## Full Length Research Article

# PREDICTING ENTERPRISE MANAGEMENT IN AGRIBUSINESS IN INDIA: AN ANALYSIS FROM A SCORE OF AGRO-ECONOMIC AND SOCIO-ECOLOGICAL VARIABLES

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## ABSTRACT

Any kind of enterprise across the world needs a clandestine management intervention. Agribusiness is the simmering character for Indian agriculture for which an interactive design is needed to organize the agribusiness factor production. In most cases farmer makes mistake in allocating resources, rationalizing cost structure and organizing farm operations with financial and managerial skills. This has led to generation of a market glut or plunging market price due to poor quality production. The present paper examines the agribusiness enterprise management as the resultant character to a score of 19 exogenous variables, responsible for elucidating management function and properties in a given enterprise ecology. Multivariate analysis was carried out to understand the complex nature of variable interaction and groupings. The following variables viz size of holding (x5), Market Interaction (x10) and Decision Matrix (x17) have been found to contribute substantially to uphold an effective agribusiness management.

## INTRODUCTION

Enterprise management in Indian agriculture needs a micro level participatory planning, especially in agriculture which is uncertain, vulnerable to risk and difficult to make generating monthly income. The transformation of crop cultivation into a farm entrepreneurship demands a faster and multi scaled intervention. Modern day farm business along with its social ecology needs a system vision in steering the entrepreneurship for dedicated productivity and endurable sustainability. 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, 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', stimulated our hypothesis that towns are 'enterprise

ecosystems'. This hypothesis cannot be tested directly (Toerien,D F; Seaman,-M-T, 2010). 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 and cultural environmental dimensions and points the way towards sustainable agricultural enterprises. The enterprise management is a process of planning, organizing, motivating and controlling, necessary for forming and achieving of the aims of organizations and these management functions should encompass all fields of enterprise activity and work payment (Klupsas,-F.,2006). Agribusiness in India 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. Agricultural cooperatives in the Czech Republic are currently in a crisis situation, brought about by numerous factors, including: an outdated production structure; high costs; low productivity; low flexibility; reduced sales of produce at unsatisfactory prices; supply outstripping demand; the distribution and marketing monopoly; shortage of capital; and lack of positive marketing and managerial measures (Novak, 1993). It is argued that the principles of enterprise

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management should include the following: orientation towards increasing effort in selling goods and winning a larger market share; orientations to long-term results; introduction of a corporate culture; using a policy of adaptation to demands of real and potential consumers; and ensuring personnel receive the necessary material benefits (Kovalev,-V-S ,2001).

## Objectives

- To predict Enterprise Management in Agribusiness.
- To present the conceptual domain of Enterprise Management in Agribusiness.
- To derive micro level policy implication as applicable to the research scale to performing better entrepreneurial ecology.

# MATERIALS AND METHODS

The deliberation on the methodology has been made to understand the concept, methods and techniques which were utilized to design the study, collection of information, analysis of the data and interpretation of the findings for revelation of truths and formulation of theories. This chapter deals with the method and a procedure used in the study and consists of eight main parts-

A. Locale of Research.
B. Pilot Study.
C. Sampling Design.
D. Empirical Measurement of the Variables.
E. Preparation of Interview Schedule.
F. Pre-testing of Interview Schedule.
G. Techniques of Data Collection.
H. Statistical Tools used for Analysis of Data.

## A. Locale of Research

Dumurdaha-Nityanandapur-I GP of the Balagarh block of Hooghly district in West Bengal was purposively selected for the study. The village namely Dadpur was selected by random sampling.

## B. Pilot Study

Before taking up actual fieldwork a pilot study was conducted to understand the area, its people, institution, communication and extension system and the knowledge, perception and attitude of the people towards climate change concept.

## C. Sampling Design

Purposive as well as simple random sampling techniques were adopted for the study. For selection of state, district, block and gram panchayat purposive sampling techniques was adopted because the area was ideal for climate change study, convenient for researcher and having the infrastructural facilities and in case of selection of villages and respondents simple random sampling technique was taken up.

## D. Empirical Measurement of the Variables

After reviewing various literature related to the field of study and consultation with the respected chairman of Advisory

Committee and other experts, a list of variables was prepared. On the basis of the selected variables, a schedule was formed.

