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ORIGINAL ARTICLE

MUSHROOM ENTREPRENEURIAL BEHAVIOUR : DIMENSIONS AND MEASUREMENT

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Abstract : Mushrooms are appreciated world over for their nutritional and medicinal properties. Though, global mushroom industry has seen a rapid growth, India is beginning to see the spurt in its growth only recently. Mushroom entrepreneurship offers major scope both for small farmers and large entrepreneurs. Absence of standardised scale to measure the performance of mushroom entrepreneurs has rendered us unclear about the status of mushroom entrepreneurship and in turn the mushroom industry in India. Hence, a scale on mushroom entrepreneurial behaviour is developed to address the existing research gap. The social research methodology using Guilford procedure was followed to develop the scale. The eleven dimensions of entrepreneurial behaviour assumed different scale values from 7.469 to 1.071, with innovativeness of entrepreneurs getting highest weightage. The scale developed will have utility in identifying and studying the successful and unsuccessful mushroom entrepreneurs in framing policies by the Government and designing trainings and seminars by training and research institutions. The researchers of social sciences will find the scale useful for studying entrepreneurial behaviour of mushroom growers and similar entrepreneurs. The financial institutions can adopt the scale in deciding criteria for extending the loans to the new entrepreneurs. The entrepreneurs themselves may use the scale to assess their own entrepreneurial skills.

Key words : Mushroom, Entrepreneurial behaviour, Measurement, Management.

1. Introduction

Since ancient times mushrooms are widely appreciated all over the world for their nutritional and medicinal properties. Besides having low fat, high protein content, high vitamin (B, C, D, K) content mushroom contain several minerals (P, K) and trace elements (Selenium). Mushrooms contain substantial amount of dietary fibres and are known as an unlimited source of bioactive molecules and valuable enzymes with around 126 therapeutic effects [Wasser (2010) and Badalyan (2012)]. Mushrooms are proven to have immune modulating, antioxidant, genoprotective, antitumor, hypocholesterinemic, antidiabetic, hepatoprotective and other medicinal properties [Badalyan (2000), Lindequist (2005), Wasser (2010) and Badalyan (2012)].

Global mushroom industry has seen a rapid growth with the production increasing more than 25-fold during the last 35 years (from about 1 billion kg in 1978 to 27 billion kg in 2012), whereas, the human population has grown 1.7 times during the same period (from about 4.2 billion in 1978 to 7 billion in 2012) [Royse (2014)]. On the other hand, in spite of varied agro-climate conditions together with abundant agriculture residues and cheap labour, the mushroom entrepreneurs in India have not made significant impact on the global mushroom scenario. With the conspicuous growth of mushroom production only in recent years, India produces more than 100,000 tonnes of fresh mushrooms. But, its contribution amounts to less than 1 per cent of global mushroom production [Wakchaure (2011)]. But, blessed with varied agro climatic conditions, abundant agriculture residues and cheap labour, India offers great opportunity to increase the mushroom production by many folds.

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In recent times, small farmers in their quest to ensure their livelihood security and large Agri-preneurs in anticipation of higher profit are exploring high value enterprises like floriculture, apiculture, terrace or roof gardening, mushroom cultivation, etc. Mushroom cultivation is emerging as an important horti-business activity and helping small farmers and entrepreneurs in realising round the year returns. Mushroom entrepreneurship is a potential, yet largely untapped venture to address many of the problems plaguing rural India like hunger and malnutrition, decreasing land holdings, declining soil fertility, poverty, lack of employment and opportunities for income generation [Verma (2014)]. Further, the need for promoting mushroom entrepreneurship emanates from the fact that per capita consumption of mushroom is very low (30 g per annum) in India, compared to more than 4000 g in the western countries [Wakchaure (2011)].

