



RESEARCH ARTICLE

# Entrepreneurial behaviour of mushroom growers in Jammu, India

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## Abstract

The study was conducted during 2023-25 on a sample size of 250 mushroom growers with an aim to study their entrepreneurial behaviour using the Entrepreneurial Behaviour Index (EBI) score. Four districts, namely Udhampur, Jammu, Samba and Kathua having the maximum number of mushroom growers in the Jammu division were selected under the study. In order to measure the reliability of eight entrepreneurial traits, Cronbach's alpha coefficient was used. The results showed high internal consistency among all the traits. Achievement motivation and decision-making ability demonstrated the highest reliability, with alpha values of 0.91 and 0.90 respectively. Economic motivation and risk-bearing capacity also showed strong reliability, with alpha values of 0.86 and 0.85. Traits such as locus of control (0.83), cosmopolitanism (0.80), planning ability (0.76) and self-confidence (0.75) exhibited acceptable reliability levels. The results also showed that majority of mushroom growers have expressed a medium level of entrepreneurial behaviour. Medium EBI score of mushroom growers is due to low cosmopolitanism trait. This creates a gap as well as an opportunity for the extension functionaries, which need to be minimized. Therefore, awareness programmes and trainings which involve the participation of mushroom growers should be systematically planned and organized.

**Keywords:** behaviour; entrepreneurship; mushroom; reliability; traits

## Introduction

Indian agriculture and allied sectors contributed US\$ 277.01 billion in the financial year 2024. As the country's population surges, income affluence and alarmingly changing food habits are demanding a drive in food culture and are especially sourcing organic products. The food culture has moved from eating dal-rice carbohydrates to more protein rich alternatives like tofu, mushrooms, soybeans, etc. For the same, a country like ours with diverse natural resources can be exploited to a limit for providing raw materials for food processing. The budget for the Department of Agriculture and Farmers' Welfare grew from Rs. 21933.50 crore (US\$ 2.53 billion) in 2013-14 to Rs. 122528.77 crore (US\$ 14.13 billion) in 2024-25. This shows the government's strong focus on supporting and developing agriculture (1).

Mushrooms have high nutritional value and are a good source of energy and water. Mushrooms are also a good source of dietary fiber, taking approximately 10 g per day can help in better digestion and makes mushrooms surprisingly satiating. Protein helps in the building and repairing of body tissues, gaining muscle mass and strengthens immune system. Taking about 5 g of mushrooms on a daily basis can help in building and repairing the body. Mushrooms have good amounts of vitamins and minerals and have a substantial contribution in selenium content. Selenium is one

of the trace elements which is a powerful antioxidant, helps in protecting our body from free radicals, regulates the production of thyroid hormone, supports the immune system, lowers the risk of various heart diseases and some cancers (2).

Mushrooms are one of the special cash crops grown in Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana and other states of India. It does not require much land unlike cereals, millets, etc. This crop can use aerial space and can be grown in small rooms under controlled temperature and humidity. It is a low maintenance crop that can be grown by illiterates, women farmers, artisans, etc. Mushroom production can be promoted by regular trainings, awareness, technological support and innovative practices related to mushroom entrepreneurship (3). Button mushroom contributes about 95 % of the total production and exports (4). It is an effective means to generate employment and additional income, reduce agricultural waste, improve food security and mitigate nutrient deficiencies (5-7). It is better and more reliable than many other crops since it gives more productivity (8). An entrepreneur is an individual who can generate employment for others and works for profit. Mushroom cultivation, hence, can be an effective enterprise for such individuals.

Development of the economy of any nation depends primarily on the important role played by entrepreneurs. An

entrepreneur is a person who organizes, manages and assumes the risk of a business. He is an economic man who tries to maximize his profit by innovations. Across the world, entrepreneurs have been considered instrumental in initiating and sustaining socio-economic developments. However, the entrepreneurs are not simply innovators, but they are people with a will to act, to assume risk and to bring about a change through the organization of human efforts. The part played by such entrepreneurs is of vital importance in a developing country like India, where there are ample opportunities for using innovations to exploit the available resources. Thus, in all economic development activities more and more focus is being centered on entrepreneurship of the people. Entrepreneurship means identifying/ innovating ideas, products and services, mobilizing resources, organizing production/ services and finally marketing them covering the risk with constant strive for growth and excellence (9). Fundamentally, entrepreneurship is a creative act. This creative process can be risky, uncertain and haphazard, but it is always dynamic. Entrepreneurs play a key role in the economic development of a country.

The emergence of entrepreneurs in mushroom cultivation can propel our rural population into self-sustaining individuals, who in turn can catalyze the development of the economy. The concept of entrepreneur and entrepreneurship has been frequently applied to the individual sector. The genesis of entrepreneurship in mushroom cultivation is quite recent. It is now being widely accepted that increase in production and productivity, in terms of, farm diversification, innovation and development of mushroom growers into self-sustaining individuals, follow the inoculation of entrepreneurial qualities among mushroom growers. Entrepreneurial behavior is human behaviour which includes identifying and exploiting opportunities through establishing and developing enterprises(10).

## Materials and Methods

Jammu division consists of 10 districts. A list of mushroom growers of all the districts of Jammu division was procured from the Directorate of Agriculture Production and Farmers Welfare, Jammu (11). Four districts, namely Udhampur, Jammu, Kathua and Samba have the maximum number of mushroom growers and hence, were selected for the present study. A proportionate sample of 250 mushroom growers was drawn from the selected districts (Table 1). In the proposed study, only those mushroom growers were selected who were practising mushroom on a commercial scale and were providing employment to others.

In the present study, entrepreneurial trait was defined as a quality or feature of mushroom entrepreneurs which was regarded as an attribute or characteristic or dimension possessed by them. Therefore, the following important entrepreneurial traits of mushroom growers were studied. Besides, the measurement of selected concepts has also been explained below.

- Achievement motivation- modified scale(12)
- Decision-making ability- modified scale(13)

- Economic motivation- modified scale(14)
- Risk-bearing capacity- modified scale(14)
- Self-confidence- modified scale(15)
- Locus of control- modified scale(16)
- Planning ability- modified scale(17)
- Cosmopolitaness- modified scale(13)

**Achievement motivation:** It was defined as the desire for excellence to attain a sense of personal accomplishment. The responses were measured on a five-point continuum scale viz. strongly agree, agree, undecided, disagree and strongly disagree with scores 5, 4, 3, 2 and 1 respectively.