## Sampling Technique and Sampling Design

| Step | Items | Level | Approach |
|---|---|---|---|
| 1 | State | West Bengal | Purposive |
| 2 | District | Hooghly | Purposive |
| 3 | Subdivision | Chinsurah | Purposive |
| 4 | Block | Balagarh | Purposive |
| 5 | Gram Panchayat | Dumurdaha-Nityanandapur - I | Purposive |
| 6 | Village | Dadpur | Random |
| 7 | Respondents | 50 | Random |
| Total No. of Respondents: 50 | | | |

### a. Independent Variables

| Sl. No. | Variables | Notation | Score |
|---|---|---|---|
| 1 | Age | $X_1$ | Chronological age |
| 2 | Education | $X_2$ | Year of Schooling |
| 3 | Family size | $X_3$ | Number of family members |
| 4 | Income | $X_4$ | Annual income/capita |
| 5 | Size of Holding | $X_5$ | Bigha |
| 6 | Operational Land | $X_6$ | Economic land/ x5 |
| 7 | Irrigation Index | $X_7$ | Real Value |
| 8 | Electric consumption | $X_8$ | Bill/month/capita |
| 9 | Fuel consumption | $X_9$ | Annual xep./capita |
| 10 | Market Interaction | $X_{10}$ | No of visit/ month |
| 11 | Group Interaction | $X_{11}$ | 1-10 scale |
| 12 | Distance Matrix | $X_{12}$ | Real value |
| 13 | Innovation Proneness | $X_{13}$ | 1-10 scale |
| 14 | Orientation Towards competition | $X_{14}$ | 1-10 scale |
| 15 | Planning Orientation | $X_{15}$ | 1-10 scale |
| 16 | Marketing Orientation | $X_{16}$ | 1-10 scale |
| 17 | Decision Matrix | $X_{17}$ | 1-10 scale |
| 18 | Idea Exchange Index | $X_{18}$ | 1-10 scale |
| 19 | Risk Orientation | $X_{19}$ | 1-10scale |

# RESULTS AND DISCUSSION

Table 1 presents the correlation coefficient between Enterprise Management (y)and 19 independent variables i.e. x1 to x19.

## Result

One variable have been found significant at 1% level of significance and this is Decision Matrix (x17).

## Revelation

For enterprise management one needs to take right decision at right time, which will ultimately promote Enterprise Management process. That is why this variable has been found significant in on Enterprise Management.

**Table 1. Coefficient of correlation (r) between Enterprise Management (y) and 19 independent variables (x1-x19)**

| Variables | r value | Remarks |
|---|---|---|
| Age (x1) | -0.107 | |
| Education (x2) | 0.196 | |
| Family size (x3) | 0.069 | |
| income (x4) | -0.087 | |
| Size of Holding (x5) | 0.244 | |
| Operational land (x6) | 0.014 | |
| Irrigation Index (x7) | 0.014 | |
| Electric consumption (x8) | -0.002 | |
| Fuel consumption (x9) | -0.038 | |
| Market Interaction (x10) | 0.237 | |
| Group Interaction (x11) | 0.001 | |
| Distance Matrix (x12) | 0.045 | |
| Innovation Proneness (x13) | 0.077 | |
| Orientation Towards competition (x14) | -0.051 | |
| Planning Orientation (x15) | -0.1 | |
| Marketing Orientation (x16) | 0.02 | |
| Decision Matrix (x17) | 0.365 | ** |
| Idea Exchange Index (x18) | 0.114 | |
| Risk Orientation (x19) | 0.077 | |

Note: ** = Significant at 0.01 level of probability
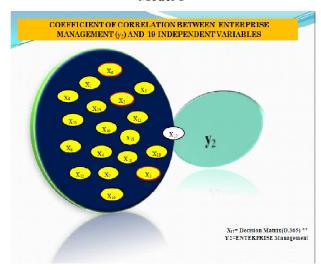      * = Significant at 0.05 level of probability