It is widely believed that the entrepreneurial function is a vital component in the process of economic growth [Schumpeter (1950) and Reynolds *et al*. (1994)]. The recognition for entrepreneurship has accelerated since the mid-1990s, with policy makers in many countries and international organisations beginning to explicitly recognise its importance by developing policies to improve the entrepreneurial environment, either by removing obstacles or by direct targeted actions such as subsidies [Lundström and Stevenson (2005)]. This has engendered to lay enough emphasis on entrepreneurial behaviour of entrepreneurs.

Minzberg (1976) stated that entrepreneurial behaviour is characterised by active search, expansionist outlook and decision making. Heredero (1979) described agricultural entrepreneur as a person, who introduces changes, which directly or indirectly lead to higher agricultural product. Entrepreneurial behaviour was operationalised by Monika and Talukdar (1997) as the extent of qualitative and innovative activities carried out by a woman entrepreneur in her enterprise to increase production spontaneously, where her activities are also a manifestation of internal mental events and processes like ideas and attitude.

In many businesses - especially the smaller ones, the entrepreneur is the key resource or a key constraint of the organisation [Castanias and Helfat (1991), Brown and Kirchhoff (1997)]. The environment may be a source of opportunities [Kirzner (1973), Gartner (1985)] but the opportunity identification is the function of interaction between the individual entrepreneur and the environment [Shane and Venkataraman (2000)]. Furthermore, the importance of studying and analysing entrepreneurial behaviour lies with the fact that the relationship between human capital and various outcomes associated with entrepreneurship may be mediated by entrepreneurial behaviour [Baron and Kenny (1986), Cohen (2003)].

Hence, it is to be noted that though there is vast body of research in the area of entrepreneurship, the nature of this research has been highly diverse. There is a lack of an agreed definition and theory of entrepreneurship and a concern over what entrepreneurship constitutes [Gartner (1990)]. The similar problem of what constitutes mushroom entrepreneurship in India is hardly studied. To add to it, there is huge variation in the performance of mushroom units across India owing to several factors like, location of the unit, accessibility to raw materials, scale and size, variety of mushroom grown, differences in composting and cultivation technology, market dynamics and entrepreneurial skills of mushroom producers. These twin reasons have augmented the need for research studies focussing on entrepreneurial behaviour of mushroom entrepreneurs.

Entrepreneurial behaviour has to be studied to understand the factors that promote or constrain an entrepreneurial activity. However, lack of systematic and standardised procedure to measure the entrepreneurial activity, let alone the mushroom entrepreneurship has led to a void in horticulture research. As there is an exigent need for entrepreneurial behaviour measurement tool for mushroom entrepreneurship, procedure to measure, it has been standardized and presented in this article.

2. Methodology

The methodology in developing the procedure to measure the entrepreneurial behaviour of mushroom entrepreneurs is based on the behavioural measurement procedure suggested by Guilford (1954). The detailed steps followed in the methodology are explained under the steps listed below.

Step 1- Identification of dimensions and statements : The 'entrepreneurial behaviour' of mushroom growers was identified as a variable, which would serve as the basis to analyze the performance

of different mushroom entrepreneurs. Based on a thorough review of literature related to entrepreneurship, eleven dimensions and statements to explain each of the dimensions were identified. The procedure or scale used to measure each of the dimensions is presented in Table 1.

Step 2- Relevancy weightage : All the statements under 11 dimensions were subjected to experts' rating on relevancy of each of the statement, regarding its utility to measure a particular dimension of entrepreneurial behaviour. The experts were asked to indicate the relevancy on a Likert's scale of five point continuum. The continuum ranged from most relevant (MR) to not relevant (NR) with 5 and 1 score respectively: The 'relevant' (R), 'somewhat relevant' (SWR) and 'least relevant' (LR) were assigned the values of 4, 3 and 2 respectively. Fifty five out of 130 experts responded to the relevancy analysis. Relevancy weightage was worked out by using the formula

$$RW = \frac{MR*5 + R*4 + SWR*3 + LR*2 + NR*1}{\text{Maximum possible scores} * \text{No. of Judges}}$$

Statements rated as relevant with a relevancy weightage (RW) of 0.75 or more (worked out on the basis of summated scores of all the judges for all the statements) were considered and retained for the next step.

