Indian Journal of Extension Education
Vol. 49, No. 1 & 2, 2013 (1-4)

Enterprise Creation in Agribusiness: An Analytical Estimation from a Score of Socio-Ecological Variables

S K Acharya[1], M M Adhikary[2] and Subhadip Das[3]

ABSTRACT

Enterprise ecology manifests the complex interactions amongst a series of entrepreneurial functions. While enterprise management is a complex and challenging process, enterprise creation has been the most significant of a plethora of factors of entrepreneurships. In the transforming Indian agriculture, which is taking a shape and text of agripreneurship, the study of multilayer enterprise generation process unveils a new pathway for enterprise research. The present paper studies the enterprise creation, a conjugate dependent variable, in terms of a score of socio-ecological variables. The variables, market interaction, group interaction and planning orientation have been found to exert decisive impact on enterprise creation at the micro levels. The variables were subjected to factor analysis to group them into different factors, which would offer a strategic intervention for enterprise creation in given social ecology.

Key words: Agribusiness, enterprise ecology, enterprise creation, environmental ecology, socio-ecological variables.

INTRODUCTION

The word ecology in common usage has two distinct, albeit essentially connected, senses: ecology as a scientific discipline and ecology as environmental philosophy. Scientific ecology refers to the study of the relations that determine the abundance and distribution of organisms in their surroundings. Environmental ecology covers a diverse range of concerns from grassroots green movements to international efforts, such as various social, economic, management efforts directed generally towards sustaining the earth's natural resources and its proper utilization. These two streams in ecology have much to contribute to both scholarly and pragmatic development in the field of entrepreneurship. There are two concepts (1) companies are 'living' entities and (2) 'company ecology' which, stimulated the hypothesis that towns are 'enterprise ecosystems (Warren S.I.; Robinson, M. 2005). This hypothesis cannot be tested directly (Toerien,-D-F; 2010, Seaman McElwee, G.2006). An ecological perspective in entrepreneurship emphasizes the many scales at which entrepreneurial activity occurs, and leads to testable research hypotheses. The ecological approach provides a rich set of concepts for organizing knowledge about the environment of successful entrepreneurship with social, economic, techno-managerial, physical, biological, cultural and environmental dimensions and points the way towards sustainable agricultural enterprises. Agribusiness is the next big thing in the surging Indian economy. Since major part of Indian population is dependent on agriculture, the progressive growth of Indian economy is controlled by agribusiness sector. According to National Council for Applied Economic Research (NCAER) study, the number of households with middle income or above is equal to that in the urban India (Chatterjee S, 2009). The study was carried out to analyse the enterprise creation in agribusiness; to select and decide the dependent variable (creation of enterprise ecology, y_1) and independent variables (x_1 to x_{19}) & interaction threats. Moreover, the study will estimate the interaction at inter and intra level to derive micro level policy implementation as applicable to the research scale for the creation of entrepreneurial ecology.

METHODOLOGY

Dumurdaha-Nityanandapur-I gram panchayat of the Balagarh community development block of Hooghly district in West Bengal was purposively selected. The village namely Dadpur was selected by random sampling method. The following nineteen independent variables were taken for the study such as age, education, family size, income, size of holding, operational land, irrigation index, electric consumption, fuel consumption, market interaction, group interaction, distance matrix, innovation proneness, orientation towards competition, planning orientation, marketing orientation.

Enterprise creation was the consequent variable to this set of nineteen exogenous variables. Statistical tools like co-efficient of correlation, beta regression coefficient, step down regression by backward elimination and PCA for factor analysis were selected.

[1 & 2]Professors and [3]M. Sc. Student, Department of Agricultural Extension, Bidhan Chandra Krishi Viswavidyalaya, West Bengal.

RESULTS AND DISCUSSION

The entire results were discussed in the form of relational analysis (r), direction analysis (path coefficient), efficacy analysis (beta coefficient) and clustering of variables based on Eigen Values. It was axiomed that the set of nineteen exogenous variables, agro-economic and socio managerial in nature, has got associational impact on the complex process of enterprise creation. Elucidating the complexity of interaction leading to an enterprise generation in a given farm ecology, the analysis starts with estimating r values, next step was to screen out effective causal variable through step down regression analysis.