**Decision-making ability:** It was defined as the degree of weighing the available alternatives in terms of their desirability and their likelihood and choosing the most appropriate one, for achieving maximum profit in mushroom farming. The response categories for each statement were 'not considered', 'considered after consultation with others' and 'considered independently' with scores 3, 2 and 1, sequentially.

**Economic motivation:** It was defined in terms of the extent to which a mushroom grower is oriented towards profit maximization and the relative value placed by him on monetary gains. The responses were measured on a five-point continuum scale viz. strongly agree, agree, undecided, disagree and strongly disagree with scores 5, 4, 3, 2 and 1, subsequently.

**Risk-bearing capacity:** It was defined as the degree to which a mushroom grower is oriented towards risk and uncertainty and has the courage to face the problems emerging from time to time in mushroom cultivation. The responses were obtained on a three-point continuum viz. 'agree', 'undecided' and 'disagree'. A weightage of 3, 2 and 1 respectively was assigned to the response categories in case of positive statements and scoring was reversed for negative statements.

**Self-confidence:** Self-confidence was defined as the degree to which a mushroom grower believes in one's own abilities. The responses were obtained on a dichotomous continuum i.e., in 'yes' and 'no' form by assigning the score of 1 and 0 for positive questions and the scores were reversed for negative questions.

**Locus of control:** It was defined as the extent to which a mushroom grower believes that he can control events that affect him. It was measured on a five-point continuum scale viz. strongly agree, agree, undecided, disagree and strongly disagree with scores 5, 4, 3, 2 and 1, consecutively.

**Planning ability:** It was defined as the ability of the mushroom grower to think about the future or mentally anticipate the right way to carry out the mushroom production activities. It was measured on a two-point continuum as 'yes' and 'no' by assigning scores 1 and 0.

**Cosmopolitaness:** It was defined as the degree or extent to which the mushroom grower possesses cosmopolitan traits. The responses were obtained on a three-point continuum viz. 'agree', 'undecided', 'disagree' by assigning weightages of 3, 2 and 1 respectively for

**Table 1.** Sampling plan of mushroom growers

S. No.	Districts	Total no. of mushroom growers	No. of mushroom growers selected
1.	Udhampur	447	96
2.	Jammu	389	83
3.	Kathua	210	45
4.	Samba	122	26
Total		1168	250

positive statements while, it was reversed for negative statements.

In order to measure the entrepreneurial behaviour of mushroom growers, suitable scales were developed and standardized, consisting of eight dimensions/components of entrepreneurial behaviour. The responses were obtained on respective continuums of different scales. The total score obtained by each mushroom grower as well as for each statement was calculated. To get an overview of mushroom growers, they were classified into three categories i.e., high, medium and low levels of Entrepreneurial Behaviour Index (EBI) score on the basis of calculated mean and standard deviation of the EBI score obtained by them, where the high category includes values  $> X + S.D.$ , the medium category includes values from  $X - S.D.$  to  $X + S.D.$  and the low category includes values  $< X - S.D.$  In the present study, a higher EBI score is perceived as high entrepreneurial behaviour trait.

Frequency and percentage of respondents in each category were calculated. Further, to determine the entrepreneurial behaviour, entrepreneurial behaviour index (EBI) (18, 19) for each statement was calculated and ranked accordingly. EBI was calculated using the following formula:

$$EBI = \frac{\text{Obtained score for dimension of entrepreneurial behaviour}}{\text{Maximum obtained score}} \times 100$$

Where,

EBI = Entrepreneurial behaviour index

The data was collected from the selected mushroom growers with the help of a structured interview schedule. The data was presented using radar charts and scatter diagrams for the entrepreneurial traits. The y-axis in figures represents the EBI score and the x-axis represents the respective statements of the traits or the sample areas of the study.

## Results

In order to check the internal consistency reliability of the eight scales used under the study, the statements were presented to

30 mushroom growers from non-sampled areas. The responses were rated on respective continuums. Cronbach's alpha method was used to test the reliability of the constructed scales (Table 2a). The results from the reliability test can be interpreted as that the reliability of achievement motivation and decision-making ability traits can be considered as excellent, as the alpha value is more than 0.90. The reliability of economic motivation, risk bearing capacity, locus of control and cosmopolitanism traits can be considered as good, as the alpha value ranges between 0.90 and 0.80. The reliability of self-confidence and planning ability can be considered as acceptable, as the alpha value ranges between 0.70 and 0.80 (Table 2b).

This section of investigation aims to analyze and understand entrepreneurial traits of mushroom growers to develop a suitable entrepreneurship development strategy for them.

### Categorization of mushroom growers based on their Entrepreneurial Behaviour index (EBI) score

The perusal of the data reveals that overall, majority (64 %) of mushroom growers had medium level of EBI score followed by 20 % and 16 % who had high and low levels of EBI score (Table 3).

Similar trends were seen in Jammu district where a majority (51 %) of mushroom growers had medium level of EBI score followed by 46 % and 4 % who had high and low levels of EBI score. Further, 76 % of mushroom growers from Kathua district showed a medium level of EBI score followed by 18 % who had a low level of EBI score and 7 % had a high level of EBI score. The results of Samba district show that a majority i.e., 58 % of mushroom growers had a medium level of EBI score followed by 38 % and 4 % who had low and high levels of EBI score. Also, in Udhampur district, majority (72 %) of mushroom growers had a medium level of EBI score followed by 21 % who had a low and 7 % had a high level of EBI score (Fig. 1 & 2). Majority of the mushroom growers possessed medium level of mushroom entrepreneurial ability (20-22).