Step 3- Calculating scale values for dimensions of entrepreneurial behaviour based on judges rating : It is apparent that all the eleven dimensions will not contribute equally towards the entrepreneurial behaviour of any entrepreneur. Hence, the variation in contribution of each dimension for the entrepreneurial ability must be represented by assigning different weightage to each of the dimension. Hence, the judges' rating was sought to obtain the scale values for each dimension of the entrepreneurial behaviour. The experts were asked to rank the dimensions of entrepreneurial behaviour in the order of importance as perceived by them. The ranks given by 35 judges were converted into rank values by using the formula

$$R_i = (n - r_i + 1)$$

Where, R_i is the rank value, n is number of items ranked and r_i is the rank given by the expert for each dimension. The centile position values (P) were arrived for each rank by the normalization of ranks approach using the formula

$$P = \frac{(R_i - 0.5) \times 100}{n}$$

Where, R_i is the rank value and n is number of things ranked. The deduction of 0.5 from the rank value is to get the middle of the area for the dimension so ranked.

P is essentially a centile value and represents the area under the normal distribution below the median of the interval assigned to the object. From the normal curve tables, we find corresponding z values to represent linear distances from the mean on the base line. Since, z values are awkward numbers to use, we make a liner transformation to values of a convenient type [Guilford (1954)]. For this purpose, Hull (1928) proposed a 'C' scale of 10 units covering a range of 5 standard deviations.

The procedure followed in arriving at the scale values for all the 11 dimensions of entrepreneurial behaviour is presented in Table 2.

Step 4- Schedule development and Scoring : For all the relevant statements under each of the 11 dimensions, the questionnaire was prepared to elicit appropriate variability for entrepreneurial behaviour. The responses on four point scale varied from Mostly Agree (MA), Agree (A), Some What Agree (SWA) and Not Agree (NA) for each of the statements given under each of the dimensions (D_1-D_{11}) of entrepreneurial behaviour. Scoring was done by giving the linear score values of 4, 3, 2 and 1 respectively for positive statements and the order of scoring was reversed for negative statements. The data was collected from 30 mushroom entrepreneurs across India for pre-testing the questionnaire and to ascertain whether the questionnaire is measuring the intended behaviour and whether the variability in the behaviour is properly elicited.

Step 5- Calculating Entrepreneurial Behaviour Index (EBI) : The entrepreneurial behaviour Index was calculated for all the individual mushroom growers. The mean score (Raw score/ maximum possible score) obtained by each respondent mushroom grower for different dimensions was multiplied with the scale values of respective dimension. The summation of values obtained for all the dimensions gives the composite index measuring the entrepreneurial behaviour of the mushroom growers. The formula used in arriving at EBI values is given below.

$$EBI = \frac{\sum_{i=1}^{11} \frac{\text{Actual score of } D_i * \text{Scale value of } D_i}{\text{Max. score of } D_i} \times 100}{\sum \text{Scale value of } D_i}$$

Testing for reliability and validity : Pilot test was conducted for a sample of 30 respondents randomly drawn across 13 different States of India, to test the reliability and validity.

Testing for reliability : The coefficient of stability (test-retest method) and the coefficient of equivalence (split-half method) were employed to measure the reliability of the scale.

The coefficient of stability is the correlation between scores on two administrations (A_1 and A_2) of the same form of the test, separated by a time period. In the pilot analysis, the responses were obtained twice at an interval of 12-15 days from the respondents with the same questionnaire. The coefficient of correlation (r) was calculated between scores from two administrations.

$$r_{(A1)(A2)} = \frac{\frac{(X_{A1})(X_{A2})}{N} - (X_{A1})(X_{A2})}{(S_{A1})(S_{A2})}$$

The correlation coefficient (r) between two administrations with time gap was found to be significantly higher (0.979).

