

Drivers of Functioning or Discontinuation of Small-Scale Agri Entrepreneurship in Rural India

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ABSTRACT: *Youth in rural India have been witnessing a paradoxical situation of unemployment on one hand and untapped potential for transforming agriculture to agribusiness on the other. Realizing this, the Indian Council of Agricultural Research (ICAR) implemented the “Attracting and Retaining Youth in Agriculture (ARYA)” project since 2016-17. The impact of the project on the extent of livelihood was assessed by comparing ‘functional’ and ‘discontinued’ enterprises with primary data from 1033 units, spread across 25 states of the country. The study attempted to know whether functioning or discontinuation was anything to do with the choice of an enterprise or was it influenced by other factors. Nine types of activities were subjected to economic performance analysis. Despite passing through COVID pandemic, the functional units provided significantly higher quanta of income and employment compared to discontinued enterprises. Composite entrepreneurial factor index, a measure of entrepreneurial ability, was subjected to test the hypothesis that entrepreneurial competencies, age, education, landholding, livelihood-capital status and utilization of information-sources influence the performance of small-scale agri enterprises.*

KEYWORDS: agricultural entrepreneurship, enterprise discontinuation, entrepreneurial competencies, information source use, rural livelihood

INTRODUCTION

Rural areas constitute the bulk of the India's population and majority of whom live in rainfed areas. Although the proportion of poor has been reduced from 40% in early 1990s to below 30% by mid 2000s, the rate of fall was less than desirable (World Bank 2012). Rural population growth has had decisive impact on the trajectory of fragmentation of holdings in India. The absolute number of farm families in India has been continuously increasing and marginal farmers were the only farm category where proportion of farmers consistently increased (Rana, et. al., 2022). Small sized land parcels discourage farmers in adoption of agricultural innovations and thereby reducing their economic viability. More inclusive rural transformation is the only possible way to address unemployment and under-employment of youth in rural areas (FAO 2017).

India has started entrepreneurship promotion rigorously, through the "Self-reliant India" drive. National Rural Livelihoods Mission, Make in India, Skill India, Startup India and Mudra Yojana are some of the government-supported programmes for the rural youth to take up the self-employment and entrepreneurial activities. The "Attracting and Retaining Youth in Agriculture (ARYA)" project is an initiative of the Indian Council of Agricultural Research (ICAR), with the aim of encouraging rural youth to sustain their livelihood in agriculture-based income-generating activities. Launched in the period from 2016 to 2017, the project is now being implemented in 100 districts across India through Krishi Vigyan Kendras (KVKs) located in each district. The goal was to reach youth who are already in agribusiness or willing to take up new agribusiness ventures. Realizing that functional skills are fundamental for managing successful entrepreneurship (Lal and Clement, 2005), capacity development of identified rural youth on selected agri-business activities was provided under the project. Initial establishment of entrepreneurial units was supported through incubation, technical handholding, liaison with development agencies for support under their ongoing schemes, facilitating input-output linkages and connections to markets. Small-scale entrepreneurship promoted under the ARYA project has had a reasonable degree of success (Singh, et. al., 2019; Chandre Gowda, et. al., 2023); however, there have been cases of discontinuation among the business units established under the project. The general business-discontinuation rate in India was approximately 5% out of 12% of the total entrepreneurial activity during the period 2018–2019 (Bosma and Kelley, 2019), and was over 6% as per the report of the Global Entrepreneurship Monitor (GEM, 2023). Although enterprise discontinuation is a universal phenomenon (Azlina, et. al., 2015; Adobor, 2020) with wide-ranging causes, not much is known about why endeavors fail (O'Reilly, 2023). This raised the research questions as to the level of discontinuation of the agribusinesses promoted under the project and how the enterprise-performance differed between functional and discontinued groups. This study sought to address following research questions;

- a) Whether functioning or discontinuation is anything to do with the choice of an enterprise activity? and

- b) Whether functioning or discontinuation is influenced by entrepreneurial competencies, personal profile, livelihood capital and information source use of entrepreneurs?

REVIEW AND THEORETICAL ORIENTATION

Agribusiness encompasses all operations of farming and related commercial activities (Chen and Anderson, 2021). Inclusive agribusiness (Pouw, et. al., 2019) could contribute to social sustainability through reduced inequalities (Hinson, et. al., 2019). Agriculture has to be made attractive and profitable for attracting youth in agriculture (Ripoll, et. al., 2017) and agricultural entrepreneurship is the key to link on-farm and off-farm activities, for generating non-farm employment and incomes (Dalwai, 2018). Entrepreneurship has been recognized as a critical driver of economic growth, job creation, and overall social development. About 42% of youth in India between the age of 14 to 18 years were working, despite most of them were enrolled as students in schools and colleges (ASER, 2018). Out of these, about 79% were working in agriculture, mostly on their family farms, although only 1.2% of them want to continue as farmers (Katyal and Katyal 2018). Entrepreneurship education is considered as a feasible mechanism to reengage rural youth in agriculture (Heinert and Roberts, 2016). Small enterprises have proved their relevance to the developing nations (Lal and Clement, 2005; Lone and Mehraj, 2015), particularly to involve bottom of the pyramid producers and consumers (Prahalad and Hart, 2008). Small-scale farmers are adapting themselves and have become market-oriented to make their farm activities more profitable (Sharma and Bhatt, 2022).

Reviews suggest a strong relationship between human capital and entrepreneurship (Garrigos-Simon, et. al., 2018). Human capital is vital for sustainability of small and medium enterprises (Mathur and Arora, 2022). College educated individuals were less likely to fail as entrepreneurs (Bates 1990) as they could perceive the risks and plan to overcome them. Higher education level of entrepreneurs contributed to business growth by increasing the labour force employed and annual turnover (Peters and Brijlal, 2011). Formal education is an integral part of human capital and strengthens an individual's ability to venture into other livelihood options (Asmah, 2011; Eneyew, 2012). Formal education adds to entrepreneurs' self-confidence, human capital and thereby enhances entrepreneurship success (Jimenez, et. al., 2015).

The gender-inclusive entrepreneurship promotion is vital for the sustainable livelihoods in rural areas. Women entrepreneurship not only alleviate present poverty levels, but also provide a basis for stronger future generation as the income is more likely invested on children's health and education (Blain and Company, 2019). Women could attain psychological, social, economic and political empowerment through entrepreneurship (Sangeetha, et. al., 2013; Ahmad, 2019) as they perceived it as an opportunity to attain autonomy and reduce dependence (Victor et. al., 2020). Socio-economic factors were the major reasons for discontinuation of protected agriculture enterprises in Sri Lanka (Wijerathna, et. al., 2014). Although strong evidence of the effect of farm size on

livelihood diversification have been reported by many (Eneyew, 2012; Kuwornu, et. al., 2014), empirical evidences on entrepreneurship among smallholder agriculturists is limited (Wale, et. al., 2021). Holding size may enhance the abilities to invest in the enterprise and pursue agriculture on the lines of agri-business. The discontinued entrepreneurs had smaller landholdings, could not make adequate investment and to meet operational expenditure (Dey and Singh, 2023).

