyzed to infer the outcomes related to entrepreneurship. Out of 74 SAUs in India, we selected 17 SAUs, where we conducted one-day workshops on "Development of soft skills for entrepreneurship among agri-graduates". Student numbers varied according to the strength within the respective universities. This study involved understanding the stated interest in entrepreneurship of agriculture students. State-wise, there were about 273 respondents (students) from Uttar Pradesh, 199 from Rajasthan, 198 from Madhya Pradesh, 178 from West Bengal, 172 from Arunachal Pradesh, 166 from Karnataka, and 102 from Maharashtra. Meanwhile, from the rest of the states, there were less than 100 students (Figure 1).

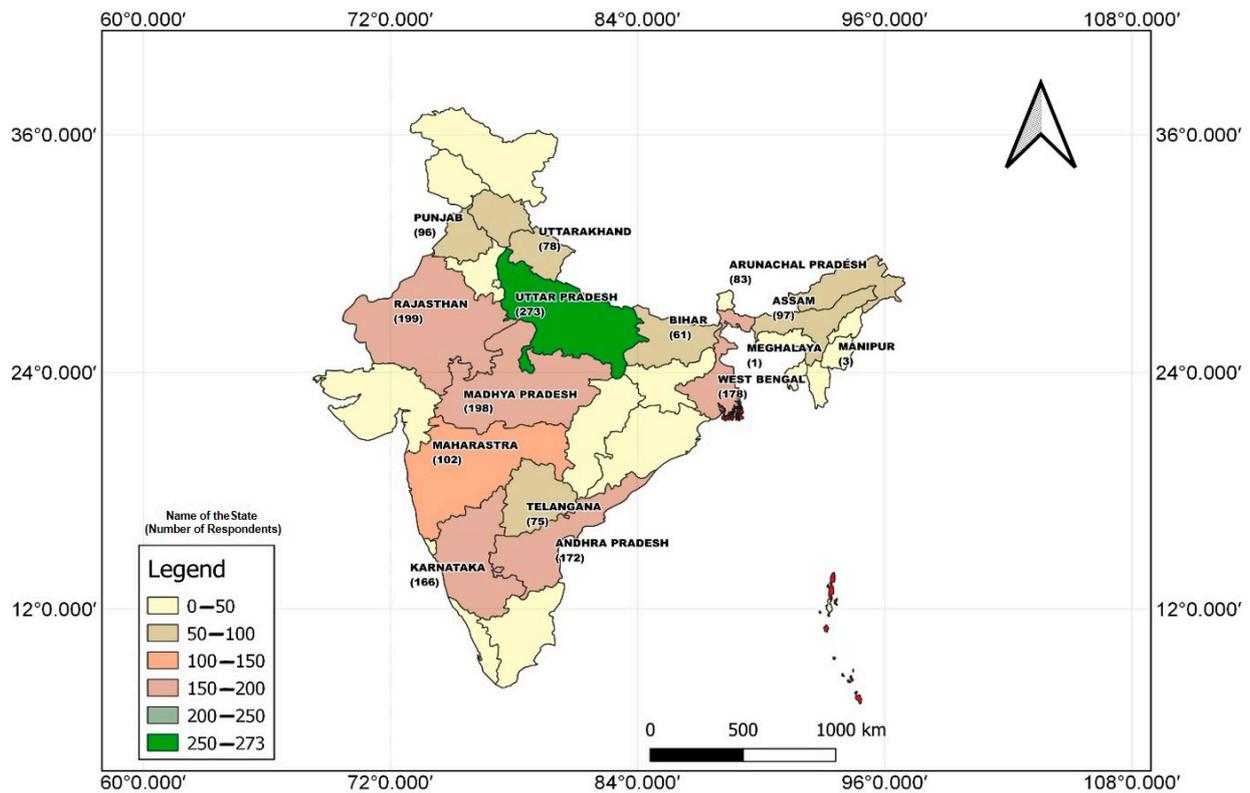


Figure 1. No. of student respondents from different states.

2.2. Survey

A survey questionnaire was designed to gather various information on students' opinions about being an entrepreneur. The authors developed a questionnaire based on brainstorming sessions and a standardized scale (as per the Likert-type scale response given by [30,31]). The present survey planned to gauge the interest in entrepreneurship and opinions on motives, constraints, skills, and ongoing entrepreneurship development programs in India. According to Ajzen's theory of planned behavior (TPB), the three antecedents of entrepreneurial intention are attitude towards engaging in entrepreneurial action, perceived social norms, and perceived behavioral control, or self-efficacy [32]. Entrepreneurial intention is seen as a deliberately preplanned behavior [33]. The TPB may therefore be used to assess entrepreneurial purpose [34]. A common idea in several areas is the theory of planned behavior, which "predicts and explains behavior in specific contexts". This is also true for entrepreneurship research, since it assumes that becoming an entrepreneur is a deliberate activity and that intention is a state of consciousness [35]. Motivational factors were assessed as per the scale given by [36]. The model used in the present study is illustrated in Figure 2.

The first section collected basic information about the student (gender, education, family background, father's occupation, and income). The following section asked students to rank their job interests, motivational factors for becoming an entrepreneur, hurdles to becoming an entrepreneur, and awareness about government schemes for entrepreneurs. In the later section, the respondents were asked to rank the critical hard and soft skills required for an entrepreneur, as per their opinion and awareness of entrepreneurship-related programs, incubation centers, etc. Finally, the respondents were asked to rank their choices for the agri-business sector if they chose to become an entrepreneur. Options in this questionnaire included (1) input production, (2) input marketing, (3) advisory services, (4) financial services, (5) farming, (6) poultry, (7) dairying, (8) developing eLearning material for farmers, (9) digital agriculture, and (10) others. The survey was then analyzed and interpreted.