The coefficient of equivalence is the correlation between scores on parallel forms (P and Q) of the test, administered with a minimal time lag between testing. The responses for the odd (P) and even numbered items (Q) were obtained and the scores of both sets were used to calculate coefficient of correlation (r).

$$r_{(P)(Q)} = \frac{(X_P)(X_Q)/N - (X_P)(X_Q)}{(S_P)(S_Q)}$$

The correlation value for split-half method was 0.974, suggesting high reliability of the scale.

Further, Spearman-Brown Prophecy formula was employed to know the reliability of the test of the original length from the values of split-half reliability.

$$r_{XX} = \frac{2r_{hh}}{1 + r_{hh}}$$

Where, r_{hh} is the split-half reliability coefficient and r_{xx} is the estimate of the reliability of a test of the full length. The r_{xx} value was 0.986 suggesting the high reliability of the full length of the scale.

Testing for Validity : Validity of the scale was ensured by analysing content validity, construct validity and criterion validity. Since, the items were based on extensive review of literature and relevancy analysis by the judges, the content validity was ascertained.

Looking at the extensive literature and the nature of mushroom entrepreneurship, 11 dimensions with suitable statements were finalised and were sent for relevancy analysis. Then the ranking for each of the dimension were obtained from 35 judges to calculate scale values. Hence, the content validity was ascertained.

The internal consistency was tested through construct validity by using correlation matrix technique with individual dimensions of the scale. All the correlation coefficients were above 0.70 suggesting high construct validity.

The score on the level of recognition and appreciation received by the respondents was taken to ascertain the criterion validity. The score was given to the respondents based on awards and appreciation they received at local, state or national level. The association of scores between entrepreneurial behaviour with the criterion score was found to be 0.821, indicating very high criterion validity.

3. Results and Discussion

The present scale was developed by following methodology from social science perspective to objectively assess the entrepreneurial behaviour of mushroom entrepreneurs in India. The dimensions of entrepreneurial behaviour were finalised based on the review of vast literature and also to suit the nature of mushroom enterprises. These eleven dimensions identified for the study assumed scale values ranging from 7.469 to 1.071 indicating different weightage to be assigned to them based on the expert opinion arrived through Judges' rating. The scale values of respective dimensions are presented in Table 3.

The present research study shows that innovativeness with a maximum scale value of 7.469 is the most important factor contributing to successful entrepreneurship among mushroom growers.

Literature relevant to entrepreneurship suggests that creative individuals are more likely to engage in

entrepreneurial behaviour [Ward (2004)]. The association between entrepreneurship, innovative behaviour and creativity has long been established [Amabile (1996) and Nystrom (1993)]. It is often suggested that, innovation is synonymous with the idea of entrepreneurship [Pareek and Nadakarni (1978) and Khan (1998)]. Entrepreneurs with innovative action were more likely to have a commercial rather than subsistence economic orientation, they had more favourable attitude towards risk, high level of achievement motivation and greater knowledge of innovations [Rogers and Shoemaker (1971)]. Rao (1989) reported that there was significant relationship between innovativeness and entrepreneurial behaviour of vegetable growers of Andhra Pradesh.

Achievement motivation (scale value of 6.863) emerged as the second important dimension. Higher need for achievement shows positive relation with entrepreneurial ability. Atkinson and Miller reported that, achievement motivation was important factor affecting the entrepreneurial behaviour of the farmers [De and Jirli (2010)]. Hence, higher weightage assumed by innovativeness and achievement motivation as important indicators of successful mushroom entrepreneurship appear to be logical.