**Table 2a.** Criteria for evaluating Cronbach's alpha values

Value of Cronbach's alpha	Internal consistency
<0.5	Unacceptable
0.5 - 0.6	Poor
0.6 - 0.7	Questionable
0.7 - 0.8	Acceptable
0.8 - 0.9	Good
≥0.9	Excellent

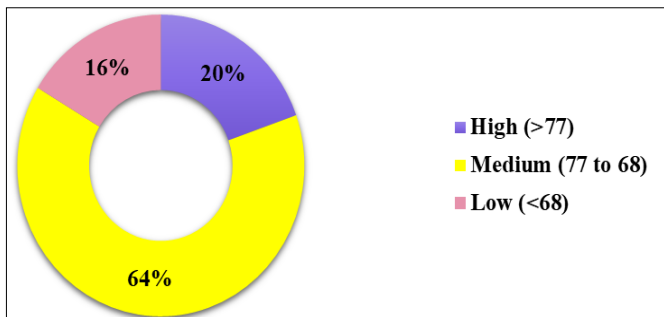
**Table 2b.** Cronbach's alpha value for each item

S. No.	Entrepreneurial traits	Reliability statistics	
		Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items
1.	Achievement motivation	0.91	0.91
2.	Decision making ability	0.90	0.90
3.	Economic motivation	0.86	0.88
4.	Risk bearing capacity	0.85	0.85
5.	Self -confidence	0.75	0.78
6.	Locus of control	0.83	0.83
7.	Planning ability	0.76	0.76
8.	Cosmopolitanism	0.80	0.84

**Table 3.** Distribution of mushroom growers based on their Entrepreneurial Behaviour Index (EBI) score

S. No.	Level of Entrepreneurial Behaviour Index score	Jammu (n=83)	Kathua (n=45)	Samba (n=26)	Udhampur (n=96)	Overall (n=250)
1.	High (>77)	38 (46)	3 (7)	1 (4)	7 (7)	49 (20)
2.	Medium (77 to 68)	42 (51)	34 (76)	15 (58)	59 (72)	160 (64)
3.	Low (<68)	3 (4)	8 (18)	10 (38)	20 (21)	41 (16)

Figures for parentheses are % and rounded off to the nearest whole number



**Fig. 1.** Overall distribution of mushroom growers on the basis of their EBI Score.

**Quantitative presentation of entrepreneurial traits of mushroom growers**

The entrepreneurial traits of mushroom growers were studied with respect to eight dimensions. The results have been presented in the subsequent tables.

**Achievement motivation of mushroom growers**

The data in Fig. 3 reveals that overall, the sampled mushroom growers accorded first rank to the statement ‘In accomplishing a task, I like to do it much better than other mushroom entrepreneurs’ with an EBI of 93 and second rank was accorded to the statement ‘I like to earn more profit’ with an EBI of 91 in the ranking hierarchy.

In Jammu district, mushroom growers accorded first rank to the statement ‘My desire is to be a successful mushroom entrepreneur’ with an EBI of 95 and second rank was accorded to the statement ‘In accomplishing a task, I like to do it much better than other mushroom entrepreneurs’ with an EBI of 94 in the ranking hierarchy.

In Kathua district, mushroom growers accorded first rank to the statement ‘In accomplishing a task, I like to do it much better than other mushroom entrepreneurs’ with an EBI of 92 and second rank was accorded to the statement ‘I like to earn more profit’ with an EBI of 90 in the ranking hierarchy.

Further in Samba district, mushroom growers accorded first rank to the statement ‘I feel my success depends upon my hard work in mushroom enterprise’ with an EBI of 93 and second was accorded to the statement ‘I like to earn more profit’ with an EBI of 91 in the ranking hierarchy.

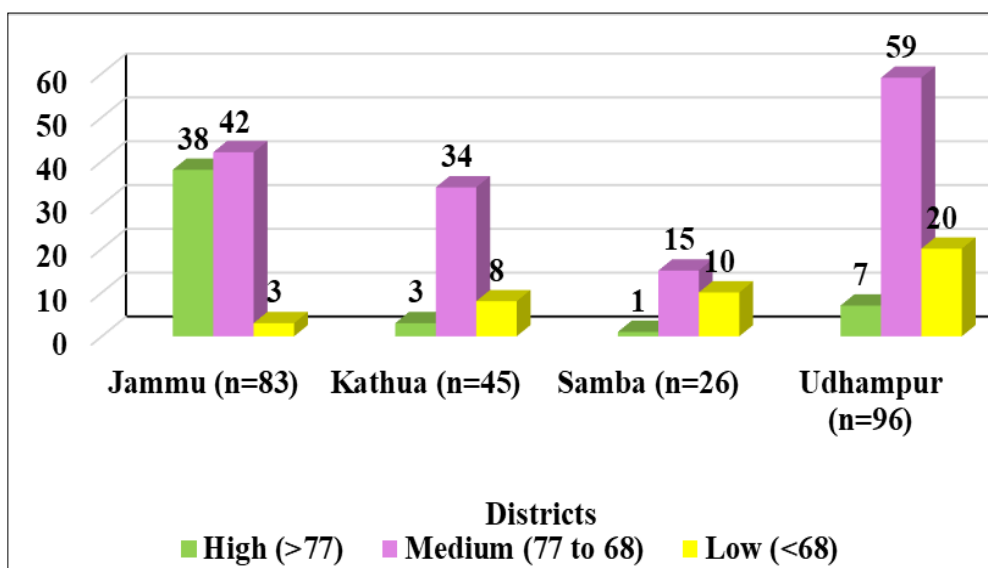
With regards to the mushroom growers of Udhampur district, first rank was accorded to the statement ‘In accomplishing a task, I like to do it much better than other mushroom entrepreneurs’ with an EBI of 95 and second rank was accorded to the statement ‘My desire is to be a successful mushroom entrepreneur’ with an EBI of 93 in the ranking hierarchy (Table 4).

**Decision-making ability of mushroom growers**

The data in Fig. 4 reveals that overall mushroom growers have accorded first rank to the statement ‘Finance’ with an EBI of 65 and second rank was accorded to ‘Value addition’ with an EBI of 51 in the ranking hierarchy.

With regards to Jammu district, mushroom growers have accorded first rank to the statement ‘Finance’ with an EBI of 72 and second rank was accorded to the statement ‘Marketing of produce’ with an EBI of 59 in the ranking hierarchy.

In Kathua district, mushroom growers have assigned first rank to the statement ‘Finance’ with an EBI of 55 and second rank to the statement ‘Value addition’ with an EBI of 43 in the ranking hierarchy.