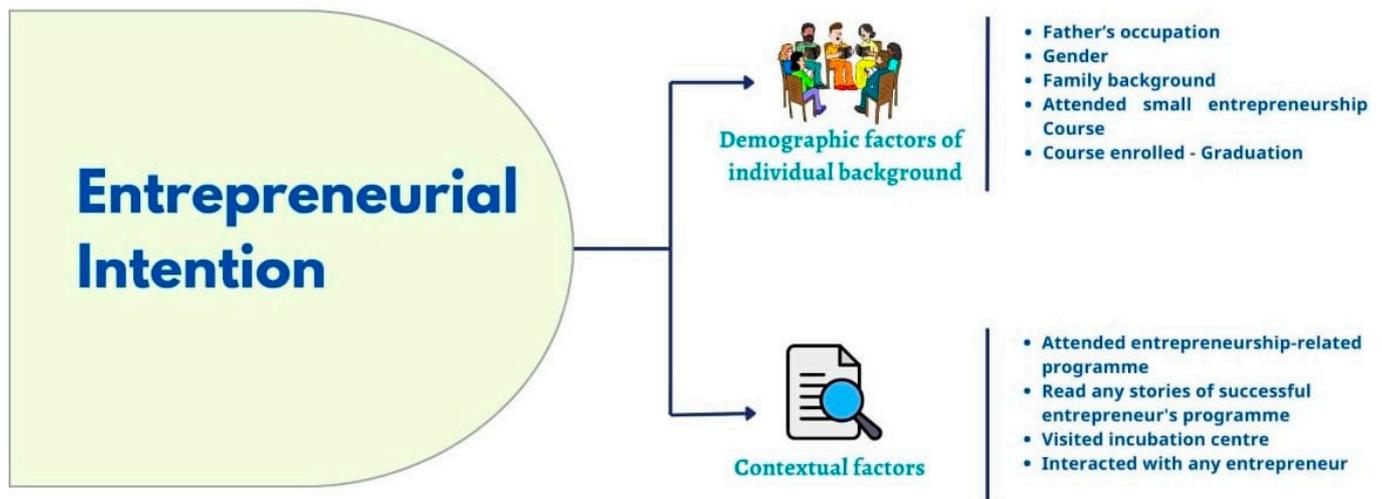


Figure 2. Model used in the present research.

2.3. Statistical Analysis

The students' responses collected using the structured questionnaire were analyzed using appropriate statistical tools. Frequencies were calculated for the responses under each question, to compare different categories such as gender, background, etc. The chi-square test (X^2) was employed to check the influence of respondents' background (rural or urban) on variables such as interest in entrepreneurship, awareness about government schemes, and exposure to entrepreneurship.

2.3.1. Rank-Based Quotient

The rank-based quotient (RBQ) technique was used to identify the important motivational factors and hurdles to entrepreneurship. The RBQ technique was also adopted in the participatory decision-making study in the recent research conducted by Meena et al., (2022). The RBQ technique was also used to rank the hard and soft skills important for the entrepreneurial journey, as perceived by the respondents. The RBQ was calculated using the formula given (Equation (1)) below:

$$RBQ = \frac{\sum f_i(n+1-i) \times 100}{N \times n} \quad (1)$$

where f_i is the no. of respondents giving rank i ($i = 1, 2, 3, \dots, n$) to an item, N is the total number of respondents, and n is the number of items.

2.3.2. Logistic Regression Analysis

Logistic regression analysis was employed to identify the variables influencing respondents' interest in entrepreneurship. Logistic regression is a generalized linear regression analysis model often used in different research areas, including data mining and economic forecasting [37]. Binary logistic regression (BLR) is used when the dependent variable is dichotomous, and the independent variables can be either continuous or categorical [38]. In this study, the dependent variable (Y) "whether interested in entrepreneurship?" was consistent with the 0–1 value characteristics of this regression model. All the independent variables used in the model were dichotomous, taking values of "yes" or "no" (Table 1). The following Equation (2) gives the BLR model:

$$P(Y = 1|X = X_i, i = 1, 2, \dots, m) = \frac{1}{1 + e^{-(\alpha + \sum_{i=1}^m \beta_i X_i + \epsilon)}} \quad (2)$$

The logit function (Equation (3)) is given as

$$\text{logit } P(Y = 1|X = X_i, i = 1, 2, \dots, m) = \ln\left(\frac{P}{1-P}\right) = \alpha + \sum_{i=1}^m \beta_i X_i + \varepsilon \quad (3)$$

In the equations, i indicates the i th variable, the overall probability of $Y = 1$ is P , β_i stands for the coefficient of the i th variable to be estimated, X_i stands for the explanatory variable, α is a constant, and ε stands for the error term. Suppose the dependent variable (Y) is proportional to a factor; in that case, Y is more likely to mean that the possibility of the respondent showing interest in entrepreneurship is greater [38]. The accuracy of the BLR model can be tested using the Hosmer and Lemeshow test [39]. The BLR model is considered a good fit if $p > 0.05$.

Table 1. Variables in the binary logistic regression model.

Variable Name	Response Value
Dependent variable (Y)	
Interested in entrepreneurship	Yes = 1/No = 0
Independent variables (X_i)	
Gender	Male = 1/Female = 0
Background	Rural = 1/Urban = 0
Course Enrolled	Graduation = 1/ Post-graduation = 0
Father's occupation	Entrepreneurship = 1/ Others = 0
Attended short entrepreneur course	Yes = 1/No = 0
Visited incubation center	Yes = 1/No = 0
Attended entrepreneurship-related programme	Yes = 1/No = 0
Read any stories of successful entrepreneurs	Yes = 1/No = 0
Interacted with any entrepreneur	Yes = 1/No = 0

3. Results

3.1. Age, Gender, and Background Information of Students

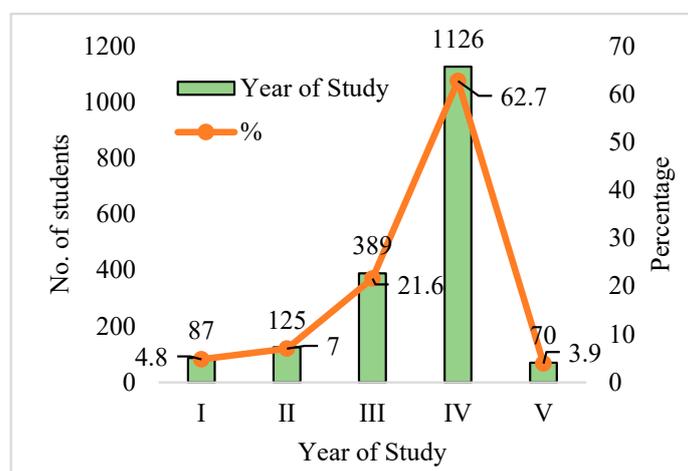
The descriptive statistics of the personal variables of the respondents are presented in Table 2. On average, the respondents were aged about 21.4 years, with not much variation among them ($SD = 1.47$). The majority (66.5%) of the students were from rural backgrounds. Among them, 385 were female and 810 were male students. Having a major part of students from a rural background and male demonstrates that agriculture remains a subject of the rural population and male dominated, despite a number of efforts being underway to attract urban students in India and having a reservation of 33 per cent for female students in agricultural education in India. On the other hand, about 33.5% of students were from an urban background, of which 382 and 220 were female and male, respectively. There were 767 females (42.7%) and 1030 male (57.3%) students altogether, making 1797 student respondents to our study.

Table 2. Descriptive statistics of the respondents.

Variable	Category	Frequency	Percentage
Gender	Male	767	42.68
	Female	1030	57.32
Background	Rural	1195	66.50
	Urban	602	33.50
Course	Graduate	1740	96.83
	Postgraduate	57	3.17
Father's Occupation	Corporate	73	4.06
	Entrepreneurship	122	6.79
	Farming	867	48.25
	Government	589	32.78
	Others	146	8.12
Age (Mean and SD)	-	21.42 (± 1.47)	

3.2. Educational Course and Year of the Study

About 96.82% of students (1740) were enrolled in graduate studies and only 3.17% (57) were in postgraduate studies. Most (62.7%) were studying in their 4th year, and about 389 students were in their 3rd year (Figure 3). Less students were from the 1st, 2nd, and 5th years. Usually, a “BSc Agriculture” course is a four-year degree program, and a bachelor of veterinary science (BVSc) is a five-year degree program. Thus, the students in the 5th year were from BVSc programs. Here, the study aimed to find the entrepreneurial intentions of leaving agricultural graduates, which is why more than 60 per cent were from the 4th year, followed by 3rd year and a meagre per cent from post-graduation.