Risk bearing ability, technical competency and decision making ability are the next three important dimensions in the order of importance with a scale value of 6.728, 6.122 and 5.650, respectively. All entrepreneurial activities involve risks, may be in varying degrees. Knight (1921) defined the entrepreneur as a calculated risk-taker and the recipient of pure profit, where profit is seen as the reward for bearing the costs of uncertainty. Cantillon (1955) emphasised risk taking as the distinguishing attribute of a successful entrepreneur. According to Bhattacharjee and Akhouri (1975) and Rao (1985), risk taking ability was found to be significantly associated with entrepreneurs. The risks of uncertainty of economic profitability are to be handled by good decision making ability. Joshi and Kapoor (1973) emphasised the managing a farm as a continuous process of decision making. Not just the decisions but correct decisions will lead to successful management of the entrepreneurship. Entrepreneurs are seen as making judgements based on their superior information and knowledge [Ucbasaran (2004)]. Knowledge of the world as well as business was among the special qualities of the entrepreneurs. The entrepreneurs need to have knowledge about several areas of activity relevant to his domain of enterprise. Such knowledge helps him plan his strategy and use his skills effectively. Knowledge about environment, industry and technology is considered important [Pareek and Nadakarni (1978)]. Understandably, knowledge on the entrepreneurship forms an important basis for making the correct decisions in the farm. The knowledge of mushroom entrepreneurship is still more critical considering the technical skills involved in spawn production, compost production technology, understanding and manipulating growing environment to suit to different mushroom varieties, management of pest and diseases, efficient marketing and processing of mushrooms to address its fast perishability.

Economic motivation and marketing strategy are at 6 and 7th place with scale values of 5.516 and 4.371 respectively. Entrepreneur's success is measured by the financial stability of his enterprise. Hence, the economic motivation of a mushroom entrepreneur is important behavioural character in ensuring success in his enterprise. His economic motivation must be matched by his acumen in designing marketing strategy after the production and processing activities. Hence, they have been rated as the next best important dimensions by the experts appear meaningful. The scientific orientation and management orientation will act as complimentary characters for mushroom entrepreneurs. They are at 8-9th places with a scale value of 3.900 and 3.293, respectively.

The leadership orientation and information seeking behaviour have assumed last two places in the order importance with the scale values of 1.543 and 1.071, respectively. Entrepreneurs played both the roles of manager and leader. Managerial role was exhibited by entrepreneur in their capacity as head of the enterprise. They also played leadership role when they were driven by their own vision to innovate or bring in a change in the manager events took place [Kanungo and Mendonca (1994)]. Vijaya and Kamalanabhan (1998), Fraser (1961) and Manjula (1995) concluded that management orientation was positively and significantly related to entrepreneurial behaviour of participant and nonparticipant women under Development of women and children in rural areas (DWACRA) programme. In the present analysis, the Judges might have felt that leadership ability of entrepreneur has little to do with the success of mushroom enterprise. Though, an

Table 1 : Dimensions (D_1 - D_{11}) of entrepreneurial behaviour of mushroom entrepreneurs and the scale used for measurement of dimension.

S. No.	Dimensions	Scale/ procedure borrowed
1.	Innovativeness	Scale developed by Anonymous (1981) with modifications
2.	Achievement motivation	Scale developed by Anonymous (1981) with modifications
3.	Economic motivation	Scale developed by Supe and Singh (1969)
4.	Technical competency	Structured schedule developed
5.	Decision making ability	Scale developed by Anonymous (1981) with modifications
6.	Risk bearing ability	Scale developed by Anonymous (1981) with modifications
7.	Information seeking behaviour	Structured schedule developed
8.	Scientific orientation	Scale developed by Supe and Singh (1969) with modifications
9.	Leadership ability	Nandapurkar (1982)
10.	Management orientation	Samanta (1977) with suitable modifications
11.	Marketing strategy	Structured schedule developed.