**Fig. 2.** Distribution of mushroom growers on the basis of their Entrepreneurial Behaviour Index (EBI) score.

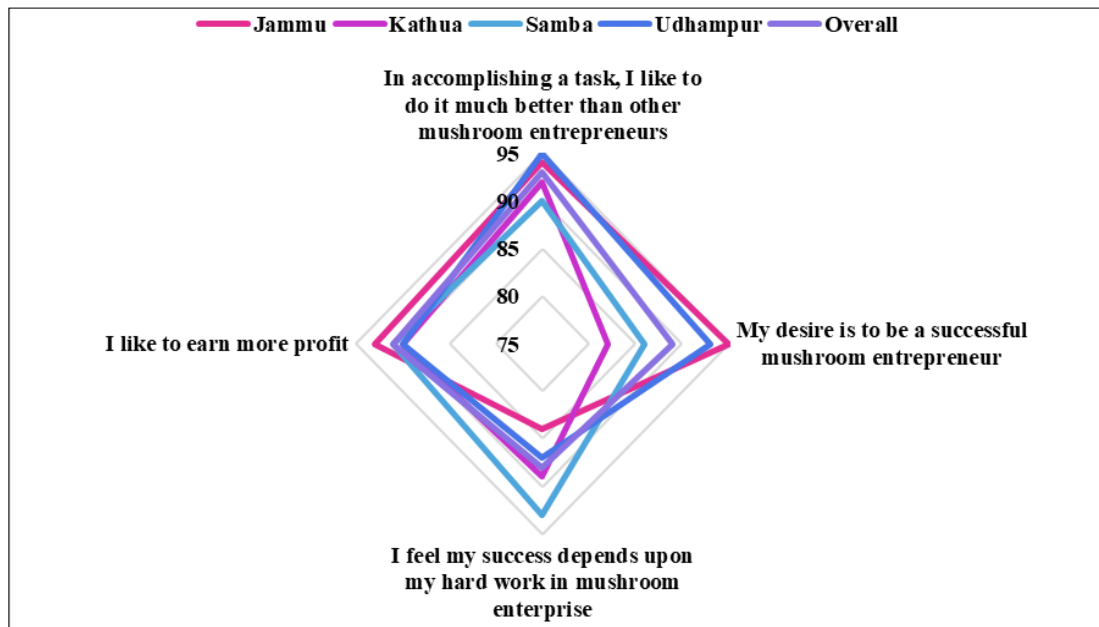


Fig. 3. Achievement motivation of mushroom growers.

Table 4. Achievement motivation of mushroom growers

S. No.	Statements	Jammu (n=83)	Kathua (n=45)	Samba (n=26)	Udhampur (n=96)	Overall (n=250)
		EBI Score				
1.	In accomplishing a task, I like to do it much better than other mushroom entrepreneurs	94 (II)	92 (I)	90 (III)	95 (I)	93 (I)
2.	My desire is to be a successful mushroom entrepreneur	95 (I)	82 (IV)	86 (IV)	93 (II)	89 (III)
3.	I feel my success depends upon my hard work in mushroom enterprise	84 (IV)	89 (III)	93 (I)	87 (IV)	88 (IV)
4.	I like to earn more profit	93 (III)	90 (II)	91 (II)	90 (III)	91 (II)

Figures in parentheses are ranks

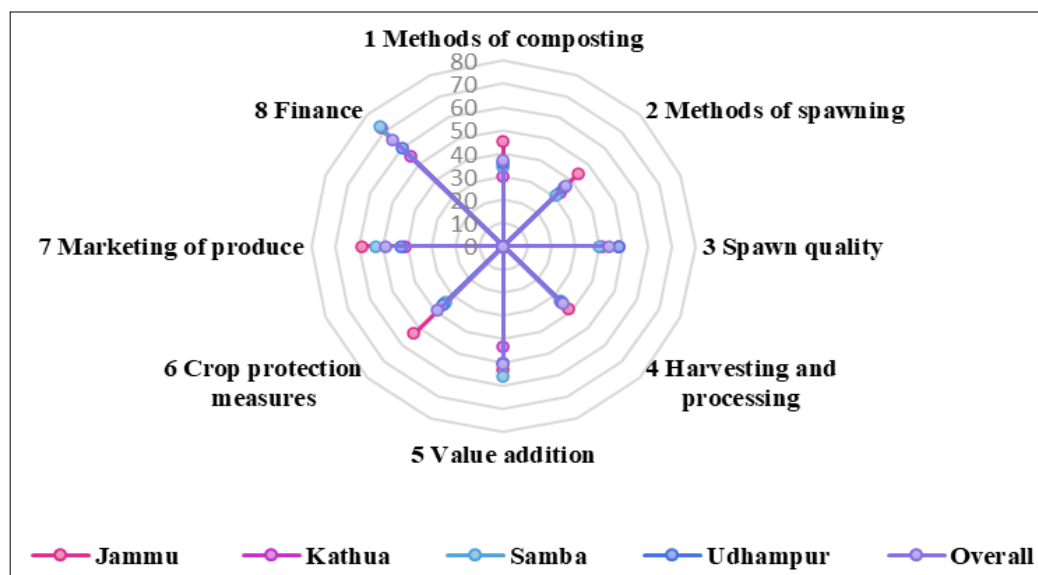


Fig. 4. Decision-making ability of mushroom growers.

Moreover, in Samba district mushroom growers have assigned first rank to the statement 'Finance' with an EBI of 73 and second rank to the statement 'Value addition' with an EBI of 56 in the ranking hierarchy.

Further, in Udhampur district the mushroom growers have accorded first rank to the statement 'Finance' with an EBI of 60 and second rank to the statement 'Value addition' with an EBI of 50 in the ranking hierarchy (Table 5). Similar findings have been reported stating that majority of the mushroom growers possessed medium to high level of decision-making ability (22).

