Entrepreneurial Behavior of Potato Growers in Kohima district of Nagaland

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ABSTRACT

The present study was conducted to access the factors influencing the entrepreneurial behavior of the potato cultivators in Kohima district of Nagaland. Potato is an important crop in the entire North Eastern region of India, comprising of a brother and seven sister states. The study revealed that majority of the potato cultivators had medium level of knowledge about improved package of practices of potato cultivation, farm decision making ability, family size, economic motivation, marketing orientation programme and scientific orientation programme. The study contributes to the knowledge about designing relevant training programmes giving due cognizance to the influencing variables.

***Key words**: Entrepreneurial behavior; Potato growers;*

Potato (*Solanum tuberosum* L.) belonging to the Solanaceae family is an annual herbaceous plant, which is highly nutritious in carbohydrates, proteins, minerals, vitamin B and vitamin C and having high quality dietary fibre (*Annon. 2011*). The world output of potato has ranged from 280 to 328.87 million tones during the period 1961 to 2005. However, the pattern of production among the developed countries and developing countries has considerably changed over this period. While the share of developed countries in world potato went down from 91.50 per cent in 1961-63 to 59.90 per cent in 1995-97, corresponding production share of developed decrease from 94.60 per cent to 64.80 per cent. The annual compound growth rates of area and production showed negative trends of 1.64 and 1.35 per cent per annum respectively during the period from 1961 to 1997. The yield however, registered a positive growth rate of 1 per cent per annum. Developing countries share in world potato area rose steadily from 8.50 per cent to 40.10 per cent and in production from 5.20 per cent to 35.20 per cent over the corresponding period. Since the potato fits in well in the principle cereal based cropping systems in the developing countries and the consumption levels improved overtime, the output increase considerably in these countries. *(Venyo, 2013).*

Potato occupies about 21.9 per cent of the total area under vegetable cultivation, having the highest of 28.9 per cent among production of vegetables in India, India ranked third with an area of 18, 28,000 ha, while it ranked second with 3, 43, 91,000 tonnes of production, whereas it ranked at 68th with lowest productivity of 181.77 q / ha only among the potato producing countries (*Anon. 2014*).

North East region of India comprising the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim covers almost 9 per cent of the area and 4.3 per cent of the production of India (*Anon. 2011*), due to various reason of biotic and abiotic factors such as lack of HYV seed, rainfed condition, non adoption of recommended package of practices, insects and diseases, lack of infrastructures facilities like cold storage, credit facilities, marketing facilities, etc.

Nagaland has an area of 16,579 square kilometers and the altitude ranging between 100 to 3840 meters above the mean sea level; out of the eleven district. Kohima district suits to this crop due to pH ranging 5.5 to 6.5, with the highest area of 830 ha and productivity of 9.096 t / ha (*Anon. 2012*), which generating 2 lakhs mandays / year (*Jha, 2012*). Therefore, the present

study was undertaken in Kohima district of Nagaland to examine the entrepreneurial behavior of the potato cultivators and the factors influencing it.

Transfer of technology through training has become a common and major extension activity in the field of agriculture. This method of transfer of technology is being used to either make the Research and Development (R & D) staff more efficient in his present job or to train the staff in specialized field. The state department gets their employees trained in various enterprises with a view to introduce new enterprise amongst the farmers in their area of operation. The expenditure made on training can be best justified, when the trainees get themselves enriched in the area of work and skill upgraded during the training, percolates amongst the ultimate clients. The present study was conducted with following specific objectives:

i.   To study the socio-economic and personnel characteristics as well as different factors influencing the entrepreneurial behavior of potato cultivators in the study area, and

ii. To study the relationship of selected variables with entrepreneurial behavior about the potato cultivators.

METHODOLOGY

A sample of 90 potato growers was selected by following the multi stage sampling technique. In the first stage two develop blocks of Kohima district viz; Jotsoma and Konoma were selected, in the second stage, three villages from each block were selected randomly. Then in the final stage a list of farmers of these villages were prepared separately and finally 15 farmers from each selected villages growing potato were considered for the study and further it was stratified into 3 groups based on the area under HYV potato crop of the respondents and about twenty per cent of them were selected by following the stratified random sampling method, which making a sample of 90 potato growers in the Kohima district of Nagaland (*Venyo, 2013*).