Table 2 : Calculation of scale values of all the dimensions of entrepreneurial behaviour based on the Judges' ranking.

r_i	R_i	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8	D_9	D_{10}	D_{11}	P	C
1	11	9	5	3	6	2	4	1	1	0	1	3	95.45	8
2	10	5	7	4	3	4	6	0	2	1	1	2	86.36	7
3	9	4	4	5	4	4	5	0	1	2	2	4	77.27	7
4	8	4	3	5	3	5	3	1	3	2	3	3	68.18	6
5	7	3	5	2	5	3	7	0	3	2	3	2	59.09	5
6	6	2	2	3	4	4	3	2	4	1	6	4	50.00	5
7	5	2	5	2	2	3	2	3	8	3	2	3	40.91	5
8	4	3	1	4	2	6	2	4	2	5	4	2	31.82	4
9	3	2	1	1	4	3	2	8	4	3	4	3	22.73	3
10	2	1	0	3	1	1	1	9	6	3	5	5	13.64	3
11	1	0	2	3	1	0	0	7	1	13	4	4	4.55	2
Σf_{ji}		35	35	35	35	35	35	35	35	35	35	35		
$R_j = \Sigma f_{ji}$ C		215	206	186	195	188	204	120	162	127	153	169		
$R = R_j / \Sigma f_{ji}$		6.14	5.89	5.31	5.57	5.37	5.83	3.43	4.63	3.63	4.37	4.83		
R_c*		7.47	6.86	5.52	6.12	5.65	6.73	1.07	3.90	1.54	3.29	4.37		

*$R_c = 2.357*R-7.01$

Table 3 : Dimensions of entrepreneurial behaviour and their respective scale values and ranks.

S. No.	Dimension	Scale value	Rank based on scale values
D_1	Innovativeness	7.469	1
D_2	Achievement motivation	6.863	2
D_3	Economic motivation	5.516	6
D_4	Technical competency	6.122	4
D_5	Decision making ability	5.650	5
D_6	Risk bearing ability	6.728	3
D_7	Information seeking behaviour	1.071	11
D_8	Scientific orientation	3.900	8
D_9	Leadership ability	1.543	10
D_{10}	Management orientation	3.293	9
D_{11}	Marketing strategy	4.371	7

important character of many successful entrepreneurs- the information seeking behaviour is placed last. The reason could be experts' perceived ease of scoring high on the dimension by majority of entrepreneurs involved in mushroom entrepreneurship.

The reliability and validity of the scale ascertained through various statistical tools were found to be good. Binkadakatti *et al*. (2013) established content validity, construct validity and reliability by split-half method for the scale developed to measure the livelihood security of rehabilitant farmers. Bharamagoudar and Angadi (2015) developed the scale to measure the job perception of Panchayat Development Officers and standardized it and found to be reliable as well as valid. Besides these procedures, the present study included criterion validity and test-retest method of reliability to ascertain the consistency and validity of the scale on entrepreneurial behaviour for mushroom growers.

4. Conclusion

The unexplored area of empirical assessment of mushroom growers' entrepreneurial behaviour has been addressed in the present research study.

The scale consisting of eleven dimensions and relevant statements will serve as a handy tool to assess the entrepreneurial behaviour of mushroom entrepreneurs. It will enable researchers to take up studies on mushroom entrepreneurship in different States. The scale helps in identifying the factors leading to successful and unsuccessful mushroom entrepreneurship, which will further support in framing policies by the Government and designing trainings and seminars by research and training institutions.

The scale will find favour with financial institutions like nationalised banks, commercial banks and National Bank for Agriculture and Rural Development (NABARD), who frequently face the task of identifying credit-worthiness of entrepreneurs while sanctioning the loans. The financial institutions can adopt the present scale with suitable modifications in deciding criteria for extending the loans to the new entrepreneurs. The entrepreneurs themselves can find the scale useful to assess their entrepreneurial skills and make necessary improvements on particular dimensions of the entrepreneurial behaviour.

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References

Amabile, T. M. (1996). *Creativity in Context*, Westview Press, Boulder, CO.

Badalyan, S. M. (2000). Antitumor and immune-modulating activities of compounds from several basidiomycetes. *Probl. Med. Mycology*, **2**, 23-28.