Business performance is determined by entrepreneurial competencies of the entrepreneurs (Man, et. al., 2012; Jamie and Oliver, 2020), more so through their ability to harness the opportunities (Khan, 2021). During COVID, economic performance was mainly determined by the entrepreneurial competencies (Kisubi, et. al., 2022). Entrepreneurial competencies are considered as strong predictors of business performance (Quezon and Vergara, 2022) as the discontinued entrepreneurs' lack of competencies were among the reasons for business discontinuation (Stokes, 2002; Pinkovetskaia, et. al., 2020). Evidences suggest strong relationship between performance of small enterprises and entrepreneurial competencies (Pulka, et. al., 2021).

Information collection, organization, processing and maintaining skills are part of the information management. Keeping track of technological advancements (Hammouti, 2018) is a crucial survival strategy for the entrepreneurs. In particular, young agri-entrepreneurs require information and technical services to establish and expand agri businesses (Fiedler, 2020). Rural entrepreneurs need constant support with information on technical, regulatory and financing aspects of their enterprises (Beriya, 2022). The use of smart phones to access digital content on pest and disease management has been found to be critical for the effective management of small-scale enterprises (Cai, et. al., 2022). Access and utilization of information have long-term implications in improving the livelihood through multiple avenues (Seneviratne, 2022).

Limited comprehensive studies, lack of policy evaluation, limited understanding of the discontinuation patterns and lack of integration of economic and social dimensions of impacts are some of the gaps in the foregoing reviews. The present research attempts to fill the gaps through an in-depth analysis of enterprises in a real-life context. Deliberations on small scale enterprises, in a rural setting having close association with agricultural sector could be very vital for policy making on sustainable development. Not many research papers provide an account of the failure in entrepreneurship, which is being strongly addressed by the present paper, and tries to provide a balanced perspective of social as well as economic dimensions.

METHODOLOGY

Nine types of agri enterprises promoted under the ARYA project in 25 districts representing 25 states in India were studied. The entrepreneurial units, which were operational for a minimum of one year and were functioning when the study was conducted during 2021, were considered "functional" units. Those that had functioned

for at least one year during 2017-2020, but closed at the time of sampling were considered “discontinued” units. Following the proportionate random-sampling procedures, 684 functional and 349 discontinued units were identified for the data enumeration. Enterprise activity wise number of functional and discontinued units covered under the study are given in Table 1. The project team involved in the ARYA project’s implementation enumerated the data during the period 2021–2022 while personally visiting each entrepreneurial unit, using the Google Forms designed by the authors. The enterprises were initiated at different times during the periods 2017 and 2020; therefore, data on five performance indicators viz., operational duration, employment generation, gross turnover, expenditure, and net income (difference between gross value of inputs used and gross turnover) were considered for the total duration of an entrepreneurial unit and also for each year.

Compound Annual Growth Rates (CAGRs) were estimated to compare the rate of growth on different performance indicators in both functional and discontinued units using the following mathematical expression:

$$\begin{aligned}
 Y_t &= Y_o(1+r)^t \\
 \text{or } \ln Y_t &= \ln Y_o + \ln(1+r)t \\
 \text{or } Y_t &= A + B * t \quad [A = \ln Y_o \text{ and } B = \ln(1+r)] \\
 r &= \exp(B) - 1
 \end{aligned}$$

Here, r = CAGR; \exp = Exponential value; \ln = Natural log; t = Time period in years for which CAGRs are calculated (Rana, et. al., 2014).

In the Indian context, the agri entrepreneurship is in a nascent stage, which is influenced not only by technical factors, but also by whole lot of social and personal dimensions. Entrepreneurial competencies, livelihood capital status, information source use, age, education, gender and landholding were perceived as the potential determinants of successful agri entrepreneurship and hence were studied for their role in the functioning or discontinuation of enterprises. Access to information is vital for youth to engage in agriculture (FAO, 2014). The methodology adopted to enumerate data on these variables is presented here.

With minor modifications, the basic scale of entrepreneurial competencies (BSEC) developed by Cardenas-Gutierrez et al. (2021) was used to assess the entrepreneurs’ operations and marketing (OM), socio-business and legal organization (SBLO), and economic and financial (EF) competencies. An entrepreneurial-competencies index (ECI) was computed by dividing the sum of the actual score obtained by the total possible entrepreneurial-competency score (14), expressed as a percentage:

$$ECI = \sum_{t=1}^n \frac{[(OM) + (SBLO) + (EF)]}{14} \times 100$$

The household-livelihood assessment tool developed by Minh et al. (2019) was used for five-capital (human, natural, social, physical and financial) based livelihood assessment. The entrepreneurs' age was expressed in terms of completed years. Education level was quantified as illiterate (0), primary (1), higher primary (2), secondary (3), intermediate (4), graduate (5) and postgraduate (6). Gender was expressed as either male (1) or female (2). Information-source use was quantified by assigning a score of 6 for daily contact, 5 for weekly contact, 4 for contact once in a fortnight, 3 for monthly contact, 2 for once in a season, and 1 for contact once in a year. With twenty information sources listed under local sources, cosmopolitan sources, mass media, ICT and social-media platforms, the maximum possible score was 120.

The t-test was used to ascertain the significance of the differences in the means between functional and discontinued units. One-way ANOVA was applied to assess the differences in performance among the enterprise activities within functional and discontinued groups. Confirmatory factor analysis (CFA) was performed to examine the theory that age, education, family size, entrepreneurial competencies, livelihood capital and information access determines entrepreneurial ability of the respondents. CFA was performed using r software considering 20 variables. Factor analysis is a dimension reduction tool used for reducing the large number of highly correlated variables into small number of uncorrelated latent variables. Exploratory factor analysis was performed using principal component analysis with varimax rotation. The extracted factors and the variables possessing factor loadings of more than 0.5 were used to construct composite entrepreneurial factors index (CEFI) as a measure of entrepreneurial ability. In the construction of index, the variables present in the extracted variables were normalized using the measures "more is better" or "less is better". For instance, education if it is higher, respondents are assumed to have better entrepreneurial ability. The normalized variables were given suitable weights for the construction of composite index. The weights were estimated by dividing the variance explained by the respective factor to the total variance explained by all the extracted factors.

The influence of entrepreneurial ability on one of the economic performance indicators 'net income' was tested by fitting revenue function. Multiple linear Ordinary Least Squares was followed to examine the influence of independent variables on the dependent variable with the following mathematical expression:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 D_1 + b_4 D_2 + b_5 D_3 + b_6 D_4 + b_7 D_5 + b_8 D_6 + b_9 D_7 + b_{10} D_8$$

Where,

Y is net income of the respondents

X₁ is Composite entrepreneurial index

X₂ is expenditure

D₁ is the dummy variable to capture bee keeping

D₂ is the dummy variable to capture fish and duck farming

D₃ is the dummy variable to capture Goat farming

D₄ is the dummy variable to capture Mushroom farming

D5 is the dummy variable to capture Nursery and protected cultivation

D6 is the dummy variable to capture Piggery

D7 is the dummy variable to capture Poultry

D8 is the dummy variable to capture processing

D1 to D8 indicates dummy matrix taking binary values are indicated below.