**Model 1**



**Table 2. Regression Analysis of Enterprise Management (y) and 19 causal variables (x1-x19)**

| Variables | Beta | Beta x R (%) | Reg. Cof.B | S. error | t value |
|---|---|---|---|---|---|
| Age (x1) | 0.0300 | -0.723 | 0.002 | 0.015 | 0.142 |
| Education (x2) | 0.3270 | 14.31 | 0.09 | 0.052 | 1.749 |
| Family size (x3) | 0.4650 | 7.149 | 0.205 | 0.177 | 1.159 |
| income (x4) | -0.1850 | 3.59 | 0 | 0 | 0.814 |
| Size of Holding (x5) | 0.4080 | 22.258 | 0.11 | 0.051 | 2.169 |
| Operational land (x6) | 0.0090 | 0.029 | 0.067 | 8408.672 | 0 |
| Irrigation Index (x7) | 0.5720 | 1.853 | 4.327 | 8408.672 | 0.001 |
| Electric consumption (x8) | -0.0060 | 0.004 | 0 | 0.003 | 0.036 |
| Fuel consumption (x9) | -0.0400 | 0.341 | 0 | 0 | 0.175 |
| Market Interaction (x10) | 0.2580 | 13.68 | 0.032 | 0.026 | 1.203 |
| Group Interaction | 0.1120 | 0.022 | 0.054 | 0.097 | 0.553 |
| (x11) | | | | | |
| Distance Matrix (x12) | 0.0290 | 0.287 | 0.037 | 0.225 | 0.163 |
| Innovation Proneness (x13) | 0.0280 | 0.477 | 0.038 | 0.281 | 0.136 |
| Orientation Towards competition (x14) | 0.3610 | -4.149 | 0.319 | 0.234 | 1.362 |
| Planning Orientation (x15) | 0.2180 | -4.897 | 0.127 | 0.183 | 0.691 |
| Marketing Orientation (x16) | -0.0480 | -0.212 | -0.059 | 0.298 | 0.197 |
| Decision Matrix (x17) | 0.5680 | 46.284 | 0.856 | 0.361 | 2.371 |
| Idea Exchange Index (x18) | -0.0260 | -0.672 | -0.056 | 0.373 | 0.149 |
| Risk Orientation (x19) | 0.0210 | 0.368 | 0.031 | 0.241 | 0.126 |

Multiple R2 = 0.4476, Multiple R = 0.669, Adjusted R2 = 0.0977, F value for R= 1.28 with 19 and 30 DFS

Table 2 presents the Regression Analysis to estimate the causal effect of 19 independent variables on the consequent variable y i.e. Enterprise Management.

## Result

It has been found that the variables, Size of holding (x5), Market Interaction (x10) and Decision Matrix (x17) have made subsequent contribution to Enterprise Management (y2). The contributions are 22.25%, 13.68% and 46.287% respectively.

## Revelation

For Enterprise Management one needs to have a survey on market behavior, market intelligence and consumer behavior. To manage an enterprise one should take right decision at right time. That is why the variables Size of Holding (x5), Market Interaction (x10) and Decision Matrix (x17) have been found to have causal impact on enterprise creation. The $R^2$ value being 0.4476, it is to infer that 44.76% variance embedded with the consequent variable i.e. enterprise management could have been explained with these 19 causal variables.

These suggest that more no of variables should be included.

| Variable | β | t |
|---|---|---|
| X2 | 0.280 | 2.110 |
| X5 | 0.339 | 2.578 |
| x10 | 0.256 | 2.093 |
| X14 | 0.371 | 2.425 |
| X17 | 0.509 | 3.679 |

| Variable | $R^2$ | R |
|---|---|---|
| X2, x5, x10, x14, x17 | 0.3649 | 0.6041 |

## Results

The step down regression analysis (forward) has retained five prominent causal variables i.e. Age (x4), Size of Holding (x5), Market Interaction (x10), Orientation towards Competition (x14) and Planning Orientation (x17) at the last step. So, these variables have got substantive strategic and operational impact on Enterprise Management (y).

## Revelation

The step down regression presents that at last step of step down analysis five variables. Only these five variables have been retained at the last stage of Step-down Regression Analysis which have contributed of 36.49 percent to the total $R^2$ value i.e., to say that these five causal variables deserve to earn a special attention while we intend to make a serious intervention in the domain of Enterprise Management.

## Model 3

Step Down Regression Analysis between Enterprise Management (y) Vs 19 Variable



**Table 3. Path Analysis: Direct, Indirect and Residual effect; Enterprise Management (y) Vs 19 Exogenous Variables (x1 to x19)**