Badalyan, S. M. (2012). Edible Ectomycorrhizal Mushrooms In: *Edible Ectomycorrhizal Mushrooms*. Soil Biology series. Vol. 34. Springer-Verlag. A. Zambonelli &G. Bonito, Eds. Pp. 317-334. ISBN: 978-3-642-33822-9.

Baron, R. M. and D. A. Kenny (1986). The Moderator-Mediator Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, **51**, 1173-1182.

Bhattacharjee, S. K. and M. M. P. Akhouri (1975). Profile of small industry entrepreneurs. *SEDME*, **2(1)**, 73-85.

Bharamagoudar, M. V. and J. G. Angadi (2015). A scale to measure the job perception of panchayat development officers (PDOs). *Int. J. Agricult. Stat. Sci*., **11(1)**, 185-187.

Binkadakatti, J. S., J. G. Angadi and S. S. Dolli (2013). A scale to measure the livelihood security of the rehabilitant farmers. *Int. J. Agricult. Stat. Sci*., **9(2)**, 649-655.

Brown, T. E. and B. A. Kirchhoff (1997). Resource Acquisition Self-Efficacy: Measuring Entrepreneurs' Growth Ambitions. In: *Frontiers in Entrepreneurship Research*, (Eds. P. D. Reynolds, W. D. Carter, P. Davidsson, W. B. Gartner, and P. McDougall), Wellesley, MA: Babson College, pp. 59-60.

Cantillon, R. (1955). *International encyclopaedia of social sciences*. Quoted by Cochran, T. C (1968) under entrepreneurship. Mac Millan, New York. **5**, 354-359.

Castanias, R. P. and C. E. Helfat (1991). Managerial Resources and Rents. *Journal of Management*, **17(1)**, 155-171.

Cohen, J. (2003). *Applied Multiple Regression / Correlation Analysis for the Behavioral Social Sciences*. Third Edition. Mahwah, NJ: Lawrence Erlbaum Associates.

De, D. and B. Jirli (2010). *A Handbook of Extension Education*. Agrobios (India) Publishing Co. Jodhpur, India.

Fraser, T. M. (1961). Achievement motivation as a factor in rural development, a report on research in western Orissa. Haveford College, Haveford, Paris.

Gartner, W. B. (1985). A Conceptual Framework for Describing the Phenomenon of New Venture Creation. *Academy of Management Review*, **10**, 696-706.

Gartner, W. B. (1990). What are we talking about when we talk about entrepreneurship? *Journal of Business Venturing*, **5**, 15.

Guilford, J. P. (1954). *Psychometric methods*. Tata McGraw-Hill Publishing Co Ltd., New Delhi.

Heredero, J. M. (1979). *Agricultural Entrepreneurship: Identification and selection of small scale entrepreneur*. (Eds. Rao, T.V. and Moulik, T.K.). IIM, Ahmedabad. pp. 151-159.

Hull, C. L. (1928). *Aptitude testing*. Yonkers, NY; world, 1928.

Joshi, S. S. and T. R. Kapoor (1973). *Fundamentals of farm business management*, Kalyani Publishes, New Delhi, India.

Kanungo, R. N. and M. Mendonca (1994). *Fundamentals of Organisational Behaviour*. Kendall Hunt Publishing Company, Iowa.

Khan, W. M. (1998). *Technological innovation in SMEs in Pakistan*. Entrepreneurship and innovation edited by Kanugo, R.N. Sage publications, New Delhi, pp. 287-309.

Kirzner, I. M. (1973). *Competition and Entrepreneurship*. Chicago: University of Chicago Press.

Knight, F. (1921). *Risk, Uncertainty and Profit, Harper and Row*, New York.

Lindequist, U. (2005). The pharmacological potential of mushrooms. Ev. Based Comp. *Alt. Med.*, **2**, 285-299.

Lundström, A. and L. Stevenson (2005). *Entrepreneurship Policy- Theory and Practices*, ISEN International Studies in Entrepreneurship, Springer.