**Figure 3.** Number of students studying in the different years.

3.3. Father's Occupation and Income Status

The father's occupation and annual income data (Table 3) showed that 48.2% had the farming sector as their source of income and this annual income was less than USD 2503. This shows that the majority of the students came from the agricultural community. We also observed that about 24% and 15% of parents had an annual income of USD 2503–6257 and USD 6257–12,515, respectively; only three of the respondents' parents had more than USD 12515 income from farming. About 32.8% of the respondents' fathers were employed in the government sector, and their annual incomes were mostly between USD 2503 and 6257 and USD 6257 and 12,515. Only about 6.8% of parents had entrepreneurship as their occupation,

which shows that a lower preference is given to this sector. It was also observed that most of these (who practiced entrepreneurship) earned less than USD 6257 per annum. The data further showed that about 4.1% of the students had fathers working in the corporate sector, with the rest, 8.1%, being in other jobs such as day laborers, shopkeepers, vendors, etc. Annual income, irrespective of occupation, showed that about 55.7% of fathers earned less than USD 2503, which shows that most of the students were from low-income families. About 24.6% and 15.0% of fathers had an annual income of USD 2503–6257 and USD 6257–12,515, respectively. We also noticed that most of the fathers with a low income (<USD2503) were from rural backgrounds (Figure 4). Only about 4.7% of fathers’ annual incomes were observed to be more than USD 12,515 (Table 3) and these were probably from an urban background (Figure 4).

Table 3. Father’s Occupation and Annual Income.

Father’s Occupation	Annual Income				Total	%
	<USD 2503	USD 2503–6257	USD 6257–12,515	>USD 12,515		
Corporate	28	28	13	4	73	4.1
Entrepreneurship	53	46	19	4	122	6.8
Farming	740	112	12	3	867	48.2
Government	82	223	216	68	589	32.8
Others	98	33	9	6	146	8.1
Total	1001	442	269	85		
%	55.7	24.6	15.0	4.7		

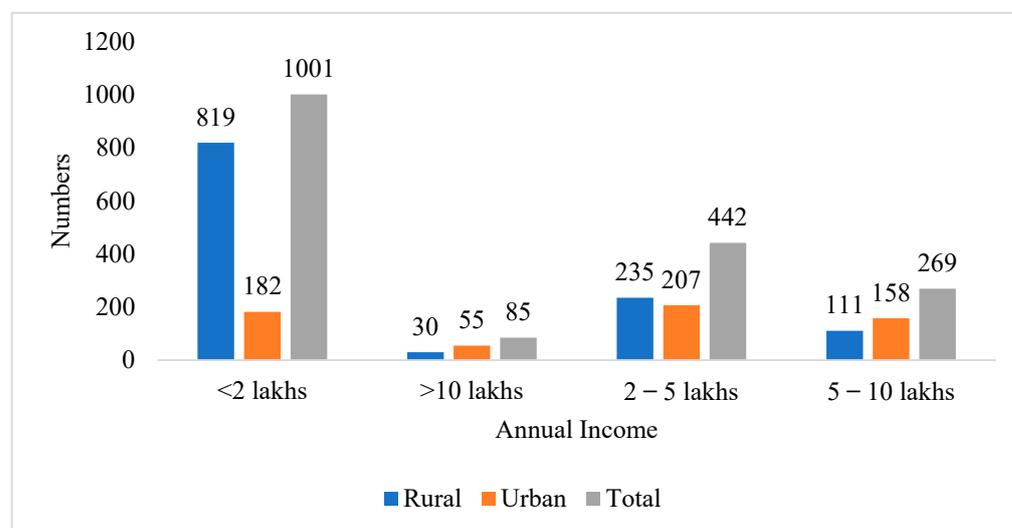


Figure 4. Fathers’ background concerning their income.

3.4. No. of Family Relatives in Entrepreneurship and Their Background

Having an entrepreneur in the family would inspire one to be interested in entrepreneurship. We observed that about 904 students were from a rural background, and 403 students belonging to an urban area (72.7% of respondents) specified that they had no entrepreneur in their family (Figure 5). However, 24.1% of students mentioned that 1–4 of their family relatives were involved in entrepreneurship, of which 60.5% were from rural backgrounds. Only about 1.7% and 1.3% of respondents mentioned that 4–8 or more than 8 of their family relatives were in entrepreneurship, respectively. This also shows a lower interest/preference towards entrepreneurship among family relatives.

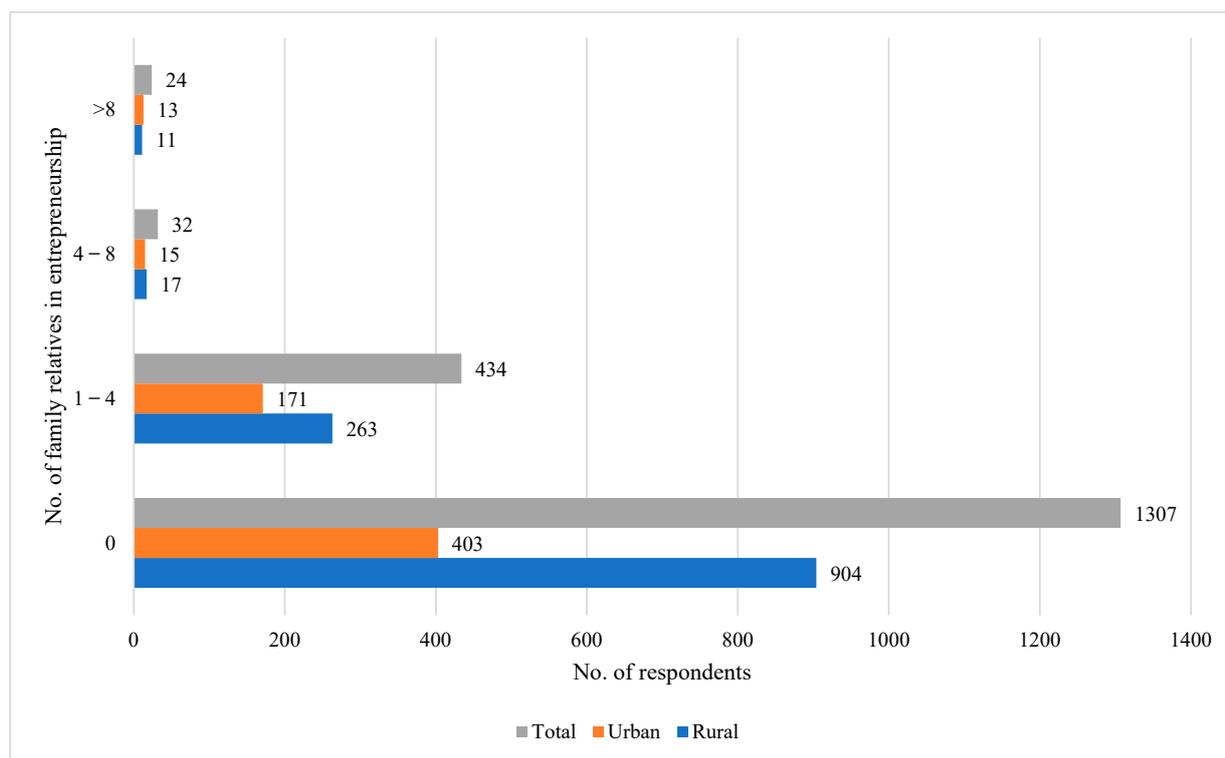


Figure 5. No. of family relatives in entrepreneurship concerning their background.