Table 1. Dummy matrix for rural enterprises

Rural enterprises	D1	D2	D3	D4	D5	D6	D7	D8
Bee Keeping	1	0	0	0	0	0	0	0
Fish and duck	0	1	0	0	0	0	0	0
Goat farming	0	0	1	0	0	0	0	0
Mushroom	0	0	0	1	0	0	0	0
Nursery	0	0	0	0	1	0	0	0
Piggery	0	0	0	0	0	1	0	0
Poultry	0	0	0	0	0	0	1	0
Processing	0	0	0	0	0	0	0	1
Vermicompost	0	0	0	0	0	0	0	0

RESULTS

The number of respondents under the functional and discontinued categories varied among the nine enterprise activities promoted under ARYA (Table 2). Of the 684 functional enterprises, mushroom production constituted the most units (147), followed by poultry farming (123), vermicompost production (100), and goat farming (93). These four activities constituted more than 71% of the functional units. When enterprise-wise discontinuation was examined, about one-third of the enterprises were discontinued. Piggery enterprises were the least discontinued, followed by vermicompost and goat-farming units. In terms of numbers, poultry and mushroom activities accounted for nearly half of the total discontinued business units. The highest proportion of discontinued business units was in processing and value addition (53.85%), followed by fish & duck farming.

Table 2. Distribution of Respondents under Functional and Discontinued Enterprises

Enterprises	Functional units (No.)	Discontinued units (No.)	Total (No.)	Discontinuation Level (%)
Processing & Value Addition	24	28	52	53.85
Fish & Duck farming	25	22	47	46.81
Poultry farming	123	95	218	43.58
Nursery & Protected cultivation	66	37	103	35.92
Bee Keeping	59	31	90	34.44
Mushroom production	147	71	218	32.57
Goat farming	93	28	121	23.14
Vermicompost production	100	29	129	22.48
Piggery	47	8	55	14.55
Total	684	349	1033	33.79

Enterprise performance indicators

Performance in terms of operational duration, employment generation, gross turnover and net income (Table 3) indicated wide variation both within the group (as indicated by F values) and between the two groups (as indicated by t values). Within the functional units, fish, poultry, goat farming, nursery and piggery activities showed sustained performance through longer operational duration and higher employment generation. The longer an enterprise operated, the more it could establish its market presence, built a customer base and generated greater revenue. A longer operational duration also allowed an enterprise to gain experience, expedite operations, and adapt to changing market conditions. Sustaining the operations by successfully passing through the COVID disturbances was the key differentiating indicator between the functional and discontinued units. Functional units (616 days per unit) functioned almost double the duration compared to discontinued units (313 days per unit) during the period 2017 to 2021 as the difference was highly significant (t value 16.95). Except for the piggery enterprises (511 days per unit), all the discontinued enterprises were in operation for less duration than the least functional vermicompost enterprises (416 days per unit). Difference in the operational duration between functional and discontinued units was highest among the fish & duck farming enterprises (75.92%), followed by processing and value addition (62.86%).

The functional units performed significantly better in employment generation, nearly three times greater than discontinued units (t value 10.05). The functional units could generate 834 person-days of employment per unit as compared to 310 person-days per unit among discontinued units. The discontinued enterprises in piggery could do better to generate 507 person-days of employment/unit, and thus performed more closer to the functional piggery enterprises. Poultry enterprises also showed a smaller difference (45.28%) due to better performance in both functional and discontinued units. The highest difference in employment generation was recorded in fish & duck farming (87.95%). Mushroom enterprises also showed wider differences in employment generation between the discontinued (181 person-days/unit) and functional units (532 person-days/unit).

Functional units performed the best on economic parameters, with average gross turnover (INR 566826/unit, one US\$ \approx 82 INR) being four times greater than the discontinued units (INR 142214/unit). The poultry units generated the highest gross turnover (INR 957459/unit) among the functional units. In case of the discontinued units, nursery enterprises generated the highest average gross turnover, although it was 72.52% lower than that of the functional units. The difference in average gross turnover between the functional and discontinued groups was the highest in goat farming (83.19%). The extent of the difference in gross turnover between the discontinued and functional enterprises was also high in processing and value addition (82.26%).

Table 3. Differences in performance indicators within the enterprises and between functional and discontinued groups

Enterprises	Operational duration (days/ unit)		Employment generation (person-days/ unit)		Gross Turnover (INR/ unit)		Net Income (INR/ unit)	
	Functional	Discontinued	Functional	Discontinued	Functional	Discontinued	Functional	Discontinued
Poultry	835	403	689	377	957459	179147	525720	91616
Goat farming	810	399	1299	375	372479	62627	294322	37824
Nursery	717	348	1068	472	911198	250419	607824	182692
Piggery	628	511	912	507	594044	148438	500805	98300
Fish & duck	573	138	3211	387	267683	60227	79392	23543
Processing & value addition	517	192	599	143	881053	156323	485772	105686
Beekeeping	479	295	728	272	634341	119438	399641	52995
Mushroom	474	243	532	181	508586	137915	248025	78730
Vermicompost	416	276	355	225	72163	41741	52585	26992
Average	616	313	834	310	566826	142214	343026	82525
F value	92.54**	8.60**	54.00**	2.11*	113.74**	4.12**	98.68**	3.63**
t value	16.95**		10.05**		12.28**		10.23**	

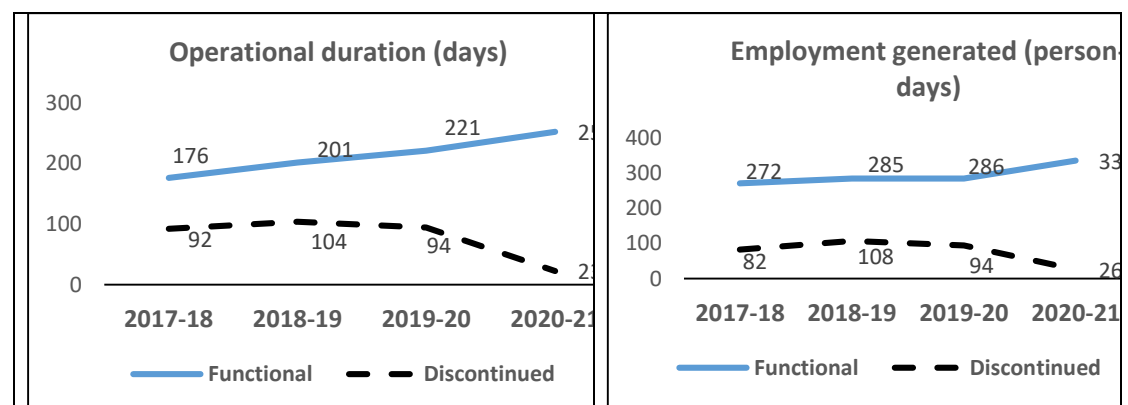
* significant at the 0.05 level

** significant at the 0.01 level

The differences got further widened in favor of functional units (INR 343026/unit) as discontinued units could only earn an average net income of INR82525/unit. Nursery enterprises generated the highest net income per unit both in the functional as well as in discontinued units, and hence the net difference was less (69.94%). The discontinued goat-rearing units earned 87.15% lower net income than functional units. The discontinued bee-keeping units also generated lower net income and reported 86.74% less income than functional bee-keeping units.