Manjula, S. (1995). A study of entrepreneurial behaviour of rural women in Ranga Reddy district of Andhra Pradesh *M. Sc. (Home Science) Thesis,* A.P.A.U, Rajendranagar, Hyderabad.

Minzberg, N. (1976). Techno-economic ecology of corporate strategy. *Journal of Management Studies*, **13(1)**, 62.

Monika, B. and R. K. Talukdar (1997). Variables influencing entrepreneurship of women entrepreneurs. *Indian Journal of Extension Education*, **33 (1&3)**, 25-34.

Nandapurkar, G. G. (1982). A study on entrepreneurial behaviour of small farmers. *Ph. D. Thesis,* Univ. Agric. Sci., Bengaluru, Karnataka, India.

Nystrom, H. (1993). Creativity and entrepreneurship. *Creativity and Innovation Management*, **2(4)**, 237-42.

Pareek, U. and M. Nadakarni (1978). Development of entrepreneurship : A conceptual model. In : *Developing Entrepreneurship : A Handbook*, *Learning System*, (Eds. Rao, T.V. and Pareek, U.), New Delhi, India.

Rao, G. K. V. (1985). A prediction analysis of farming performance of farmers through their entrepreneurial behaviour factors. *Ph.D. Tthesis*, APAU, Rajendra nagar Hyderabad.

Rao, T. V. S. (1989). A study on entrepreneurial characteristics of vegetable growers in Guntur district of Andhra Pradesh. Unpublished *M. Sc. (Agri.) Thesis*, APAU, Rajendra Nagar, Hyderabad.

Reynolds, P., D. J. Storey and P. Westhead (1994). Cross-National comparisons of the variation in new firm formation rates. *Regional Studies*, **28**, 443-456.

Rogers, E. M. and F. F. Shoe Maker (1971). *Communications of innovations*, A cross cultural approach. The Free Press, A Division of Macmillan Publication Company Inc., New York.

Royse, D. J. (2014). A global perspective on the high five: Agaricus, Pleurotus, Lentinula, Auricularia & Flammulina. In: *Proceedings of 8th International Conference on Mushroom Biology and Mushroom Products*, Nov, 19-22, 2014, New Delhi, India.

Schumpeter, J. A. (1950). *Capitalism, Socialism and Democracy*. Herper, New York.

Shane, S. and S. Venkataraman (2000). The Promise of entrepreneurship as a field of research. *Academy of Management Review*, **25**, 217-226.

Supe, S. V. and S. N. Singh (1969). *Dynamics of rational behaviour of Indian farmers*. New Heights Publishers and Distributors, New Delhi.

Ucbasaran, A. D. (2004). Business ownership experience, entrepreneurial behaviour and performance: novice, habitual, serial and portfolio entrepreneurs. *Ph. D. Thesis,* University of Nottingham, UK.

Verma, R. N. (2014). India on the threshold of non-green revolution. In: *Proceedings of 8th International Conference on Mushroom Biology and Mushroom Products*, Vol-II, Nov, 19-22, 2014, New Delhi, India.

Vijaya, V. and T. J. Kamalanabhan (1998). A scale to assess entrepreneurial motivation. *The Journal of Entrepreneurship*, **7(2)**, 183-198.

Wakchaure, G. C. (2011). Production and marketing of mushrooms: Global and National scenario. In: *Mushrooms Cultivation, Marketing and Consumption* (Eds. Manjit Singh, Bhuvnesh Vijay, Shwet Kamal and Wakchaure, G. C.) Directorate of Mushroom Research, Solan, pp. 15-22.

Ward, T. B. (2004). Cognition, creativity, and entrepreneurship. *Journal of Business Venturing*, **19**, 173-88.

Wasser, S. P. (2010). Medicinal mushroom science: history, current status, future trends and unsolved problems. *Int. J. Med. Mushrooms,* **12**, 1-16.