3.5. Interest of Students in Becoming an Entrepreneur

A good majority (1404) of the agricultural students were interested in becoming entrepreneurs; out of which, the majority (947) belonged to a rural background (Table 4). A binomial test was performed to test the null hypothesis that there is an equal number of students who are interested and not interested in entrepreneurship in each year of study (starting from graduation). It was found that there were more students interested in entrepreneurship, except for the students from the first year. Students of the 3rd year and 4th years were observed as having a great interest in entrepreneurship. The reasons for this could be that much entrepreneurship-related training and many program are organized for agri-graduates these days in India. From the rank-based quotients (RBQ) for comparing perceptions among rural and urban students (Table 5), we further noticed that the majority of the students would prefer to be employed in the government sector (RBQ-2208.66), followed by entrepreneurship (RBQ-1619.52), banking (RBQ-1332.96), corporate (RBQ-1249.72), and farming (RBQ-1089.15). Here, we noticed that there needs to be more interest among students in farming. This ranking was observed to be similar among both rural and urban students.

Table 4. Association of interest in entrepreneurship with background and year of study.

Interested in Entrepreneurship		Rural	Urban	Total	Chi-Square (X ²)	p
No		248	145	393	2.4117	0.120
Yes		947	457	1404		

Year of Study	N	Interested in entrepreneurship?		Proportion	Binomial test [p-value]
		No	Yes		
1	47	28	19	0.404	0.243
2	111	41	70	0.631	0.007
3	342	50	292	0.854	<0.001
4	1123	221	902	0.803	<0.001
5	37	10	27	0.730	0.007
6+	22	3	19	0.864	<0.001

Table 5. Rank based quotients (RBQ) for comparing perceptions of job interest, motivational factors, hurdles and hard skill requirements for being an entrepreneur among rural and urban students.

	Job	Overall		Urban		Rural	
		RBQ	Rank	RBQ	Rank	RBQ	Rank
(a) Rank your interest in the jobs	Government	2208.66	1	2189.08	1	2218.51	1
	Corporate	1249.72	4	1331.09	4	1208.79	4
	Farming	1089.15	5	977.31	5	1145.39	5
	Entrepreneurship	1619.52	2	1631.09	2	1613.69	2
	Banking	1332.96	3	1371.43	3	1313.61	3
	Factor	Overall		Urban		Rural	
		RBQ	Rank	RBQ	Rank	RBQ	Rank
(b) Rank the motivational factors for you to become an entrepreneur	My own passion	2611.98	1	2567.68	1	2634.38	1
	High income	2251.10	3	2259.60	3	2246.81	3
	Challenging	1979.76	5	1977.78	5	1980.77	5
	Family/Relatives are already doing	1234.26	6	1134.34	6	1284.77	6
	Personal growth	2193.44	4	2245.45	4	2167.15	4
	Independence	2329.45	2	2415.15	2	2286.13	2
	Hurdle	Overall		Urban		Rural	
		RBQ	Rank	RBQ	Rank	RBQ	Rank
(c) Rank the following hurdles for you to become an entrepreneur	No support from family	1775.21	5	1564.86	6	1883.23	5
	Financial constraint	2615.62	1	2407.09	2	2720.68	1
	Uncertainty of future	2323.60	2	2432.43	1	2268.77	2
	Fear of Success	2084.21	3	2176.01	4	2037.96	3
	No information on processes and regulations	2043.80	4	2179.05	3	1975.66	4
	No favourable ecosystem for doing business	1756.20	6	1840.54	5	1713.70	6
	Hard Skill	Overall		Urban		Rural	
		RBQ	Rank	RBQ	Rank	RBQ	Rank
(d) Rank the following hard skills as per their importance for an entrepreneur	Developing Business Proposal/Plan	1998.03	1	2047.90	1	1972.95	1
	Financial literacy	1593.93	4	1549.58	4	1616.23	4
	Marketing skill	1708.38	2	1749.58	2	1687.66	2
	Technical skill	1605.17	3	1573.95	3	1620.88	3
	Others (please specify)	594.49	5	578.99	5	602.28	5

3.6. Motivational Factors and Hurdles to Becoming An Entrepreneur

Most of the students specified that “my own passion” was the key motivational factor (RBQ-2611.98) for becoming a successful entrepreneur (Table 5). The next factor specified was “independence” (RBQ-2329.45), followed by high income (RBQ-2251.10), personal growth (2193.44), and challenge (RBQ-1979.76); and the last motivational factor was having an entrepreneur in the family (RBQ-1234.26). The ranking was observed to be similar for both rural and urban students. These results show that students need to follow their passion for work and require independent motivation to occupy themselves in entrepreneurship as their career choice. However, we perceived that some hurdles might be in the way of students moving toward the path of entrepreneurship, so we examined the significant hurdles (Table 5). Overall, the students mentioned that “financial constraint” was the foremost hurdle (RBQ-2615.62) to becoming an entrepreneur, followed by uncertainty about the future (RBQ-2323.60), fear of success (RBQ-2084.21), no information on processes and regulations (RBQ-2043.80), no support from family (RBQ-1557.21), and non-favorable ecosystem for doing business (RBQ-1756.20). However, urban students ranked “uncertainty about the future” (RBQ-2432.43) as their major constraint, followed by financial constraints, no information on processes and regulations, fear of success, non-favorable ecosystem for doing business, and no support from family.