Differences in growth rate

The year-on-year comparison of the performance of functional and discontinued enterprises reveals the progressive growth or decline of the entrepreneurial activities (Figure 1). The Compound Annual Growth Rate (CAGR) for the functional units was positive, while the growth rate for the discontinued units was negative on all parameters. The difference in operational duration widened from 84 days in the first year to 229 days in the fourth year, as the average operational duration among the functional units gradually increased at a 12.43% CAGR (Appendix 1). This was a true reflection on the tenacity of successful agri-entrepreneurship despite COVID hindrances. The employment-generation gap between functional and discontinued units widened from 190 person-days in the first year to 310 person-days in the fourth year. The difference was three times in the first year but more than 12 times in the fourth year. The CAGRs of employment generation in terms of human days was 6.58% while the corresponding CAGR for discontinued units was (-)30.13%. Gross turnover among the functional units increased from INR 149736/unit during the first year to INR 255341/unit in the fourth year, showing a CAGR of 19.21%, whereas the discontinued units gross turnover declined from INR 40044/ unit to INR 11433/ unit, reflected by a CAGR of (-)30.88%. The difference in the average expenditure between the functional and discontinued units widened from approximately four times in the first year to more than 20 times in the fourth year. The CAGR of per unit expenditure was 12.95% for functional units, while this estimate for discontinued business units was (-)30.01%.



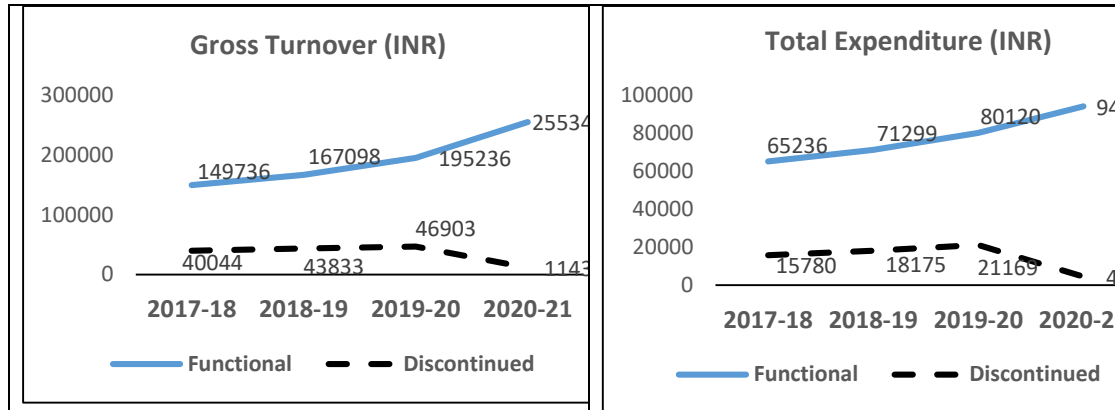


Figure 1. Progressive and year-wise gap in the performance of functional and discontinued units

Differentiating factors

The performance was influenced by the profile, human capital status, information-source use, and entrepreneurial competencies (Table 4) of the entrepreneurs. Most parameters differed significantly at the 0.01 level indicating the role of these factors on the performance of small-scale agri business enterprises. The average age of functional entrepreneurs was significantly less compared to discontinued category. Functional category had more number of youth in the age group of 20-30 years and 90 per cent of them were in the age group of 20-40 years. There were none in the age group of more than 50 years among functional entrepreneurs, whereas about 2% of the discontinued entrepreneurs were above 50 years. There was significant difference in the level of education of the functional and discontinued entrepreneurs. More number of functional entrepreneurs in the present study had intermediate, graduate and post-graduate level of education compared to more of secondary education level of the discontinued entrepreneurs. Proportion of graduates (28.5%) and post-graduates (3.8%) was higher in the functional entrepreneurs as compared to discontinued entrepreneurs (23.5% and 1.4% respectively). The discontinued entrepreneurs' families were constrained by lower human capital, with a score of 6.85 compared to the functional entrepreneurs' 7.15. Another feature of the functional enterprises was the higher percentage of females' participation in the business (28.22%), than in the discontinued category where the females' participation was 20.63%. Holding size of the families of the rural entrepreneurs was also an influencing factor. The study indicated that functional entrepreneurs' families cultivated more area (3.33 acres, 1.35 ha) compared to an average of one hectare cultivated by discontinued enterprises' families (2.52 acres, 1.01 ha).

There were significant differences between the functional entrepreneurs' entrepreneurial competencies and those of the discontinued entrepreneurs. These differences were highly significant for the three sub-components of entrepreneurial competencies as well as for the overall entrepreneurial-competencies. The functional

unit entrepreneurs had significantly higher levels of operational and marketing (OM) competencies (score of 3.76 out of a possible score of 6, compared to 2.35 among discontinued unit entrepreneurs). Functional entrepreneurs had higher socio-business and legal organization (SBLO) competencies (3.22 out of 5) compared to discontinued units. Economic and financial competencies were generally low for both the groups. Within the OM competencies, ability to 'sell the products' was highest among functional entrepreneurs (90.2%) as against 67.9% of the discontinued units being able to do this (Appendix 2). Ability to 'plan and organize' was another major differentiator, with 68.9% of the functional units against only 37.2% of the discontinued units. The discontinued entrepreneurs had very low ability to 'design new products' as only 15.2% could perform this task as against 40.5% of the functional units. Besides the ability to analyze 'customers preferences' (85.8%), the functional entrepreneurs were able to 'organize people' (74.7%). This particular competency was found with only 41.5% discontinued entrepreneurs.

The functional enterprise units could utilize the information and communication sources in a better way as indicated by significantly higher communication source use score of 59.08, compared to an average communication use score of 38.72 among discontinued units out of a possible score of 120 (Table 4). As evident from the range in total communication score presented in Appendix 3, vast majority of the functional entrepreneurs (73.7%) were falling under high information use category (> 40 score), whereas majority of the discontinued entrepreneurs (58.5%) were falling under low to medium level of information source use. Family members were the most contacted information sources by both functional and discontinued entrepreneurs, with a score of 5.05 and 3.84 respectively. However, WhatsApp was the second most contacted source of information by functional units, whereas the discontinued units depended more on friends and neighbors. Functional entrepreneurs contacted KVK scientists more frequently and valued the importance of scientific information in managing their enterprise units. The use of social media platforms and web-portals was also very much higher among functional units. Discontinued units exhibited much less access to information from agricultural university/research institute (1.06), mobile apps (0.87), publications (0.57) and agri-portals (0.28).