Table 1: Coefficient of correlation (r) between enterprise creation and 19 independent variables (x_1 to x_{19})

Variables	r value
Age (x_1)	-0.1500
Education (x_2)	-0.0368
Family Size (x_3)	0.0105
Income (x_4)	-0.0162
Size of holding (x_5)	-0.0195
Operational Land (x_6)	0.0112
Irrigation index (x_7)	0.0112
Electric consumption (x_8)	0.1245
Fuel consumption (x_9)	0.1519
Market interaction (x_{10})	0.2079
Group interaction (x_{11})	0.2399
Distance matrix (x_{12})	-0.1120
Innovation proneness (x_{13})	0.1095
Orientation towards competition (x_{14})	0.1370
Planning orientation (x_{15})	0.1623
Marketing orientation (x_{16})	0.1023
Decision matrix (x_{17})	0.0058
Idea exchange index (x_{18})	0.0340
Risk orientation (x_{19})	-0.0476

* significant at 0.05 %

The above table revealed the present coefficient of correlation between enterprise creation (y) and 19 independent variables *i.e.* x_1 to x_{19}. Two variables have been found significant at 5 per cent level of significance and these are market interaction (x_{10}) and group interaction (x_{11}).

For enterprise creation, it needs to have a lot of market and group interaction, which will ultimately promote the enterprise creation process. Hence, these two variables have been found in creating predominant influence on enterprise creation.

Table 2: Regression analysis of enterprise creation (y_1) and 19 causal variables (x_1-x_{19})

Variables	β co-effieient	β x R (5)	R^2	S error	t value
Age (x_1)	0.0000	0.001	0	0.02	0.001
Education (x_2)	0.0840	-1.663	0.026	0.07	0.372
Family Size (x_3)	0.0820	0.464	0.04	0.239	0.17
Income (x_4)	-0.3010	2.6	0	0	1.089
Size of holding (x_5)	0.1700	-1.774	0.051	0.068	0.745
Operational Land (x_6)	-0.0030	-0.016	-0.022	11344.665	0
Irrigation index (x_7)	0.2450	1.466	2.064	11344.665	0
Electric consumption (x_8)	0.1630	10.835	0.003	0.003	0.761
Fuel consumption (x_9)	0.0400	3.27	0	0	0.146
Market interaction (x_{10})	0.2330	25.895	0.032	0.35	0.896
Group interaction (x_{11})	0.1910	24.512	0.102	0.131	0.778
Distance matrix (x_{12})	-0.0500	2.998	-0.071	0.304	0.234
Innovation proneness (x_{13})	-0.0910	-5.229	-0.138	0.379	0.365
Orientation towards competition (x_{14})	0.1710	12.502	0.168	0.316	0.531
Planning orientation (x_{15})	0.2730	23.672	0.176	0.247	0.712
Marketing orientation (x_{16})	0.0290	1.606	0.04	0.403	0.099
Decision matrix (x_{17})	0.1410	0.436	0.236	0.487	0.484
Idea exchange index (x_{18})	-0.0540	-0.987	-0.128	0.503	0.254
Risk orientation (x_{19})	0.0200	-0.521	0.032	0.326	0.099

Multiple R^2 = 0.1870, Multiple R = 0.4325, Adjusted R^2 = -0.3279, F value for R= 0.36 with 19 and 30 DFS

The Table 2 showed the regression analysis to estimate the causal effect of 19 independent variables on the consequent variable (y) *i.e.* enterprise creation. It was found that the variables market interaction (x_{10}), group interaction (x_{11}) and planning orientation (x_{12}) have made 25.89, 24.5 and 23.67 per cent contribution to enterprise creation (y) respectively. For enterprise creation, one needs to have a survey of market behavior, market intelligence and consumer behavior. All these market data were discussed with enterprise members and used in the decision making process. That is why the variables x_{10}, x_{11} and x_{15} have made a remarkable impact on enterprise creation. The R^2 value being 0.1870, reveals that 18.70 per cent variance is embedded with the consequent variable *i.e.* enterprise creation could explained with these 19 causal variables. This suggests that more number of variables should be included. Step down regression was used to isolate the most effective variables.