3.7. Hard and Soft Skill Requirements for Becoming an Entrepreneur

Students were asked to rank the hard skill (Table 5) and soft skill (Table 6) requirements for becoming an entrepreneur. Among the hard skill requirements, they ranked “plan” in the first position (RBQ-1998.03), followed by marketing skill (RBQ-1708.38), technical skill (RBQ-1605.17), financial literacy (RBQ-1593.93), and others (RBQ-594.49). The rankings were observed to be similar among both rural and urban students. Overall, this shows that planning and marketing skills are the major hard skill requirements for becoming an entrepreneur. Among the soft skill requirements (Table 6), students gave more importance to “communication” (RBQ-1181.37), followed by leadership (RBQ-1134.90), teamwork (RBQ-828.59), and time management (RBQ-825.14). Again, the ranking was observed to be similar among both rural and urban students. This data showed that communication and leadership qualities were the major soft skills requirements (as ranked by the students) for becoming a successful entrepreneur. We also asked them to rank the soft skills that they were strong at. (Table 6). The majority ranked “communication” (RBQ-1061.64), followed by teamwork (RBQ-1031.33), leadership (RBQ-1000.34), and time management (RBQ-906.92). However, this response varied when we compared rural and urban students. We observed that urban students were good at teamwork (RBQ-1075.17), followed by communication, while rural students were good at communication (RBQ-1059.10), followed by leadership.

Table 6. Rank based quotients (RBQ) for comparing the perception of soft skill requirements and areas of interest for becoming an entrepreneur among rural and urban students.

(a) Rank the following soft skills as per their importance for an entrepreneur	Soft Skill	Overall		Urban		Rural	
		RBQ	Rank	RBQ	Rank	RBQ	Rank
	Communication	1181.37	1	1164.49	1	1189.87	1
	Leadership	1134.90	2	1135.68	2	1134.51	2
	Teamwork	858.59	3	881.07	3	847.26	3
	Time management	825.14	4	818.76	4	828.35	4
(b) Which of the following soft skills are you strong at?	Soft Skill	Overall		Urban		Rural	
		RBQ	Rank	RBQ	Rank	RBQ	Rank
	Communication	1061.64	1	1057.05	2	1059.10	1
	Leadership	1000.34	3	965.77	3	1017.78	2
	Teamwork	1034.33	2	1075.17	1	1013.72	3
	Time management	906.92	4	902.01	4	909.40	4
(c) Rank the following as per your interest	Area	Overall		Urban		Rural	
		RBQ	Rank	RBQ	Rank	RBQ	Rank
	Input production	6560.93	2	6407.47	2	6638.39	2
	Input marketing	6330.87	3	6397.28	3	6297.34	4
	Advisory services	6068.34	5	6268.25	4	5967.44	6
	Digital agriculture	6872.44	1	7088.29	1	6763.50	1
	Financial services	5648.63	7	5651.95	5	5646.96	7
	Farming	6093.96	4	5623.09	6	6331.62	3
	Poultry	5372.44	8	5188.46	8	5465.30	8
	Dairying	5809.23	6	5475.38	7	5977.72	5
	Developing eLearning material for farmers	4608.20	9	5159.59	9	4329.91	9
	Others (please specify)	1634.97	10	1740.24	10	1581.83	10

3.8. Area of Interest in Entrepreneurship

Interestingly, we noticed that “digital agriculture” (RBQ-6872.44) was the major area of interest, followed by input production (RBQ-6560.93), ranked similarly by both urban and rural students (Table 6). However, the rest of the areas of interest varied among urban and rural students. When we considered the overall students’ interest in digital agriculture and input production, we noticed that the order was as follows: input marketing > farming > advisory services > dairying > financial services > poultry > developing eLearning material for farmers > and others.

3.9. Awareness of Government Schemes among Rural and Urban Students

The Government of India has initiated several schemes to support young entrepreneurs, but people need to be aware of such schemes. We observed a significant response ($p < 0.002$) toward the awareness of government schemes, such as the Agriculture Skill Council of India (ASCI), Agri—UDAAN (Food and Agribusiness Accelerator launched by a-IDEA (Association for Innovation Development of Entrepreneurship in Agriculture)), ASPIRE (A Scheme for Promotion of Innovation, Rural Industries and Entrepreneurship) and Startup India (Table 7). Only 2.8% of students marked “know in-depth”, 34.4% marked “heard of”, and 62.8% marked “no” about their awareness of the ASCI scheme ($X^2 = 12.82$, $p < 0.002$). The percentage results of “know in-depth”, “heard of”, and “no” was 5, 42.5, and 52.5% ($X^2 = 17.08$, $p < 0.001$); 3.6, 28.1, and 68.3% ($X^2 = 27.33$, $p < 0.001$); 15.2, 59.2 and 25.7% ($X^2 = 20.27$, $p < 0.001$), respectively, for Agri—UDAAN, ASPIRE, and Startup India. From this question, we can see that the students were more aware and had in-depth knowledge (15.2%) about the scheme “Startup India”. We further noticed that urban students were more aware and had more in-depth knowledge (17.6%) than rural students (14%) about this scheme. The survey also revealed that 11.7% of students marked “know in-depth” about the scheme “Agri Clinic/Agri Business Centres (MANAGE)”, but the chi-square result was statistically non-significant.

Table 7. Awareness about govt. schemes among rural and urban students.

Scheme	Awareness	Background			Chi-Square Test	
		Rural	Urban	Overall	Chi-Square (X^2)	p
Agriculture Skill Council of India (ASCI)	Know in Depth	34 (2.8)	16 (2.7)	50 (2.8)	12.82 **	0.002
	Heard of	377 (31.5)	241 (40)	618 (34.4)		
	No	784 (65.6)	345 (57.3)	1129 (62.8)		
Agri Clinic/Agri Business Centers (MANAGE)	Know in Depth	140 (11.7)	70 (11.6)	210 (11.7)	0.28	0.868
	Heard of	616 (51.5)	318 (52.8)	934 (52)		
	No	439 (36.7)	214 (35.5)	653 (36.3)		
Biotechnology Industry Research Assistance Council (BIRAC)	Know in Depth	18 (1.5)	8 (1.3)	26 (1.4)	6.78 *	0.034
	Heard of	128 (10.7)	90 (15)	218 (12.1)		
	No	1049 (87.8)	504 (83.7)	1553 (86.4)		
The Venture Capital Assistance schemes	Know in Depth	23 (1.9)	15 (2.5)	38 (2.1)	0.84	0.658
	Heard of	260 (21.8)	136 (22.6)	396 (22)		
	No	912 (76.3)	451 (74.9)	1363 (75.8)		
Dairy Entrepreneurship Development Schemes	Know in Depth	91 (7.6)	28 (4.7)	119 (6.6)	6.13 *	0.047
	Heard of	513 (42.9)	257 (42.7)	770 (42.8)		
	No	591 (49.5)	317 (52.7)	908 (50.5)		
Agri—UDAAN	Know in Depth	54 (4.5)	35 (5.8)	89 (5)	17.08 **	<0.001
	Heard of	472 (39.5)	292 (48.5)	764 (42.5)		
	No	669 (56)	275 (45.7)	944 (52.5)		
ASPIRE	Know in Depth	33 (2.8)	31 (5.1)	64 (3.6)	27.33 **	<0.001
	Heard of	298 (24.9)	207 (34.4)	505 (28.1)		
	No	864 (72.3)	364 (60.5)	1228 (68.3)		
Startup India	Know in Depth	167 (14)	106 (17.6)	273 (15.2)	20.27 **	<0.001
	Heard of	683 (57.2)	380 (63.1)	1063 (59.2)		
	No	345 (28.9)	116 (19.3)	461 (25.7)		

Values in parentheses indicate the percentage distribution. Note: * significant at 5% level; ** significant at 1% level.