Table 4. Differences in socio-personal profile, livelihood capital, entrepreneurial competencies and information-source use of functional and discontinued enterprises

Socio-personal and entrepreneurial factors	Functional enterprises (N = 684)	Discontinued enterprises (N = 349)	t-test for Inequality of Means	Sig. (2-tailed)
Entrepreneurs' age (years)	32.20	33.36	2.915	0.004
Education level	3.73	3.51	2.740	0.006
Gender (% women)	28.22	20.63	2.647	0.008
Family members (Number)	5.19	5.37	1.494	0.136
Family members engaged in agriculture (Number)	2.17	1.92	3.595	0.000
Total cultivated area (acres)	3.33	2.52	3.479	0.001
Human capital (max 10)	7.15	6.85	2.843	0.005
Natural capital (max 8)	5.49	5.64	1.528	0.127
Social capital (max 5)	3.42	3.39	0.406	0.685
Physical capital (max 3)	2.77	2.74	0.746	0.456
Financial capital (max 2)	0.92	0.84	1.715	0.087
Livelihood-capital score (total 28)	19.74	19.46	1.583	0.114
Operation & marketing competency (max 6)	3.76	2.35	12.185	0.000
Socio-business competency (max 5)	3.22	1.98	12.152	0.000
Economic-financial competency (max 3)	1.32	1.08	3.598	0.000
Entrepreneurial-competency index	59.31	38.64	11.982	0.000
Information-source use score (max 120)	59.08	38.72	11.317	0.000

Factor analysis, performed using principal component analysis with varimax rotation, extracted six principal components capable of explaining 63 percent of variation for functional enterprises (Table 5). The extracted principal components were called as latent variables and the naming of the latent variable was done based on those variables which have appeared in that principal component with highest loading. The first principal component consisted of 'information sources' having an intermixed combination of social media (WhatsApp, YouTube, mobile SMS), informal sources (family members, neighbors, progressive farmers) and mass media (TV channels). The second PC consisted of formal information sources and entrepreneurial competencies. The third PC consisted only two (natural and social) of the five livelihood capitals,

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followed by literacy as PC4, financial capital as PC5 and imputed labour force as PC 6.

Table 5. Factors influencing composite entrepreneurial factor index of functional enterprises

Observed variables /Latent Variable	Communication Sources (PC1)	Entrepreneurial competency (PC2)	Natural and social capital (PC3)	Literacy (PC4)	Financial capital (PC5)	Imputed Labour force (PC6)
Information from WhatsApp	0.825					
Information from family members	0.817					
Information from neighbor	0.783					
Information from progressive farmers	0.746					
Information from TV	0.726					
Information from Youtube	0.716					
Information on Mobile SMS	0.610					
Information from Department officials		0.752				
Information from KVK		0.717				
Operation & marketing competency		0.625				
Socio-business competency		0.543				
Natural capital			0.617			
Social capital			0.616			
Education				0.569		
Financial capital					0.641	
Family size						0.550
Total variance explained	24.03	11.86	9.72	6.24	5.89	5.34

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Similar factor analysis was performed for the discontinued enterprises with distinct results wherein the informal and formal information sources emerged as the PC1 (Table 6), entrepreneurial competency factors as PC2, and social media information sources emerged separately as the third principal component. All five livelihood capitals emerged as important differentiators as PC 4 and PC 5 for discontinued enterprises. The six principal components explained almost 71.86 percent of variation among discontinued enterprises. The emergence of literacy as a separate PC among the functional enterprises and its absence among discontinued enterprises is a notable phenomenon.

Table 6. Factors influencing composite entrepreneurial factor index of discontinued enterprises

Observed /Latent variables	Information from formal sources	Entrepreneurial competency	Information from social media	Business capital	Human capital	Imputed Labour force
Information from progressive farmers	0.902					
Information from family members	0.893					
Information from neighbors	0.882					
Information from KVK	0.722					
Information from Department officials	0.698					
Socio-business competency		0.911				
Operation & marketing competency		0.873				
Economic-financial competency		0.766				
Information from Youtube			0.876			
Information from TV			0.675			
Information from SMS			0.624			

Information from WhatsApp			0.563			
Physical capital				0.761		
Social capital				0.669		
Financial capital				0.524		
Human capital					-0.802	
Natural capital					0.537	
Family size						0.766
Total variation explained	27.20	12.94	9.94	8.81	6.91	6.06

The extracted factors and encompassing variables within the factors were given suitable weights for estimation of composite entrepreneurial factor index (CEFI). The CEFI across rural enterprises is depicted in Table 7 for functional and discontinued agri entrepreneurs. The CEFI is expected to be of higher magnitude to reflect more entrepreneurial ability. Functioning entrepreneurs had higher magnitude of CEFI, which ranged from 0.33 in fish and duck farming to 0.73 in case of goat farming. Among the discontinued entrepreneurs, CEFI ranged from 0.1 in case of fish and duck rearing respondents to 0.71 in case of goat farming activities.

Table 7. Composite entrepreneurial factor index (CEFI) for ‘functional’ and ‘discontinued’ enterprises

Rural Enterprise	Functional entrepreneurs		Discontinued entrepreneurs	
	CEFI	Gross turnover (INR/unit)	CEFI	Gross turnover (INR/unit)
Fish and duck	0.33	267052	0.10	60227
Processing	0.51	881420	0.52	229223
Vermicomposting	0.54	71874	0.49	41741
Mushroom	0.64	508058	0.55	137916
Bee keeping	0.66	633936	0.55	119438
Piggery	0.66	594017	0.52	185359
Nursery	0.67	910558	0.58	250419
Poultry	0.68	957453	0.54	105559
Goat farming	0.73	372052	0.71	62627

The confirmatory factor analysis (CFA) was attempted to verify the theory that age, literacy, gender (FI variables), information sources use (CI variables), livelihood capital status (LI variables), and entrepreneurial competency (EI variables) determined the entrepreneurial ability of agri-entrepreneurs. The CFA was performed using r software separately for functional and discontinued groups. The CFA analysis demonstrated the

direct and indirect relation and magnitude of causal relation between latent variables and observed variables. The model adequacy was examined considering the minimum value of RMSE, significant chi square statistics and significance of coefficients indicating causal relation. The diagrammatic representation of causal relation enables readers to testify the theory with empirical values. Figure 2 captures the strong influence of operational and marketing competencies (E1) and WhatsApp as information source (C8) for functional entrepreneurs. Figure 3 captures the influence of personal information sources (C1, C2, C3) and socio-business competencies (E2) as the determinants for the discontinued entrepreneurs. On confirmation of theory empirically, the results of factor analysis were used to identify the factors contributing to entrepreneurial ability.

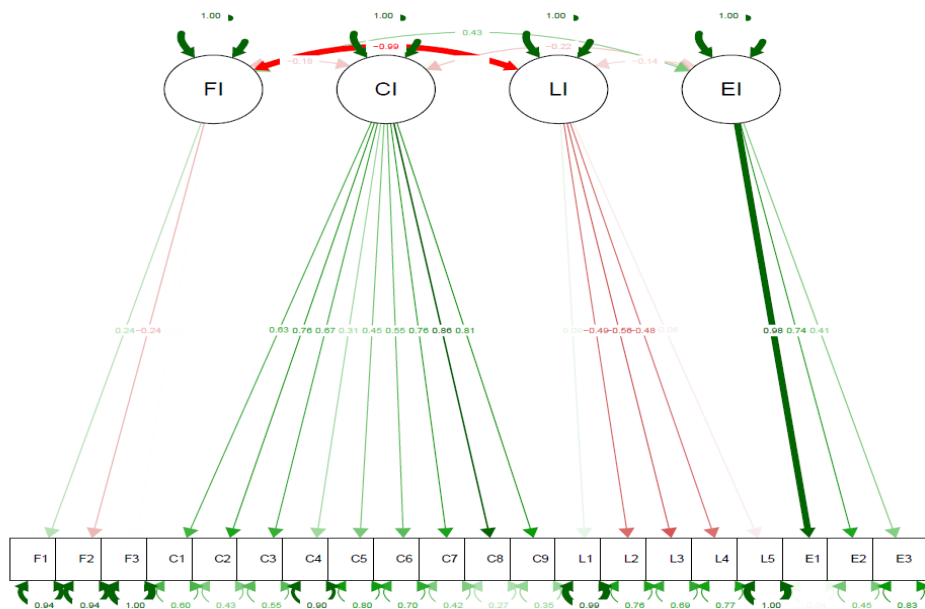


Figure 2. Causal relationship between latent and observed variables for ‘functional’ entrepreneurs