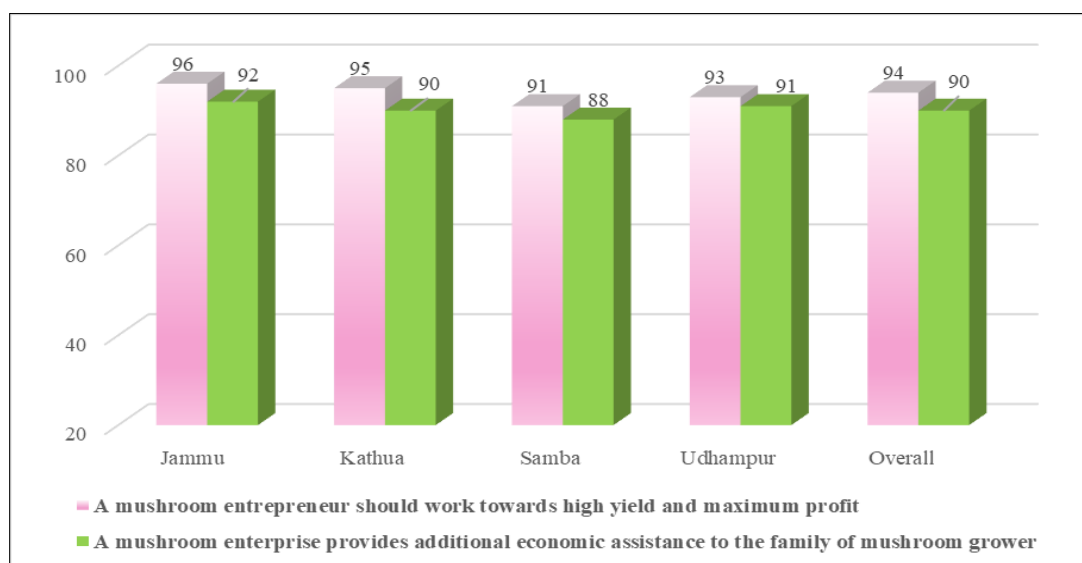
### Economic motivation of mushroom growers

Fig. 5 shows that overall, mushroom growers have assigned first rank to the statement 'A mushroom entrepreneur should work towards high yield and maximum profit' with an EBI of 94 and second rank to the statement 'A mushroom enterprise provides additional economic assistance to the family of a mushroom grower' with an EBI of 90 in the ranking hierarchy. Similar pattern was seen in all the selected districts (Table 6).

**Table 5.** Decision-making ability of mushroom growers

S. No.	Statements	Jammu (n=83)	Kathua (n=45)	Samba (n=26)	Udhampur (n=96)	Overall (n=250)
		EBI Score				
1.	Methods of composting	45 (V)	30 (VII)	34 (V)	36 (V)	37 (VI)
2.	Methods of spawning	44 (VI)	33 (VI)	31 (VII)	36 (V)	37 (VI)
3.	Spawn quality	48 (IV)	41 (III)	40 (IV)	48 (III)	44 (IV)
4.	Harvesting and processing	38 (VII)	34 (V)	33 (VI)	34 (VI)	35 (VII)
5.	Value addition	53 (III)	43 (II)	56 (II)	50 (II)	51 (II)
6.	Crop protection measures	53 (III)	35 (IV)	34 (V)	36 (V)	39 (V)
7.	Marketing of produce	59 (II)	41 (III)	53 (III)	43 (IV)	49 (III)
8.	Finance	72 (I)	55 (I)	73 (I)	60 (I)	65 (I)

Figures in parentheses are ranks

**Fig. 5.** Economic motivation of mushroom growers.**Table 6.** Economic motivation of mushroom growers

S. No.	Statements	Jammu (n=83)	Kathua (n=45)	Samba (n=26)	Udhampur (n=96)	Overall (n=250)
		EBI Score				
1.	A mushroom entrepreneur should work towards high yield and maximum profit	96 (I)	95 (I)	91 (I)	93 (I)	94 (I)
2.	A mushroom enterprise provides additional economic assistance to the family of mushroom grower	92 (II)	90 (II)	88 (II)	91 (II)	90 (II)

Figures in parentheses are ranks

### Risk-bearing capacity of mushroom growers

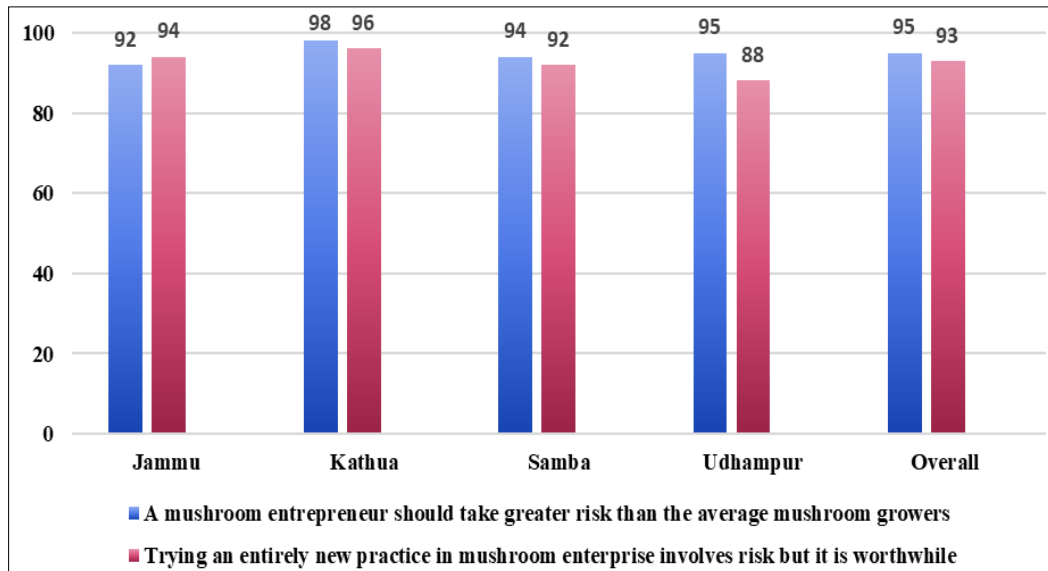
On perusal of Fig. 6 overall results have shown that mushroom growers have accorded first rank to the statement 'A mushroom entrepreneur should take greater risk than the average mushroom growers' with an EBI of 95 and second rank to the statement 'Trying an entirely new practice in mushroom enterprise involves risk but it is worthwhile' with an EBI of 93 in the ranking hierarchy. Similar trend was examined in the results of Kathua, Samba and Udhampur.

In Jammu district, mushroom growers have assigned first rank to the statement 'Trying an entirely new practice in mushroom enterprise involves risk but it is worthwhile' with an EBI of 94 and second rank to the statement 'A mushroom entrepreneur should take greater risk than the average mushroom growers' with an EBI of 92 in the ranking hierarchy (Table 7).

### Self-confidence of mushroom growers

The results in Fig. 7 reveal that overall, mushroom growers have accorded first rank to the statement 'Do you have enough faith in yourself to make profit in mushroom enterprise?' with an EBI of 98 and second rank to the statements 'Do you frequently feel unworthy?' and 'Do you have rely on others to carry out all mushroom production activities?' with an EBI of 95 in the ranking hierarchy.