Variable	β	t
X_{11}	0.240	1.712
Variable	**R^2**	**R**
X_{11}	0.0576	0.2399

The step down regression analysis (forward) has retained one prominent causal variable *i.e.* group interaction (x_{11}) at the last step. Hence, this variable has got substantive strategic and operational impact on enterprise creation (y). Only group interaction (x_{11}) has

been retained at the last stage of Step-down regression analysis as it contributed 5.76 per cent to the total R^2 value. Hence, this variable deserves a special attention while making a serious intervention in the domain of enterprise creation.

Table 3: Path Analysis: direct, indirect and residual effect; enterprise creation (y_1) vs 19 exogenous variables (x_1 to x_{19})

Variables	Total effect r	Total direct effect (TDE)	Total indirect effect (TIE)=r-DE	Highest indirect effect
Age (x_1)	-0.1500	-0.002	-0.1480	0.0857 (x_{15})
Education (x_2)	-0.0368	0.0845	-0.1213	-0.1085 (x_{15})
Family Size (x_3)	0.0105	0.0825	-0.0720	-0.2019 (x_7)
Income (x_4)	-0.0162	-0.3008	0.0139	0.1546 (x_{15})
Size of holding (x_5)	-0.0195	0.1699	-0.1894	-0.0718 (x_7)
Operational Land (x_6)	0.0112	0.001	0.0112	0.2209 (x_7)
Irrigation index (x_7)	0.0112	0.2209	-0.2097	-0.0754 (x_3)
Electric consumption (x_8)	0.1245	0.1628	-0.0383	0.0340 (x_{10})
Fuel consumption (x_9)	0.1519	0.0438	0.1081	0.1497 (x_{15})
Market interaction (x_{10})	0.2079	0.2329	-0.0250	-0.0330 (x_{13})
Group interaction (x_{11})	0.2399	0.1911	0.0488	0.1089 (x_{15})
Distance matrix (x_{12})	-0.1120	-0.1501	0.0381	-0.0754 (x_{13})
Innovation proneness (x_{13})	0.1095	-0.0905	0.2000	0.1495 (x_{15})
Orientation towards competition (x_{14})	0.1370	-0.1707	-0.0337	0.1996(x_{15})
Planning orientation (x_{15})	0.1623	0.1727	-0.0104	-0.1750(x_4)
Marketing orientation (x_{16})	0.1023	0.2094	-0.1071	0.1294 (x_{15})
Decision matrix (x_{17})	0.0058	0.1407	-0.1349	-0.1260(x_{15})
Idea exchange index (x_{18})	0.0340	-0.1543	0.1883	0.0519(x_4)
Risk orientation (x_{19})	-0.0476	0.0205	-0.0681	-0.0439(x_{14})

Residual Effect = 0.8132, Highest Occurrence = X_{15}

Table 3 presents the path analysis where in the total effects of exogenous variables are decomposed into total direct (TD), total indirect (TI) and residual effects (RE). It has been found that the market interaction has exerted the highest total direct effect on enterprise creation. It is simply because, for any enterprise creation, market survey, market analysis and interaction with successful entrepreneur can provide the basic inputs. The other variable *i.e.* innovation proneness have exerted the highest total indirect effect which implies that this variable has got tremendous associative impact on enterprise creation. The same table also elucidates the foot that variable planning orientation has caused the highest number of indirect effects *i.e.* eight times on enterprise creation. This indicates that for enterprise creation, planning has got highest structural contribution for its much needed success. The residual effect being 0.8132; it is to infer that a huge portion of variance in the consequent variables (81.32%) could not be explained.

In the present study, 19 variables have been reduced to 7 number of factors based on extraction of the receptive factor loading values. The Table 4 has also depicted the number of factors; the variable included in the receptive factors, the variables explained the common variables and the factor loadings. Thus the Factor 1 has following variables *i.e.* age (X_1), income(X_4), fuel consumption (X_9), group interaction (X_{11}), innovation proneness (X_{13}), orientation towards competition(x_{14}), planning orientation (x_{15}) and market interaction (x_{16}) which has contributed 22.04 per cent of variance and has been renamed as 'Resource motivation'. The Factor 2 has the variables *i.e.* operational land (X_6) and irrigation index (X_7) which has contributed 16.453 per cent of variance and has been renamed as 'Agro-economy'. The Factor 3 includes the variables *i.e.* distance matrix ($X1_2$) and risk orientation (X_{19}) which has contributed 8.957 per cent of variance and has been renamed as 'Strategic location'. Factor 4 includes the variables *i.e.* market orientation (X_{16}) and electric consumption (X_8) which has contributed 8.393 per cent of variance and has been renamed as 'Entrepreneurial modernization'. The factor 5 has the variables *i.e.* education (X_2) and idea exchange index (X_{18}) which has contributed 8.064 per cent of variance and has been renamed as 'Enterprising concept'. Factor 6 has the variables *i.e.* family size (x_3) and decision matrix (x_{17}) which has contributed 6.973 per cent of variance and has been renamed as 'Entrepreneurial decision'. The factor 7 has only one variable *i.e.* size of holding (x_5) which has contributed 5.451 per cent of variance and has been left unchanged as size of holding.