To understand the background of potato cultivators a total number of nine characteristics viz; age, education, knowledge (improved potato cultivation practices), family size, farm size, farm experiences for potato cultivation / growers, annual income, information sources utilization and farm decision-making ability were studied under the socio-economic and personal characteristics in terms of the variables. The empirical measurement

of these variables was done with the help of structured schedule specially designed and developed for the purpose of the investigation. The entrepreneurial variables included economic motivation, self confidence, technical-cum-scientific orientation programme, marketing orientation programme, finance orientation programme and risk and uncertainty of production. The entrepreneurial behavior of the selected respondents was empirically measured with the help of the entrepreneurial index develop for this purpose. The entrepreneurial variables included scientific orientation, Self-confidence, Economics motivation, Risk orientation, and Marketing orientation. The variable 'Economic Motivation' with the help of modified scale of *Sharma (2012)*, 'Self Confidence' by the scale of *Sharma et al. (2012)*, 'Scientific orientation' was empirically measured with the help of modified scale of *Sharma et. al (2012)*, 'Financial orientation' was empirically measured with the help of modified scale of *Sharma (2012)*, 'Risk orientation' was empirically measured with the help of modified scale of *Jha (2012)* and *Sharma et. al (2012)*. 'Knowledge' with the help of 'Knowledge Index' developed by *Jha (2012)* and *Sharma (2012)*, 'Farm decision making ability', by using the scale of *Sharma et. al (2012)*. The respondents were classified in three categories based on their respective mean and standard deviation values.

The primary data were collected from the selected respondents with the help of pre-tested structured schedule by personal interview method. Secondary data were collected from different sources viz; online reports / publication, journals, magazine, books, records etc; Data analysis was done by using SAS (9.1 version) software for obtaining the valid inferences.

The 't' values of the regression co-efficient of predictor variables explaining the entrepreneurial behaviour (Y) of the potato cultivators/growers. The regression model fitted for this purpose is:

$$Y = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 + b_7 x_7 + b_8 x_8 + b_9 x_9 + \epsilon$$

RESULTS AND DISCUSSION

Keeping in view the objectives, the present study was divided into three parts viz; socio-economic and personnel characteristics of potato growers, entrepreneurial behavior of the potato growers and multiple linear regression of 'Entrepreneurial behavior' with the predictor variables (*Venyo, 2013*).

Table 1 reveals that to understand the background of potato cultivators, a total number of nine characteristics viz; age, education, knowledge, family size, farm size, farm experiences for potato cultivation/ growers, annual income, information sources utilization and farm decision-making ability selected. The empirical measurement of these variables was done with the help of structured schedule specially developed for the purpose of investigation. The entrepreneurial variables included Economic motivation, Self confidence, Technical-cum-scientific orientation programme, Marketing orientation programme, Finance orientation programme and Risk and uncertainty of production.

Table 1 reveals that the most (41.11%) of potato growers belonged to the young age group (below 38 years), followed by 36.67 per cent of them in the age of

Table 1. Socio-economic and personnel characteristics of potato growers (N = 90)

Characteristics	Category / Level	No.	%
Age (years)	Old group ($\geq$ 59)	33	36.67
$\mu = 45.5$	Middle group (38 - 58)	20	22.22
s.d. = 26.125	Young group ($\leq$ 37)	37	41.11
Education	Graduate & above (?3.34)	12	13.33
$\mu = 2.333$	Middle to P.U. (1.35 - 3.33)	61	67.78
s.d. = 1.006	Up to Primary ($\leq$ 1.34)	17	18.89
Knowledge	High ($\geq$ 2.43)	11	12.22
$\mu = 1.778$	Medium (1.14 - 2.42)	48	53.33
s.d. = 0.649	Low ($\leq$ 1.13)	31	34.44
Family	Big ($\geq$ 9.01)	22	24.44
members (hh)	Medium (5.45 - 9.00)	42	46.67
$\mu = 7.222$	Small ($\leq$ 5.44)	26	28.89
s.d. = 1.785			
Farm size (ha)	Big ($\geq$ 4.89)	14	15.56
$\mu = 3.289$	Medium (1.70 - 4.88)	68	75.56
s.d. = 1.605	Small ($\leq$ 1.69)	8	8.89
Farm	High ($\geq$ 9.21)	19	21.11
Experiences (Yrs)	Medium (4.94 - 9.20)	60	66.67
$\mu = 7.06$	Low ($\leq$ 4.93)	11	12.22
s.d. = 2.14			
Annual	High ($\geq$ 108978)	12	13.33
income (Rs)	Medium (12432 - 108977)	78	86.67
$\mu = 60704.46$	Low ($\leq$ 12431)	0	0
s.d. = 48273.49			
Information	High ($\geq$ 2.05)	6	6.67
sources utilization	Medium (0.82 - 2.04)	84	93.33
$\mu = 1.433$	Low ($\leq$ 0.81)	0	0
s.d. = 0.619			
Farm decision	High ($\geq$ 6.71)	54	60.00
making ability	Medium (1.39 - 6.70)	36	40.00
$\mu = 4.044$	Low ($\leq$ 1.38)	0	0
s.d. = 2.664			