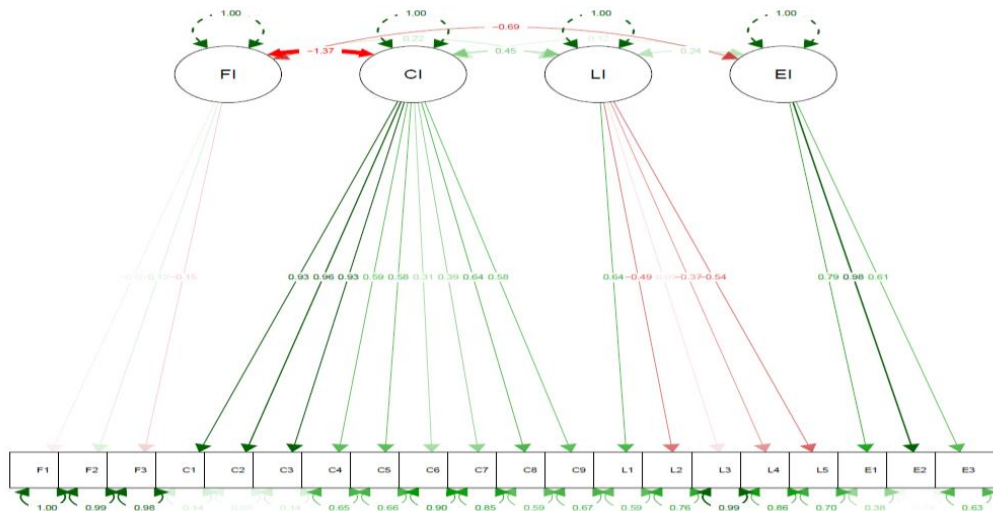


Figure 3. Causal relationship between latent and observed variables for ‘discontinued’ entrepreneurs

The influence of enterprises, entrepreneurial ability and expenditure on ‘gross returns’ across rural enterprises was examined through estimation of linear revenue function (Table 8). The regression coefficients for most of the variables were found to be statistically significant at 1 percent level of significance in case of functioning entrepreneurs. The entrepreneurial ability had synergistic influence across enterprises which farmer wishes to follow. The estimated gross returns across rural enterprises depicted in the Table 8 clearly indicates that functioning ARYA entrepreneurs practicing poultry reaped maximum returns followed by nursery and processing enterprises. Vermicomposting has resulted in lower gross returns and hence proved to be an ineffective enterprise, as farmer entrepreneurs treated it as a subsidiary in the main occupation of agriculture.

Table 8. Influence of entrepreneurial ability, as indicated by CEFI, on gross returns

Particulars	Functional entrepreneurs		Particulars	Discontinued entrepreneurs	
	Coefficients	t Stat		Coefficients	t Stat
Intercept	297.2669	3.041155	Intercept	-8690.11	-0.29612
CEFI	-304.778	-2.41055	EDI	44588	1.346534
Expenditure	0.000641	9.747378	Expenditure	1.946905	18.37331
d1	476.4051	4.06957	d1	-25741.2	-0.74055
d2	-150.786	-0.94944	d2	-6824.34	-0.17083
d3	239.1939	2.30344	d3	-8529.32	-0.23739
d4	225.291	2.414408	d4	7063.542	0.238136
d5	579.6446	5.076729	d5	101305.8	3.026556
d6	789.657	6.320038	d6	36245.54	0.681365
d7	359.8161	3.57727	d7	-6632.65	-0.22725
d8	528.3158	3.283145	d8	43443.52	1.227088

The revenue function in case of discontinued respondents was also statistically significant but most of the independent variables were found to have non-significant influence. The probable reason would be the least difference across discontinued sample respondents practicing different rural enterprises. The estimated gross returns in comparison to that of functioning respondents across rural enterprises was far lower. The estimated gross returns across discontinued enterprises also indicated that vermicomposting resulted in lower gross returns followed by goat rearing and bee keeping.

DISCUSSION

Most agri-entrepreneurs in rural India showed preference for mushroom, poultry, vermicompost, and goat farming (Table 2) as these enterprises were easy to start and had demand for these products in the local markets. Mushroom cultivation could be taken up with different species in different regions of the country, and some species were started with smaller investment using technical assistance and support from institutions. Poultry activity offered opportunities to rear dual-purpose birds in backyards with low to medium level of investment. The vermicompost production has the potential to utilize the main product on their own farm, which created interest and enthusiasm to start enterprises. Further interest on vermicomposting was triggered by the impetus given by Government of India for organic farming. Goat farming units were started as part of the animal husbandry activities of the households which were reared in a moderate housing with outdoor grazing and limited external feed requirement. These were some of the reasons behind the rural youths' choice of enterprises.

There were obvious differences in the performance indicators of functional and discontinued entrepreneurial activities (Table 3). But within the functioning enterprises, some enterprise activities were more likely to fetch higher net returns (nursery, poultry, piggery, and processing) and activities like vermicompost production and fish rearing were the low-income generators. There were a few region-specific factors that could be the drivers of functioning or discontinuation. Coastal areas were more prone to cyclones and hence outdoor or field based activities were more vulnerable for destruction and discontinuation. High rainfall areas were not congenial for beekeeping due to frequent migration of bee colonies. On the contrary, there were comparative advantages for certain enterprises for certain areas. Goat farming was more profitable in a state like Madhya Pradesh which had more opportunities for both semi-intensive (with outdoor grazing option) as well as intensive rearing. Hill and low-temperature areas were less-favourable for poultry enterprises, but the same areas were more favourable for mushroom, plant nursery and processing enterprises. Poultry enterprises performed better in hot and dry climate, but demanded more technology and investment support.

An analysis of the reasons for discontinuation revealed further insights, which are briefly summarized below. The discontinued enterprises exhibited signs of failure from the very beginning, as the difference was visible right from the first year. The discontinued enterprises struggled to survive during second and third years and succumbed under the COVID influence.

- Difficulty in scaling-up, lower turnover and inability to meet the operational costs caused discontinuation of 31.80% of the enterprises. On the other hand, functional units diversified their product portfolio (for example, from fish production to fish-seed production) to overcome the slow and low returns. Vermicompost enterprise units were smaller in scale of operation than other enterprises, resulting in least employment generation and revenue among all other studied enterprises. The sub-optimal size of the discontinued units was a key indicator of low performance of mushroom enterprises (Shirur et al. 2018). In one of the study districts, the discontinued goat-farming enterprises depended mainly on pastureland grazing, which led to a slower growth rate, reduced body-weight gain and lower turnover (Meena, et. al., 2022). Small-scale entrepreneurial units managed by entrepreneurs themselves as source of family livelihood was the reason for fewer jobs created (Shrivastav and Kaur, 2023).
- Inability to ensure raw material availability continuously, high cost of the raw material and poor quality of the inputs were the reasons for 25.50% of the discontinued enterprises. Mushroom production in Kerala was dependent on neighbouring states for paddy straw and spawn, which often resulted in high cost. The poor-quality straw added to infection and crop failure. Cost-ineffectiveness and lack of resources are the common reasons for business discontinuation (Hanna and Wigmore, 2023). Poor economic conditions and the inability of the entrepreneurs to obtain sufficient quantities of economic resources could precipitate closure of businesses (Vitez, 2023). This reiterates

the importance of sustained economic performance for the survival of agribusiness enterprises.