Further, the mushroom growers of Jammu, Kathua and Udhampur have assigned first rank to the statement 'Do you have enough faith in yourself to make profit in mushroom enterprise?' with an EBI of 94, 100 and 98 respectively and second rank was assigned to the statement 'Can you adjust readily to a new situation?' with an EBI of 92, 98 and 97 respectively in the ranking hierarchy.

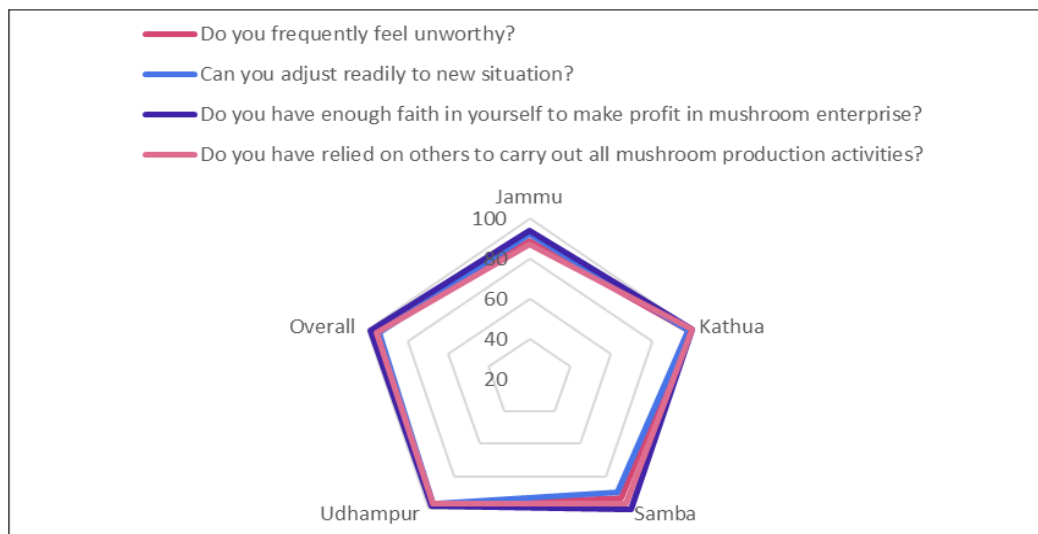


**Fig. 6.** Risk-bearing capacity of mushroom growers.

**Table 7.** Risk-bearing capacity of mushroom growers

S. No.	Statements	Jammu (n=83)	Kathua (n=45)	Samba (n=26)	Udhampur (n=96)	Overall (n=250)
		EBI Score				
1.	A mushroom entrepreneur should take greater risk than the average mushroom growers	92 (II)	98 (I)	94 (I)	95 (I)	95 (I)
2.	Trying an entirely new practice in mushroom enterprise involves risk but it is worthwhile	94 (I)	96 (II)	92 (II)	88 (II)	93 (II)

Figures in parentheses are ranks



**Fig. 7.** Self-confidence of mushroom growers.

With regards to Samba district, mushroom growers have assigned first rank to the statement 'Do you have enough faith in yourself to make profit in mushroom enterprise?' with an EBI of 100 and second rank was accorded to the statement 'Do you have rely on others to carry out all mushroom production activities?' with an EBI of 97 in the ranking hierarchy (Table 8).

#### Locus of control of mushroom growers

Fig. 8 reveals that overall, mushroom growers have assigned first rank to the statement 'When I make plans, I am almost certain to make them work' with an EBI of 91 and second rank to the statement 'If I work hard, I can successfully achieve what I want' with an EBI of 90 in the ranking hierarchy. A similar trend was seen in Jammu, Kathua and Udhampur district. However, in Samba district, mushroom growers have assigned first rank to the statement 'If I work hard, I can successfully achieve what I want' with an EBI of 92

and second rank to the statement 'When I make plans, I am almost certain to make them work' with an EBI of 90 in the ranking hierarchy (Table 9).

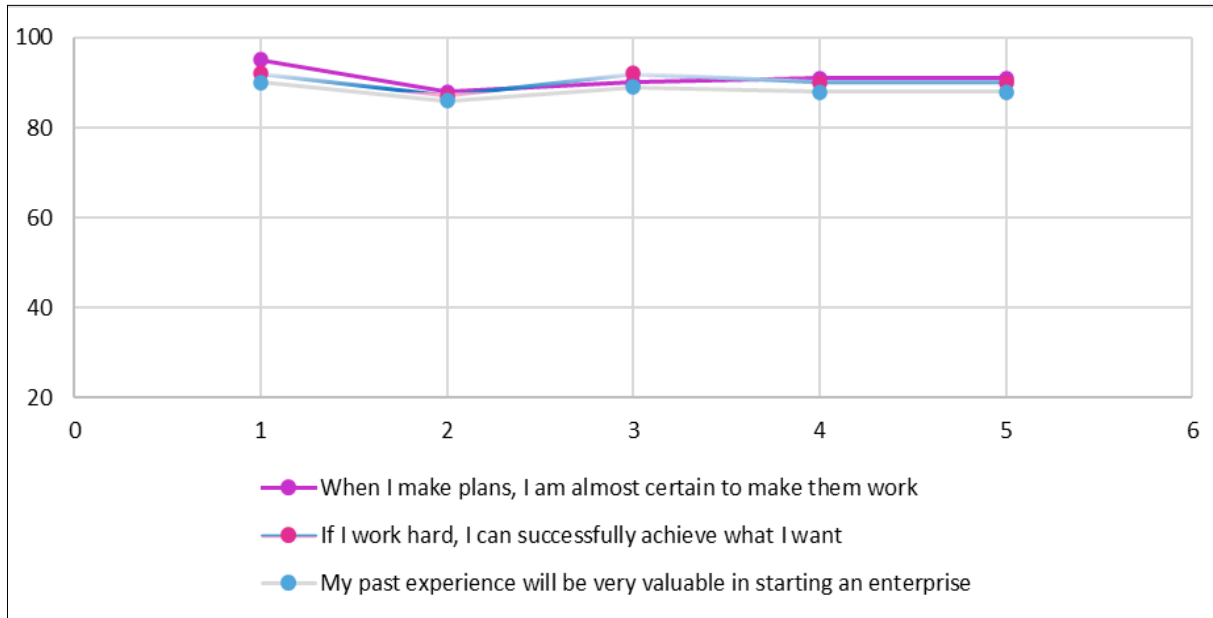
#### Planning ability of mushroom growers

On perusal of the data presented in Fig. 9, overall mushroom growers have assigned first rank to the statements 'Preparation of calendar of operations of mushroom activities' and 'Estimating in advance, the capital requirement for mushroom production' with an EBI of 94 each and second rank to the statement 'Consulting in advance with experts about quality mushroom production' with an EBI of 46 in the ranking hierarchy. Thus, it can be concluded that the majority of the mushroom growers do not prefer to consult experts rather rely more on personal experiences, neighbors and input dealers for any information they require.