old group (above 58 years) and the remaining 22.22 per cent of them having in the age of middle group (38 to 58 years). Majority (67.78%) of potato growers were middle to P. U. level of education, followed by 18.89 per cent had primary level of education and the remaining 13.33 per cent of them were graduate and above level of education. Majority (53.33%) of potato growers had medium range of knowledge, followed by 34.44 per cent of them with low range of knowledge and the remaining 12.22 per cent of them having high knowledge about the HYV seed of potato cultivation.

Majority (46.67%) of the potato growers were having medium size of family (5 to 9 members), followed by 28.89 per cent of them were small size of family (below with 5 members) and the remaining 24.44 per cent of them were having big size of family (above 9 members). Majority (75.56%) of potato growers were having medium size of land (1.70 to 4.88 ha), followed by 15.56 per cent of them were big size of land (above 4.88 ha) and the remaining 8.89 per cent having the small size of land (below 1.70 ha). Majority (66.67%) of potato growers belonged to the medium range of farm experience (5 to 9 years), followed by 21.11 per cent of them in high range of farm experience (above 9 years) and the remaining 12.22 per cent of them having low range of farm experience (below 5 years).

Majority (86.67%) of potato growers belonged to the medium range of annual income (Rs. 12,432/- to Rs. 1, 08,977/-), followed by 13.33 per cent in the high range of annual income (above Rs. 1, 08, 977/-), whereas none of them were in low range of annual income (below Rs. 12,432/-). Majority (93.33%) of the respondents had medium level of utilization of information sources (0.82 - 2.04), followed by high level (6.67%) of information sources (above 2.05), whereas none of them had low level of utilization of information sources. Majority (60.00%) had high level of farm decision making ability (above 6.70), followed by medium level (40.00%) of farm decision making ability (1.39 to 6.70), whereas none of them had low level of farm decision making ability.

Table 2 reveals that majority (50.00%) of potato cultivators had medium level of economic motivation, 30.00 per cent of them had high level of economic motivation and only 20.00 per cent of the respondents had low level of economic motivation. Most (41.11%) of the potato cultivators had medium level of self confidence level, 35.56 per cent of them had low level

Table 2. Entrepreneurial behavior of the potato growers (N = 90)

Behavior	Level	No.	%	Mean	S.D
Economic Motivation	High	27	30.00	2.100	0.704
	Medium	45	50.00		
	Low	18	20.00		
Self Confidence	High	21	23.33	2.467	1.463
	Medium	37	41.11		
	Low	32	35.56		
Technical-cum-scientific orientation programme	High	18	20.00	7.867	3.319
	Medium	58	64.44		
	Low	14	15.56		
Marketing Orientation Programme	High	17	18.89	1.700	0.771
	Medium	73	81.11		
	Low	0	0		
Financial-based orientation programme	High	19	21.11	4.044	2.224
	Medium	55	61.11		
	Low	16	17.78		
Risk and Uncertainty of production pattern	High	25	27.78	11.022	2.788
	Medium	42	46.67		

of self confidence level and only 23.33 per cent of the respondents had high level of self confidence. Most (64.44%) of the potato growers had medium level of technical-cum-scientific orientation programme, 20.00 per cent of them had high level of technical-cum-scientific orientation programme and only 15.56 per cent of the respondents had low level of technical-cum-scientific orientation programme. Most (81.11%) of the potato growers had medium level of marketing orientation programme, 18.89 per cent of them had high level of marketing orientation programme, whereas none of them had low level of marketing orientation programme. Most (61.11%) of the potato growers had medium level of finance-based orientation programme, 21.11 per cent of them had high level of finance-based orientation programme and only 17.78 per cent of the respondents had low level of finance-based orientation programme. Most (46.67%) of the potato growers had medium level of risk and uncertainty of production pattern, 27.78 per cent of them had high level of risk and uncertainty of production pattern and only 25.56 per cent of the respondents had low level of risk and uncertainty of production pattern. The studies conducted by *Jha (2012), Sharma (2012)* and *Sharma et. al (2012)*, reported that for any enterprise to succeed, an entrepreneur must possess risk and uncertainty capacity, but at moderate or medium level.