- Non-profitability of the enterprises was a strong reason for discontinuation in about 20 per cent of the discontinued enterprises. Processing and value-addition enterprises required capital to establish and scale-up. It was challenging for the small-scale enterprises to produce high-quality value-added products that could meet market standards and compete with established brands. Many enterprise units could not sell their quality products against the cheaper products available in the markets. Some of the processing activities required more investment for equipment, machineries, and infrastructure during the early stages, making it difficult for small-scale entrepreneurs to thrive. Small businesses faced difficulty in achieving sufficient market share (Vitez, 2023) where the number of companies in the economic market for consumers is high.
- About 20 per cent of the discontinued enterprises cited the reason that the technologies and practices could not give the desired level of performance. That indicated the technical inefficiency, inappropriate selection of technologies and lack of competency to handle the technologies. Beekeeping units suffered from variety of reasons such as migration of colonies and destruction due to heavy rains in some areas and destruction by wild rock-bee in some other areas. In particular, young agri-entrepreneurs require information and technical services to establish and expand agri businesses (Fiedler, 2020). Rural entrepreneurs need constant support with information on technical, regulatory and financing aspects of their enterprises (Beriya, 2022).
- Inability to adopt the suggested technologies or management practices was also a reason for about 19 percent of the enterprises. The difference between functional and discontinued units was least among vermicompost enterprises due to low level performance by both functional and discontinued units. On the contrary, every functional entrepreneur had regular contact with subject matter specialist concerned in the KVK for technical back-up.
- Fishery enterprises also showed greater level of discontinuation as these required continuous availability of water resources and had long waiting periods for first harvest and income. Resource-poor entrepreneurs struggled to carry on during the zero-income period. Those who could pull-on, experienced difficulty in arranging the fish-seedlings for the next batch, which was also a reason for discontinuation. High mortality of young fishes, slow growth, low yields (Adobor, 2020), and lack of market for poor-sized fishes demotivated the budding aquaculture entrepreneurs. The COVID-19 outbreak severely affected the small-scale fishery enterprises due to low consumer demand, limited market access, and restricted transportation (FAO, 2020). Its effect could be seen on seed- and feed-supply disruptions up to the village level (Bhendarkar, et. al., 2021). The association of the Wuhan wet market with the COVID-19 pandemic probably had a psychological barrier to fish demand (Bondad-Reantaso, et. al., 2020).

Despite the prevalence of the above bio-physical limitations, including COVID turbulence, the functional units survived and progressed slowly and steadily. Besides the choice of enterprises and low-scale of operation, the performance was influenced by the profile, human capital, information-source use, and entrepreneurial competencies (Table 4) of the entrepreneurs. College educated individuals were more successful as entrepreneurs as they could perceive the risks in advance and planned to overcome those. Higher education contributed to business turnover by adopting technology and efficient utilization of the manpower employed. As an integral part of human capital, formal education strengthened their ability to pursue different livelihood options. Formal education added to entrepreneurs' self-confidence and thereby enhanced success. Young and college educated rural youth could be the harbingers of sustained rural entrepreneurship.

The gender-inclusive entrepreneurship promotion is vital for the sustainable livelihoods in rural areas. Women entrepreneurship uplifted the entire family, not only alleviating the present poverty levels, but built a strong foundation for the future of the young family members. Women's psychological, social, economic and political empowerment through entrepreneurship provided an opportunity to attain autonomy and reduce dependence on the otherwise limited resources of the family.

Business performance was determined by entrepreneurial competencies of the entrepreneurs, as they could harness the opportunities better than those who lacked the necessary competencies. Considering the constraints under which the rural enterprises operated particularly during COVID related restrictions, entrepreneurial competencies were key for the economic performance. Entrepreneurial competencies have emerged as strong predictors of business performance even in small scale enterprises. In particular, the functional entrepreneurs were able to 'organize people' as per the requirements and were able to 'choose a management model' suitable to their enterprise. Economic and financial competencies were generally low in both categories as many were unable to do 'results account' and 'explain accounting book'. Strong relationship between performance of small enterprises and entrepreneurial competencies demand for entrepreneurship education as part of the formal education programmes in schools and universities.

Information collection, organization, processing and maintaining skills are part of the information management. Keeping track of technological advancements was a crucial survival strategy for the entrepreneurs. The use of smart phones to access digital content on pest and disease management was found to be critical for the effective management of small-scale enterprises. Access and utilization of information had long-term implications in improving the livelihood through multiple avenues.

Implication to research and practice

This research contributes novelty to the existing body of knowledge on the drivers of functioning or discontinuation of small-scale agricultural entrepreneurship in rural India through the following key innovations:

Unlike previous studies that often focus solely on economic or agricultural aspects, this research adopts an interdisciplinary approach. By integrating economic, sociological, and policy perspectives, it provides a more nuanced understanding of the drivers affecting the success or discontinuation of small-scale agricultural entrepreneurship.

This research incorporates a temporal dimension by examining the changes and developments in the drivers of small-scale agricultural entrepreneurship over time. By tracing the evolution of these ventures and their response to dynamic factors such as market trends, climate variations, and policy modifications, the study captures a more dynamic and adaptive picture of entrepreneurship in rural India.

Recognizing the significance of community dynamics, the research places a strong emphasis on understanding how small-scale agricultural entrepreneurship impacts and is influenced by local communities. By exploring community perceptions, social structures, and collaborative initiatives, it unveils the community-level intricacies that play a crucial role in the success or discontinuation of these ventures.

To enrich the analysis, this research integrates qualitative and quantitative research methodologies. By combining in-depth interviews, case studies, and surveys, it captures not only statistical trends but also the experiences, narratives, and qualitative nuances that contribute to a more comprehensive and contextually grounded understanding of the subject.

In recognizing the role of technology in modern agricultural practices, this research investigates the impact of technological advancements on small-scale agricultural entrepreneurship. It examines how the adoption of innovative agricultural technologies influences the functioning and sustainability of these ventures, thereby providing insights into the contemporary challenges and opportunities faced by rural entrepreneurs.

By incorporating these innovative elements, this research aims to offer a fresh and enriched perspective on the drivers of functioning or discontinuation of small-scale agricultural entrepreneurship in rural India, contributing valuable insights for academia, policymakers and practitioners alike.