3.10. Exposure to Entrepreneurship among Rural and Urban Students

To further widen our understanding about the student’s exposure to entrepreneurship, we surveyed using some crucial questions related to entrepreneur courses, incubation centers, entrepreneurship-related programs, success stories of entrepreneurs, etc. (Table 8). About 31.9% of students mentioned that they had taken short entrepreneur courses during their study, and the rest marked “no” ($X^2 \leq 0.001$, $p = 0.982$). Only 14.4% of students had visited incubation centers; however, rural students had visited them more (15.4%) than urban students (12.3%). About 43.2% of students attended entrepreneurship-related programs

(of which urban—47.7% and rural—40.9%). Regarding reading success stories about entrepreneurs, about 65.4% of students marked “yes” (Urban—70.6% and rural—62.8%). For the last query about interaction with any entrepreneurs, about 54.4% of students marked “yes”. From these findings, we could estimate that, on average, 40–50% of students had not been exposed to any entrepreneurship-related activities.

Table 8. Exposure to entrepreneurship among rural and urban students.

Question	Answer	Rural	Urban	Total	Chi-Square	<i>p</i>
Have you ever taken short entrepreneur course/courses?	No	814 (68.1)	409 (67.9)	1223 (68.1)	<0.001	0.982
	Yes	381 (31.9)	193 (32.1)	574 (31.9)		
Have you visited any incubation centers?	No	1011 (84.6)	528 (87.7)	1539 (85.6)	2.892	0.089
	Yes	184 (15.4)	74 (12.3)	258 (14.4)		
Have you attended any Entrepreneurship related programmes?	No	706 (59.1)	315 (52.3)	1021 (56.8)	7.170 **	0.007
	Yes	489 (40.9)	287 (47.7)	776 (43.2)		
Have you read any success stories of entrepreneurs?	No	444 (37.2)	177 (29.4)	621 (34.6)	10.300 **	0.001
	Yes	751 (62.8)	425 (70.6)	1176 (65.4)		
Have you interacted with any entrepreneurs?	No	553 (46.3)	266 (44.2)	819 (45.6)	0.623	0.430
	Yes	642 (53.7)	336 (55.8)	978 (54.4)		

Note: ** significant at 1% level.

3.11. Variables Influencing Entrepreneurship

The result of the binary logistic regression (BLR) model shows that, among the independent variables, gender, reading stories of successful entrepreneurs, and interacting with an entrepreneur affected interest in entrepreneurship (Table 9). The odds ratio indicated that male respondents, respondents who had read stories of successful entrepreneurs, and respondents who had interacted with entrepreneurs were more likely to show interest in entrepreneurship. According to the Hosmer and Lemeshow test, the BLR model had a good fit ($\chi^2 = 9.84$, $p = 0.276$).

Table 9. The different variables that influence entrepreneurship.

Variables	Estimate	OR	SE	<i>p</i>
Intercept	0.226	1.253	0.371	0.543
Father’s occupation	0.184	1.202	0.249	0.460
Gender	0.536	1.709	0.125	0.000
Background	0.141	1.151	0.132	0.287
Course enrolled on	−0.207	0.813	0.351	0.555
Attended short entrepreneurs course	0.211	1.235	0.140	0.132
Visited incubation center	0.031	1.031	0.192	0.872
Attended entrepreneurship-related programme	−0.030	0.970	0.138	0.827
Read any stories of successful entrepreneurs	0.813	2.255	0.130	<0.001
Interacted with any entrepreneurs	0.665	1.944	0.129	<0.001

3.12. Development of Students’ Career Opportunities with CDC Activity

The activities taken with a CDC [40] revealed that the majority of the students believed that increasing the likelihood for student engagement; empowering, confidence building and enriching the students; supporting students in navigating their career developmental journeys; and creating an ecosystem to foster a culture of entrepreneurship were extremely helpful to very helpful (Figure 6). This indicated that the establishment of a CDC in every SAU is critically important for influencing students interest towards entrepreneurship and for the overall development of their professional skills.

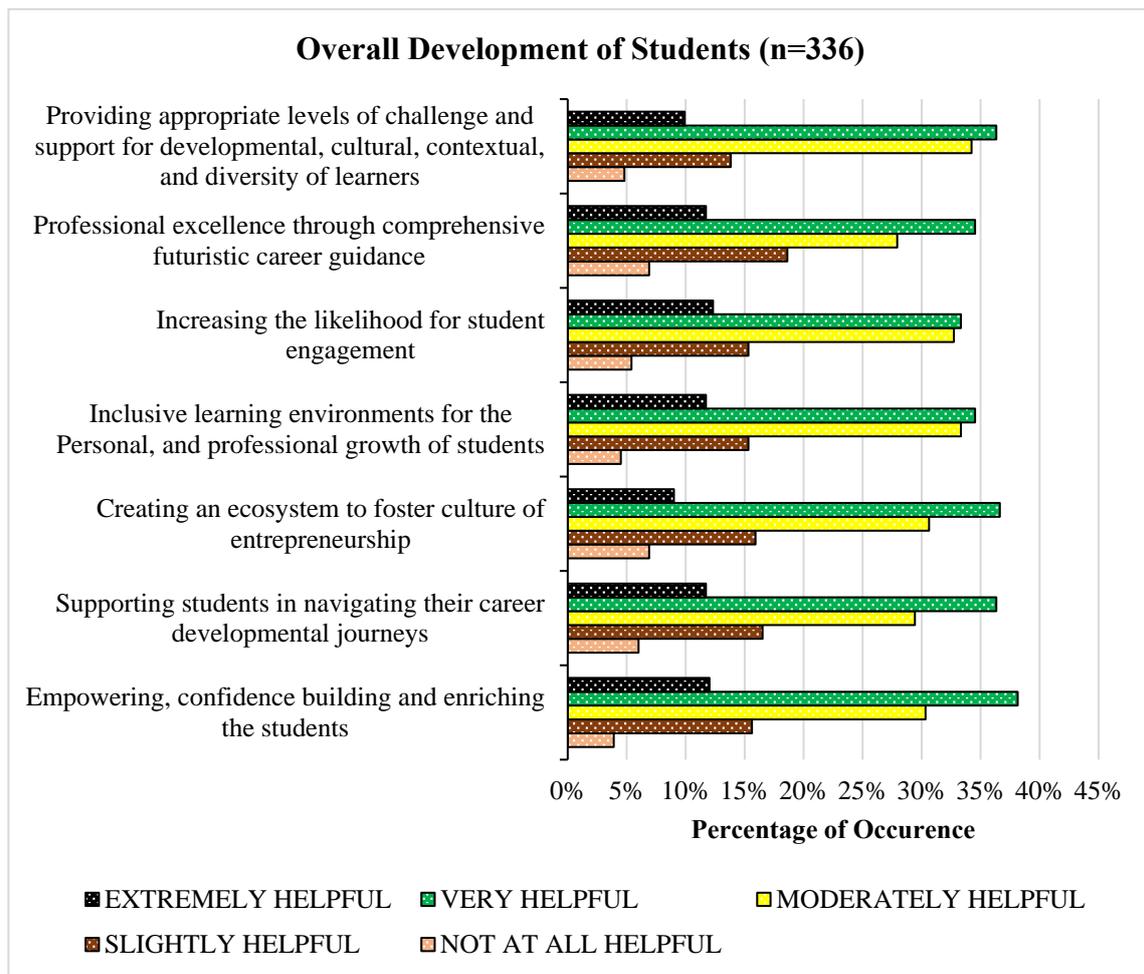


Figure 6. Students' perception about the role of CDCs in the overall development of students (Adopted from: Soam et al. [40]).