Table 4: Factor analysis for clubbing of variables into factor based on factor loading [rotated component matrix, including enterprise creation (y)]

Factors	Variables accounted	Factor loading	% of variance	Cumulative %	Factor rename
Factor 1	Age (x_{11})	0.517			
	Income (x_4)	0.638			
	Fuel consumption (x_9)	0.563			
	Group interaction (x_{11})	0.461			
	Innovation proneness (x_{13})	0.585	22.004	22.004	Resource motivation
	Orientation towards competition (x_{14})	0.849			
	Planning orientation(x_{15})	0.902			
	Market orientation (x_{16})	0.512			
Factor 2	Operational land (x_6)	0.977	16.453	38.456	Agro-economy
	Irrigation index (x_7)	0.977			
Factor 3	Distance matrix (x_{12})	0.558	8.957	47.413	Strategic location
	Risk orientation (x_{19})	0.590			
Factor 4	Market orientation (x_{10})	0.410	8.393	55.806	Entrepreneurial
	Electric consumption (x_8)	0.770			modernization
Factor 5	Education (x_2)	0.312	8.064	63.870	Entrepreneurial
	Idea exchange index (x_{18})	0.419			concept
Factor 6	Family size (x_3)	0.113	6.973	70.843	Entrepreneurial
	Decision matrix (x_{15})	0.589			decision
Factor 7	Size of holding (x_5)	0.574	5.451	76.294	Size of holding

CONCLUSION

Enterprise creation in a social ecology has got a systematic vision which keeps some weeding in and out a lot of psychological and managerial disposition towards

attaining an enterprise ecology. Any enterprise ecology presents a combination of consumer psyche and motivation domain to create an enterprise, to manage an enterprise and socializing an enterprise. It is basically an interaction between social structure and psychological interaction. The variable enterprise creation (y) has formed up a complex entrepreneurial status within which respondents make their behavioral disposition to act and manage an enterprise and thereby, pro-create a new enterprise. From correlation coefficient table, these two variables market interaction (x_{10}) and group interaction (x_{11}) have been found in creating predominant influence on enterprise creation. From regression analysis, it has been found that the variables market interaction (x_{10}), group interaction (x_{11}) and planning orientation (x_{12}) have made subsequent percentile contribution to enterprise creation (y_1). From path analysis, it has been found that the market interaction has exerted the highest total direct effect on enterprise creation. It is simply because, for any enterprise creation, market survey, market analysis and interaction with successful entrepreneur can provide the basic inputs. The other variables innovation proneness have exerted the highest total indirect effect, elucidates that innovation proneness has got tremendous associative impact on enterprise creation. Hence, within a spatial distribution and given social ecology, the motivational factors and communication variables can play a vital role in ushering the function of entrepreneurial ecology.

REFERENCES

Warren S.I.; Robinson, M. 2005. *Journal of Rural Enterprise and Management*. 2005; 1(1):13-20

McElwee, G. 2006. *Journal of Rural Enterprise and Management*. 2006; 2(2): 23-24

Chatterjee, S. 2009. Retailing of agricultural products in India. Green-Farming. 2009; 2(9): 649-650, URL:http://www.greenfarming.in

Toerien, D.F.; Seaman, M.T. 2010. *South African Journal of Science*. 2010; 106(5/6): 24-33, URL: http://www.sajs.co.za

Toerien, D.F.; Seaman, M.T. 2010. *South African Journal of Science*. 2010; 106(5/6): 24-33. http://www.sajs.co.za, URL: http://www.wireuk.org