Table 3 reveals that the regression equation which included predictor variables knowledge, economic motivation, self confidence, technical-cum-scientific orientation programme, marketing orientation programme, finance orientation programme and risk and uncertainty of production. Explained to the extent of 77.49 per cent of the variations in the entrepreneurial behaviour of the potato cultivators and the 'F' value (30.22) both were found to be significant at 1 per cent level of significance.

Table 3. Multiple linear regression of Entrepreneurial behavior with the predictor variables

Predictor variables	b value	SE (b)	't' value
Education (x_1)	0.0608	0.1590	0.3825[NS]
Knowledge (x_2)	0.4155	0.3210	1.2945*
Family size (x_3)	0.0423	0.0897	0.4713[NS]
Farm decision making ability (x_4)	1.1816	0.0744	15.8924***
Economic motivation (x_5)	0.0608	0.2278	0.2667[NS]
Technical-cum-Scientific Orientation Programme (x_6)	0.2684	0.1130	2.3748***
Marketing Orientation (x_7)	0.0884	0.0472	1.8744*
Finance Orientation Programme (x_8)	0.1802	0.2270	0.7941*
Risk and Uncertainty Orientation Programme (x_9)	-0.0279	0.0777	-0.3593[NS]

a = -0.1636647; F = 30.21556***; R-square = 0.77489***;
Adjusted R^2 = 0.74924491;
*** Significant at 1 per cent; ** Significant at 5 per cent;
* Significant at 10 per cent level of significance;
NS: Non-significant and DF (9, 79).

Table further depicts that the regression coefficient of the predictor variables on farm decision making ability (x_4) and technical-cum-Scientific Orientation Programme (x_6) both were found to be highly significant at 1 per cent level of significance, whereas the regression coefficient of the predictor variables viz; knowledge (x_2), marketing orientation (x_7) and finance orientation programme (x_8) were found to be significant at 5 per cent level of significance. Thus, it may be inferred that all the above significant predictor variables at different level were found to be important in explaining the entrepreneurial behaviour of the potato cultivators / growers, these findings are in the line of *Sharma (2012)*, reported in the same manner.

Whereas education (x_1), family size (x_3) and economic motivation (x_5) were found to be non-significant, which indicate less contribution to the

entrepreneurial behaviour of potato growers, while risk and uncertainty orientation programme (x_9) while it was negative non-significant contribution factor for the potato cultivator, the negative relationship of dependent variable might not be serious about the future risk and uncertainty of production, which resulted into low gain.

Policy implication : From the above findings, following are the suggestion made for the potato growers in order to lift up their overall status in Kohima District of Nagaland.

Agencies like co-operative organization should be encouraged at the village level. Institutional credit facilities at a marginal rate of interest should be made available and improved cultural practices for increasing production and productivity of potato crop. Trainings-cum-demonstrations should be organized time to time for the enrichment of knowledge.

Farmers growing potato should be made aware of the different varieties of potato in this area / region. Post harvest technology-cum value addition should be given more emphasis to generate more income as well as employment.

CONCLUSION

It may be concluded that majority of potato cultivators had medium level of knowledge about the improved package of practices of potato cultivation. Farm decision making ability, economic motivation, marketing orientation programme and scientific orientation programme had significant influence. However; low utilization of information sources in majority of the cases is observed to be a limiting the above mentioned factors. Therefore it is recommended to organize need based entrepreneurial trainings with practical utility for the farmers with effective communication skill. In view of these findings, it is concluded that the training programme has been effective in achieving the desired outcome in terms of change in the existing knowledge level of the potato cultivators. Further, it is suggested that such training programme should be organised time to time to transfer potato cultivation technology to enhance the yield levels in Kohima district of Nagaland.

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