4. Discussion

In the present investigation, we noticed that most of the students in agricultural studies were from rural backgrounds. Yunandar et al. [41], in a study on students' attitudes towards agricultural entrepreneurship, observed that the majority (70.5%) of students also came from the agricultural community or rural families. Most students had fathers' with an annual income less than USD 2503, which shows the poor financial status of these agricultural students' families. Fewer farmers were progressive and rich, earning >USD 12,515 income from farming. Those working in the government sector earned more than USD 6257, which seemed sufficient to run the family and provide education for their children. Most of the fathers with low incomes were from rural backgrounds. We noticed that "entrepreneurship" was given a lower preference by the majority, as the data also showed that they earned less than USD 6257 per annum. Furthermore, we observed that about 72.7% of respondents specified that no one in their family or relatives had entrepreneurship as their source of income. As a result, there needs to be more motivation for the students from their family members. Unless families and communities have agricultural backgrounds, it is not easy to shape the youths' behavior toward agricultural entrepreneurship. Family background strongly influences youth attitudes [41,42]. Furthermore, environmental factors such as family, school, and society also influence the entrepreneurial intentions of children [43]. However, in our survey, we observed that about 78% of students showed interest in becoming an entrepreneur, and most of these were from rural backgrounds. Students of the 3rd and 4th years were observed as having a great interest in entrepreneurship. Nevertheless,

the student's job preference was recorded as prioritizing the government sector, followed by entrepreneurship, banking, corporate, and farming. Here, it is understandable that students are not interested in working on farms/agricultural lands, but this showed their willingness to become agri-entrepreneurs. Oyewumi and Adeniyi [44] proved that students have positive knowledge and attitudes toward entrepreneurship in the agricultural sector and are likelier to build a career after school. Therefore, it is necessary to optimize the role of schools and the Internet in order to favorably shape students' attitudes to agricultural entrepreneurship. The growth of young agri-entrepreneurs primarily aims at increasing youth interest and motivation in agricultural entrepreneurship through agricultural education and extension activities [41] (Yunandar 2019). They also stated that the Indonesian government has adopted this strategy to motivate youth toward entrepreneurship. There is a great need to involve the youth in the agricultural sector, to ensure the ongoing progress of agricultural regeneration [45].

Most students specified that "my own passion" and "independence" were the key motivational factors for becoming an entrepreneur. Students' perception towards becoming an entrepreneur is improving in India because of the enormous competition. Furthermore, students' attitude towards generating job opportunities is changing, from job seekers to job providers. Hence, independence can have a significant role in forming a favorable attitude in the younger generation towards agricultural entrepreneurship. However, the major hurdle to becoming an entrepreneur, as specified by most students, was "financial constraint", followed by "uncertainty about the future". However, urban students mentioned "uncertainty about the future" as their major constraint, followed by financial constraint. This shows that without financial support, youth are discouraged from pursuing entrepreneurship. Therefore, the Government should encourage and support the young generation with financial assistance, to grow young agricultural entrepreneurs. The Government should provide financial support to entrepreneurs as encouragement for startups, subsidies for infrastructure, royalties on innovations, and loans for becoming established. In addition, the Government must implement some policy programs to protect young entrepreneurs from the risk of business losses, especially for on-farm businesses [41]. According to our research, self-efficacy and personal attitudes towards entrepreneurial behavior have the greatest influence on entrepreneurial intention. Most previous studies found that self-efficacy and personal attitudes towards entrepreneurial behavior have an impact on entrepreneurial intention. Therefore, our sample supports Ajzen's theory of planned behavior (TPB) [22,46,47].

Among the hard skill requirements, students ranked "plan" and "marketing skill", and among the soft skill requirements "communication" and "leadership qualities", as prerequisites to becoming a successful entrepreneur. Most students were observed to be strong at "communication" and "teamwork", but comparatively, urban students were better at teamwork than rural students, as per their ranking. Students from urban areas may be exposed to various soft skills during their secondary education. Urbanization also brings various improvements in students learning, whereas rural students may lack such facilities.

Interestingly, we noticed that "digital agriculture" was the largest area of interest, followed by "input production", as ranked by students. Next, the preferred vocations were input marketing > farming > advisory services > dairying > financial services > poultry > developing eLearning material for farmers > others. Furthermore, we observed that only 31.9% of students had completed short entrepreneur courses during their studies; 14.4% of students had visited incubation centers; about 43.2% of students had attended entrepreneurship-related programs; 65.4% of students had read the success stories of entrepreneurs, and only 54.4% of students had interacted with entrepreneurs. Therefore, we estimated that, on average, 40–50% of students had not been exposed to any entrepreneurship-related activities. Students did not receive any entrepreneurship education in primary and secondary school; hence, most of the students had not been exposed to entrepreneurship. In light of this information, it is clear that there is an urgent necessity to teach students from the root level about the scope and avenues

of entrepreneurship in agriculture. Classroom lectures, social media, and the Internet are the easiest ways to reach them. Information access through mass media was observed to be a significant contributor to youth attitudes toward employment in agriculture [48]. Educated and active African youths had a positive attitude towards entrepreneurship because of access to social media [49].

Students' attitudes towards agricultural entrepreneurship can be changed by teaching them and providing various information about entrepreneurship in the farming sector and through the learning process at schools/universities. Universities must pay attention to entrepreneurship education, to teach students that social capital, i.e., an attitude of honesty, values, and networks, which are theoretically and practically inherent in social capital, help in entrepreneurial successes [50]. The entrepreneurial environment at the university should include an entrepreneurship development center, motivational talks from successful entrepreneurs, and encouragement of students' innovations. Furthermore, from the binary logistic regression (BLR) model, it was observed that male respondents who had read stories of successful entrepreneurs and respondents who had interacted with entrepreneurship were more likely to show interest in entrepreneurship. This shows the crucial requirement of connecting successful entrepreneurs with graduate students, to enhance their thoughts, ability, and attitudes. Students' attitudes towards entrepreneurship have a strong relationship with the entrepreneurial environment at the university [51]. A strong need for achievement among students strengthens the learning environment, study engagement, and teacher–student relationships. This helps improve students' self-efficacy in entrepreneurship [2].