CONCLUSIONS

Sustainable rural entrepreneurship in the farming and related activities is a challenging proposition, particularly in the case of small-scale enterprises. Operational duration was

the survival indicator and employment generation was the growth indicator. However, only a certain degree of economic success could ensure enterprise sustainability. Choice of enterprise was critical, as few activities were more likely to succeed (nursery, poultry, piggery) in rural India. More number of youths showed inclination to start mushroom, vermicomposting and goat farming considering the ease of starting a business, but the smaller scale of operation affected their economic viability. Vermicomposting and beekeeping have broader relevance in ecological context, but could not generate enough economic support to livelihoods. Information use was a dominant driver for both functional and discontinued entrepreneurs, but the information sources differed greatly between the two categories of respondents. Persons with entrepreneurial competencies could operate agri enterprises at economically viable levels, therefore, it is of paramount importance to identify the gaps in competencies and empower through well-planned educational activities. Younger and college educated entrepreneurs are more likely to succeed and therefore demand greater focus in any entrepreneurship drive. Human capital possession, and more female participation add to the probability of success. These findings have practical and pragmatic implications for rural entrepreneurship and various organizations that are mandated with agribusiness promotion.

Future Research

The present investigation has captured a few drivers of successful small-scale agri entrepreneurship, which could explain about 60 to 70 percent of the variations. There could be some more drivers which need to be identified and ascertained for their relevance to the sustenance of rural agri entrepreneurship. Rural India is getting energized with wide ranging agri-entrepreneurship activities having multiple business value-chains. Chain-wide analysis of each type of enterprise activities needs to be studied using internationally accepted analytical tools and techniques.

Ethical statements

Respondent entrepreneurs of the study were explained the objectives of study and probable outcomes including hard copy and digital publications. These entrepreneurs provided their consent to be part of study, however, wished to remain anonymous except only on disclosing the geographical information of their locality.

Declaration of No Conflict of Interest

The authors certify that they have NO affiliations with or involvement in any organization or entity with any financial interest, or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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Appendix 1. Compound Annual Growth Rates (CAGRs) of different attributes of functional and discontinued enterprise units.

Year	Functional Units				Discontinued Units			
	Operational Days (No./unit)	Employment days (No./unit)	Gross Income (INR/unit)	Total Expenditure (INR/unit)	Operational days (No./unit)	Employment days (No./unit)	Gross income (INR/unit)	Total Expenditure (INR/unit)
2017-18	176	272	149736	65236	92	82	40044	15780
2018-19	201	285	167098	71299	104	108	43833	18175
2019-20	221	286	195236	80120	94	94	46903	21169
2020-21	252	336	255341	94164	23	26	11433	4566
CAGR	12.43***	6.58***	19.21***	12.95***	-34.69*	-30.13*	-30.88*	-30.01*

Note: ***, **, *, represent significance of the CAGRs at 1, 5 and 10% level of significance, respectively

Appendix 2. Differences in entrepreneurial competencies (EC)

Entrepreneurial Competencies	Functional (n=684)	Discontinued (n=349)
Organization and Marketing competencies		
Able to sell products	617(90.2)	237(67.9)
Able to set prices	506(74.0)	177(50.7)
Able to plan and organize	468(68.4)	130(37.2)
Able to analyse characteristics of products/ services	459(67.1)	137(39.3)
Able to design new products	277(40.5)	53(15.2)
Able to brand advertising	245(35.8)	87(24.9)
Socio-Business and Legal Organization competencies		
Able to analyse customers preferences	587(85.8)	209(59.9)
Able to organize people	511(74.7)	145(41.5)
Able to set up the Enterprise	492(71.9)	170(48.7)

Able to choose management model	387(56.6)	89(25.5)
Able to design the organogram	226(33.0)	77(22.1)
Economic and Financial competencies		
Able to calculate costs, revenues	508(74.3)	210(60.2)
Able to explain accounting book	248(36.3)	107(30.7)
Able to do a results account	149(21.8)	60(17.2)

Note: Figures in parenthesis indicate the percentage

Appendix 3. Differences in use of information sources by functional and discontinued enterprise units

Communications sources	Information use score (out of 6)		P value
	Functional	Discontinued	
Family members	5.05±1.75	3.84±2.39	<0.001**
WhatsApp	4.35±2.41	3.13±2.68	<0.001**
Neighbours / Friends	4.11±1.90	3.34±2.27	<0.001**
KVK scientists	3.84±1.42	2.92±1.78	<0.001**
Mobile SMS/MMS	3.72±2.55	2.01±2.58	<0.001**
Progressive farmer	3.67±1.82	3.07±2.07	<0.001**
Newspaper	3.57±2.55	2.28±2.66	<0.001**
Fellow farmers/entrepreneurs	3.46±1.93	2.81±2.02	<0.001**
YouTube	3.26±2.67	1.38±2.40	<0.001**
Television	3.06±2.82	2.11±2.69	<0.001**
Village leaders	2.71±1.95	2.32±2.01	0.003**
Field Workers	2.48±1.89	1.91±1.85	<0.001**
Department officers	2.48±1.58	2.23±1.57	0.018*
Web browsing	2.41±2.61	1.11±2.21	<0.001**
Mobile Apps	2.36±2.69	0.87±1.99	<0.001**
Radio	2.32±2.63	1.14±2.11	<0.001**

Publications, books, journals	1.92±2.34	0.57±1.25	<0.001**
Agricultural University / Research Institute	1.79±1.55	1.06±1.37	<0.001**
Agri-Portals	1.44±2.24	0.28±1.04	<0.001**
Facebook, Instagram	1.09±2.28	0.36±1.32	<0.001**

Category	TOTAL Communication score	Functional (n=684)	Discontinued (n=349)
Low information source use	<20	75(11.0%)	76(21.8%)
Medium information source use	20-40	105(15.4%)	128(36.7%)
High information source use	>40	504(73.7%)	145(41.5%)

P<0.001**

Appendix 4. Parametric estimates of confirmatory factor analysis for functional and discontinued entrepreneurs

Variables	Functional entrepreneurs			Discontinued entrepreneurs		
	Estimate	P value	Regression coefficient	Estimate	P value	Regression coefficients
Education	0.303	0.005	0.242	-0.061	0.488	-0.052
Gender	-0.107	0.005	-0.239	0.048	0.447	0.118
Family size	-0.012	0.897	-0.006	-0.243	0.437	-0.155
Information from family members	1.098	0	0.630	2.218	0	0.929
Information from neighbors	1.435	0	0.756	2.174	0	0.958
Information from progressive farmers	1.216	0	0.668	1.919	0	0.929
Information from department officials	0.495	0	0.313	0.926	0	0.589
Information from KVK	0.633	0	0.445	1.039	0	0.584

Information from TV	1.541	0	0.548	0.831	0	0.310
Information from YouTube	2.027	0	0.759	0.936	0	0.391
Information from WhatsApp	2.059	0	0.856	1.712	0	0.641
Information from SMS	2.053	0	0.807	1.486	0	0.578
Human capital	0.133	0.113	0.082	1.113	0	0.644
Natural capital	-0.733	0	-0.488	-0.795	0	-0.493
Social capital	-0.574	0	-0.558	-0.091	0.156	-0.093
Physical capital	-0.245	0	-0.477	-0.195	0	-0.370
Financial capital	-0.040	0.232	-0.062	-0.347	0	-0.543
Operation & marketing competency	1.686	0	0.978	1.428	0	0.788
Socio business competency	1.113	0	0.74	1.614	0	0.98
Economic - financial competency	0.414	0	0.407	0.632	0	0.607