**Table 8.** Self-confidence of mushroom growers

S. No.	Statements	Jammu (n=83)	Kathua (n=45)	Samba (n=26)	Udhampur (n=96)	Overall (n=250)
		EBI Score				
1.	Do you frequently feel unworthy?	89 (III)	98 (II)	93 (III)	98 (I)	95 (II)
2.	Can you adjust readily to new situation?	92 (II)	98 (II)	90 (IV)	97 (II)	94 (III)
3.	Do you have enough faith in yourself to make profit in mushroom enterprise?	94 (I)	100 (I)	100 (I)	98 (I)	98 (I)
4.	Do you have relied on others to carry out all mushroom production activities?	87 (IV)	100 (I)	97 (II)	97 (II)	95 (II)

Figures in parentheses are ranks



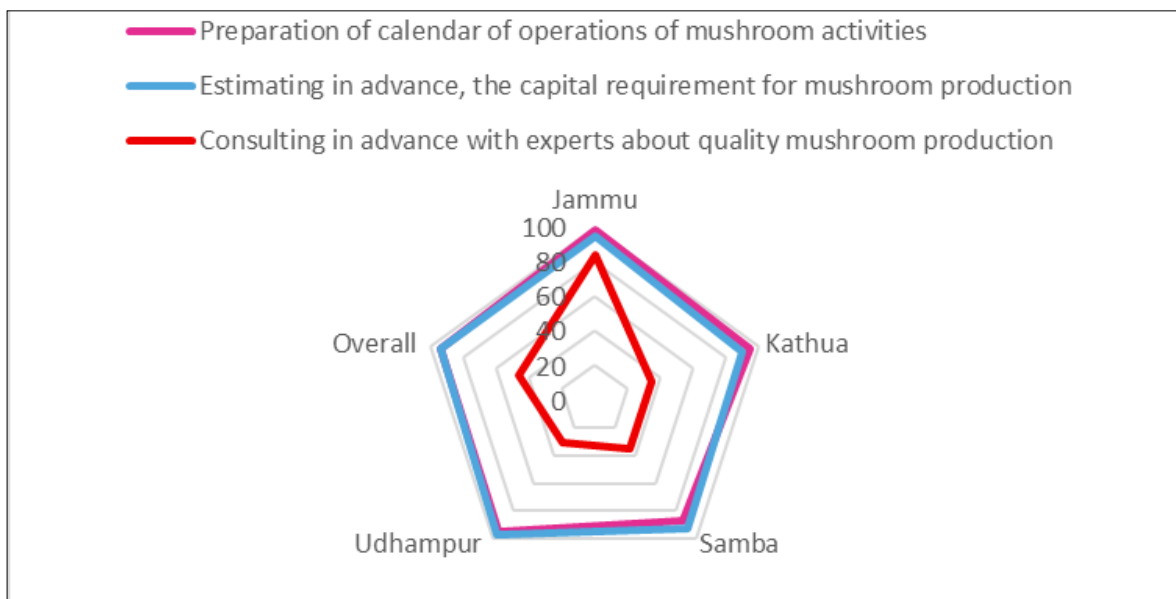
1-Jammu, 2- Kathua, 3- Samba, 4-Udhampur, 5-Overall

**Fig. 8.** Locus of control of mushroom growers.

**Table 9.** Locus of control of mushroom growers

S. No.	Statements	Jammu (n=83)	Kathua (n=45)	Samba (n=26)	Udhampur (n=96)	Overall (n=250)
		EBI Score				
1.	When I make plans, I am almost certain to make them work	95 (I)	88 (I)	90 (II)	91 (I)	91 (I)
2.	If I work hard, I can successfully achieve what I want	92 (II)	87 (II)	92 (I)	90 (II)	90 (II)
	My past experience will be very valuable in starting an enterprise	90 (III)	86 (III)	89 (III)	88 (III)	88 (III)

Figures in parentheses are ranks



**Fig. 9.** Planning ability of mushroom growers.

With regards to Jammu and Kathua districts, mushroom growers have accorded first rank to the statement 'Preparation of calendar of operations of mushroom activities' with an EBI of 98 and 95 and second rank to the statement 'Estimating in advance the capital requirement for mushroom production' with an EBI of 95 and 90 in the ranking hierarchy.

With regards to Samba and Udhampur districts, mushroom growers have accorded first rank to the statement 'Estimating in advance the capital requirement for mushroom production' with an EBI of 92 and 97 and second rank to the statement 'Preparation of calendar of operations of mushroom activities' with an EBI of 87 and 95 in the ranking hierarchy (Table 10).

### Cosmopolitanism of mushroom growers

Fig. 10 shows that overall mushroom growers have assigned first rank to the statement 'Visiting the mushroom production specialist is wastage of time' with an EBI of 89 and second rank to the

statement 'There is no need to collect additional information from outside of the village for successful mushroom enterprise' with an EBI of 84 in the ranking hierarchy.