The inclusion of agricultural entrepreneurship-related courses, linking with the curriculum, aids in the provision of learning benefits for students. Entrepreneurship courses allow acquiring skills and knowledge through appropriate teaching strategies [2]. Such courses and learning different aspects of agriculture would enhance the overall quality of education and greatly contribute to the sustainable developmental goal SDG-4. The SDG-4 goal ensures the equitable quality education; while SDG-4.3 targets the equal access to affordable technical and vocational education. Improving course syllabus with interesting theories and practical learning experience would enhance students' professional skills and increase exposure to industry and other sectors in the form of entrepreneurship education thus, influencing students' attitudes toward entrepreneurial careers [52,53]. Nevertheless, academia–industry collaborations help students in gaining practical exposure to industry, and both sectors concur that such exposure will significantly contribute to quality education. In addition, such collaborations facilitate the students with financial support, increase students' employability, and improve their entrepreneurial skills. Academia and industry have been collaborating for many decades, transferring knowledge and combining their strengths for their own and broader societal benefits [54]. Collaboration with universities helps companies increase their innovation capacity and improve their competitive position via product and process development. Similarly, universities benefit from added financial and other resources, networks of knowledge creation and utilization, industrial information, and the increased workforce participation and development of the students [55–58].

The questions regarding CDCs revealed that majority of the students believed that by increasing the likelihood of student engagement; empowering, confidence building and enriching the students; supporting students in navigating their career developmental journeys; and creating an ecosystem to foster a culture of entrepreneurship, were extremely helpful to very helpful. Nevertheless, the confidence and positive attitude of a student helps in performing better in interviews, speeches, or any other career activities. Nowadays, employers hire persons who are dependable, self-directed, have effective communication, ethical, willing to work and learn, and resourceful with a positive attitude [59]. CDCs aim to develop the relevant skills and capabilities among students required to pursue careers as professionals or entrepreneurs. All agricultural universities (A.U.s) in India need to establish a CDC, to develop students' professional excellence in their sphere through need-based activities. Under a World Bank-funded project, i.e., NAHEP component-2, about 131 activi-

ties have been carried out in 5 SAUs, resulting in 10,187 beneficiaries [60]. The progress of the CDCs is being monitored through a portal (link: <https://nahep.naarm.org.in/cdc/> accessed on 5 July 2022) developed by ICAR-National Academy of Agricultural Research Management (NAARM) for the achievement of these targets. Program coordinators should enter data regarding the events, participants' details, files, reports, achievements, and activity reports for all sub-themes, such as capacity building, media and corporate communication, alumni coordination, placement coordination, entrepreneurship, and innovation. This portal will also ensure uniformity in terms of the activities across all centers. Guidelines for the establishment of model CDCs have been published by Soam et al. [61], and they provide complete idea about the operational mechanism, in order to develop humane, professional, leadership, and entrepreneurial skills, for not only enhanced employability but the best career progression for students.

In the National Education Policy-NEP (2020) of the Government of India (NEP-page 21, Section 5.5), it is also emphasized that schools are encouraged to hire local experts in the field of entrepreneurship, agriculture, or any other subjects, to benefit students through the local knowledge and professions. The ICAR 5th Deans committee also introduced entrepreneurship development and business management courses. The Indian Government has already initiated some schemes, such as the Agriculture Skill Council of India (ASCI), Agri—UDAAN, ASPIRE, and Startup India. However, the awareness among students about these schemes was significantly low. We observed that students were more aware of the "Startup India" scheme. Comparatively, urban students were more aware of this scheme. Some students knew more about the "Agri Clinic/Agri Business Centres (MANAGE)" scheme. However, the various schemes offered by the Government and other organizations related to entrepreneurship are not reaching the grass root level because of poor publicity. This shows that creating greater awareness among students about the existing government schemes is a need of the hour to promote agri-entrepreneurship in India.

5. Implications of the Study

There needs to be more motivation for students from their family members to consider entrepreneurial ventures. The Government should encourage and support the young generation with financial assistance, to grow young agricultural entrepreneurs with appropriate policies. Government should provide financial support to entrepreneurs as encouragement for startups, subsidies for infrastructure, royalties on innovations, and loans for the establishment of new businesses. The entrepreneurial environment at the university should include an entrepreneurship development center, motivational talks from successful entrepreneurs, and encouragement for student innovations. There is a crucial requirement for connecting successful entrepreneurs with graduate students, to enhance their thoughts, abilities, and attitudes. Student attitudes towards entrepreneurship have a strong relationship with the entrepreneurial environment at the university. This study implies that there is a need for professional excellence in soft skills (leadership quality, communication skills, interview skills, teamwork, etc.) that significantly contributes to a personality that drives successful entrepreneurs. All agricultural universities (A.U.s) in India need to establish a career development center (CDC) to develop students' professional excellence in their sphere through need-based activities. Creating greater awareness among students about the existing government schemes is the need of the hour to promote Agri-entrepreneurship in India.

6. Conclusions

The data gathered from the 1797 respondents suggested a great need to create awareness about agricultural entrepreneurship in India. On average, about 50% of students have yet to be exposed to any entrepreneurship-related activity. Additionally, there needs to be more motivation for the students from their family members, due to financial constraints and unawareness of the opportunities available in agricultural entrepreneurship in India. Teaching from the grassroots level about the scope and opportunities of entrepreneurship

in agriculture enables a broader exposure and understanding among students. Inclusion of agricultural entrepreneurship-related courses linked with the curriculum aids in the provision of learning benefits for students. Building professional excellence in leadership quality, teamwork, communication skills, interview skills, etc., develops a personality that drives successful entrepreneurs. Such soft skills can be efficiently developed through CDCs. The development of CDCs in the universities would help students to harness their inherent potential and could be a possible solution to promote entrepreneurship in the farming sector. The Government should encourage and support the young generation with financial assistance and proper policy schemes, to grow young agricultural entrepreneurs in India. Some of the limitations of this investigation are that we have yet to consider all the states, and the parameters used in the questionnaire were developed through brainstorming sessions. Surveying the country's states with critical analysis would further enhance our understanding and allow making better decisions. Developing state and university level policies for entrepreneurship development would promote an entrepreneurial ecosystem among students.

Overall, the present research output and the policy implications generated from this study will significantly contribute to the SDG Goal-4, i.e., quality education, which is a key requirement for every national education system. Nevertheless, the soft skill development of students (through CDCs) and encouraging them to become an agri-entrepreneur (with appropriate policies and financial assistance) is the need of the hour for every country; specifically, for developing Asian countries such as Bangladesh, Indonesia, Bhutan, Afghanistan, Vietnam, Burma, and Cambodia. Encouraging agri-graduates towards entrepreneurship is a potential solution to achieving global food security. In conclusion, this study enables decision-makers to promote agri-entrepreneurship with a proper policy framework.

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