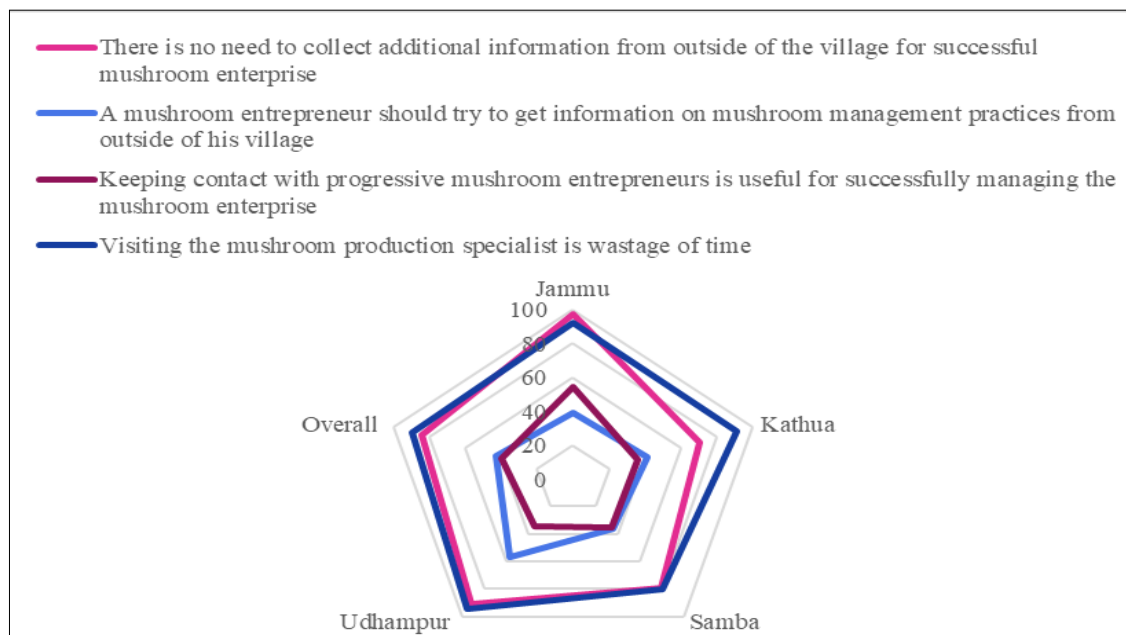
With regards to Jammu district, mushroom growers have assigned first rank to the statement 'There is no need to collect additional information from outside of the village for successful mushroom enterprise' with an EBI of 97 and second rank to the statement 'Visiting the mushroom production specialist is wastage of time' with an EBI of 92 in the ranking hierarchy.

The mushroom growers of Kathua, Samba and Udhampur districts have assigned first rank to the statement 'Visiting the mushroom production specialist is wastage of time' with an EBI of 91, 80 and 95 respectively and second rank was accorded to the statement 'There is no need to collect additional information from outside of the village for successful mushroom enterprise' with an EBI of 70, 79 and 91 respectively in the ranking hierarchy (Table 11).

**Table 10.** Planning ability of mushroom growers

S. No.	Statements	Jammu (n=83)	Kathua (n=45)	Samba (n=26)	Udhampur (n=96)	Overall (n=250)
		EBI Score				
1.	Preparation of calendar of operations of mushroom activities	98 (I)	95 (I)	87 (II)	95 (II)	94 (I)
2.	Estimating in advance, the capital requirement for mushroom production	95 (II)	90 (II)	92 (I)	97 (I)	94 (I)
3.	Consulting in advance with experts about quality mushroom production	84 (III)	35 (III)	35 (III)	31 (III)	46 (II)

Figures in parentheses are ranks



**Fig. 10.** Cosmopolitanism of mushroom growers.

**Table 11.** Cosmopolitanism of mushroom growers

S. No.	Statements	Jammu (n=83)	Kathua (n=45)	Samba (n=26)	Udhampur (n=96)	Overall (n=250)
		EBI Score				
1.	There is no need to collect additional information from outside of the village for successful mushroom enterprise	97 (I)	70 (II)	79 (II)	91 (II)	84 (II)
2.	A mushroom entrepreneur should try to get information on mushroom management practices from outside of his village	39 (IV)	41 (III)	36 (III)	57 (III)	43 (III)
3.	Keeping contact with progressive mushroom entrepreneurs is useful for successfully managing the mushroom enterprise	54 (III)	36 (IV)	35 (IV)	34 (IV)	40 (IV)
4.	Visiting the mushroom production specialist is wastage of time	92 (II)	91 (I)	80 (I)	95 (I)	89 (I)

## Discussion

The results have shown that a majority of mushroom growers possessed a medium level of EBI scores which can be interpreted as a medium level of entrepreneurial traits (23, 24). This might be due to low level of cosmopolitanism and decision-making ability traits. The rankings of achievement motivation and economic motivation indicate that mushroom growers were highly profit driven rather than production oriented. The desire to be successful was associated with gaining more profit and not improving production technology. The decision related to finances, value addition and marketing of produce were made after consulting experts, but decisions regarding method of spawning, composting and harvesting were made by the mushroom growers. This might be because areas like finances, value addition and marketing involve higher risk and market price fluctuations. Therefore, mushroom growers rely on external sources for such information on their experiences for technical operations such as methods of spawning and composting. The results have shown high level of risk-bearing capacity and self-confidence. Further, mushroom growers do not consult experts from outside the village while planning in advance regarding their enterprises. Previous studies also concluded that the medium level of cosmopolitanism and extension contact of mushroom growers while studying entrepreneurial behaviour (25).

## Conclusion

The study highlights the various traits possessed by mushroom growers which contribute to the success of mushroom crop as a livelihood activity. It can be concluded from the study that mushroom growers possessed traits such as achievement motivation, decision-making ability, self-confidence, economic motivation on a higher level but have shown disagreement on consulting others for information related to the enterprise. They do not prefer consulting experts and progressive farmers while making decisions on methods of composting, spawning and processing. Whereas they consult experts about value addition and finance. This inference indicates that the growers were more dependent on their personal experiences and nearby farming community with regards to decision making and planning ability. The growers possessed low levels of cosmopolitanism and had limited access to external sources of information. Therefore, better communication channels, strong extension networks, participation of farmers and more structured policies could be established in order to tackle these shortcomings.

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## Authors' contributions

JSM and PS conceptualized the research problem. The problem was framed and discussed with PP, SG and AB. After the valuable feedback of PP who is specialized in the field of

entrepreneurship, SG who is specialized in the field of mushroom production technology and AB, an expert from agricultural economics, the research design was finalized. Semi-structured schedule was constructed by PS under the guidance of JSM. PS conducted the fieldwork and undertook data analysis. Further, the research findings were discussed with the other three authors. PS prepared the manuscript with inputs from JSM. All authors reviewed and approved the final manuscript.

## Compliance with ethical standards

**Conflict of interest:** Authors do not have any conflict of interest to declare.

**Ethical issues:** None

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