| Sl no | Variables | Total Effect (r) | Total Direct Effect (TDE) | Total Indirect Effect (TIE)=r-DE | Highest Indirect Effect |
|---|---|---|---|---|---|
| 1 | Age (x1) | -0.107 | 0.0301 | -0.1371 | -0.1813 (x17) |
| 2 | Education (x2) | 0.196 | 0.3274 | -0.1314 | -0.1286 (x14) |
| 3 | Family size (x3) | 0.069 | 0.4645 | -0.3955 | -0.5124 (x7) |
| 4 | income (x4) | -0.087 | -0.1854 | 0.0984 | 0.1767 (x14) |
| 5 | Size of Holding (x5) | 0.244 | 0.4076 | -0.1636 | 0.1447 (x3) |
| 6 | Operational land (x6) | 0.014 | 0.000 | 0.014 | 0.5607 (x7) |
| 7 | Irrigation Index (x7) | 0.014 | 0.5607 | -0.5467 | -0.4245 (x3) |
| 8 | Electric consumption (x8) | -0.002 | -0.0064 | 0.0044 | 0.0873 (x17) |
| 9 | Fuel consumption (x9) | -0.038 | -0.0398 | 0.0018 | -0.1160 (x2) |
| 10 | Market Interaction (x10) | 0.237 | 0.2578 | -0.0208 | -0.0655 (x5) |
| 11 | Group Interaction (x11) | 0.001 | 0.1119 | -0.1109 | -0.1668 (x17) |
| 12 | Distance Matrix (x12) | 0.045 | 0.0287 | 0.0163 | 0.1063 (x17) |
| 13 | Innovation Proneness (x13) | 0.077 | 0.0278 | 0.0492 | 0.1417 (x14) |
| 14 | Orientation Towards competition (x14) | -0.051 | 0.3606 | -0.4116 | -0.2460 (x17) |
| 15 | Planning Orientation (x15) | -0.1 | 0.2182 | -0.3182 | 0.2639 (x14) |
| 16 | Marketing Orientation (x16) | 0.02 | -0.0479 | 0.0679 | 0.1470 (x14) |
| 17 | Decision Matrix (x17) | 0.365 | 0.5682 | -0.2032 | -0.1561 (x14) |
| 18 | Idea Exchange Index (x18) | 0.114 | -0.0263 | 0.1403 | 0.1048 (x2) |
| 19 | Risk Orientation (x19) | 0.077 | 0.0215 | 0.0555 | 0.973 (x5) |

Residual Effect = 0.5527

Table 3 presents the path analysis where in the total effects of exogenous variables decomposed into Total Direct, Total Indirect and Residual Effects. It has been found that the decision matrix (x17) has exerted the highest Total Direct Effect on Enterprise Management. It is simply because, for any enterprise management, right decision is to be taken at right time. The other variables idea exchange index (x18) have exerted the highest Total Indirect Effect to elucidate that idea exchange index has got tremendous associative impact on Enterprise Management. The same table also elucidates that variable Orientation towards Competition (x14) has rooted the highest number of indirect effects i.e. six times on enterprise

management. This indicates that for enterprise management, competitiveness and decision making ability have got highest structural contribution for its much needed success. The Residual Effect is being 0.5527; it is to infer that a huge portion of variance in the consequent variables (55.27%) could not be explained. Enterprise Ecology being a very complex structure and concept, more number of variables, if included, could have explained higher level of variance. In the present study 19 numbers of variables have been reduced to 7 numbers of factors based on extraction of the receptive factor loading values. The table has also depicted the number of factors; the variable included in the receptive factors, the variables explained the common variables and the factor loading. Thus the **Factor 1** has following variables *i.e.* Age (X1), Income(X4), Fuel Consumption (X9), Group Interaction (X11), Innovation Proneness(X13), Orientation towards competition(X14), Planning Orientation(x15) and Market Interaction(x16) which has contributed 22.004% of variance and has been renamed as Resource Motivation. The **Factor 2** has following variables *i.e.* operational land (X6) and Irrigation Index (X7) which has contributed 16.453% of variance and has been renamed as Agro-Economy.
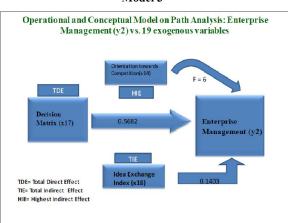
**Model 3**



**Table 4. Factor analysis for clubbing of variables into factor based on factor loading [Rotated Component Matrix, Including Enterprise Management (Y)]**

| Factors | Variables Accounted | Factor loading | % of variance | Cumulative % | Factor rename |
|---|---|---|---|---|---|
| Factor 1 | • Age (X₁)<br>• Income(X₄)<br>• Fuel Consumption (X₉)<br>• Group Interaction (X₁₁)<br>• Innovation Proneness(X₁₃)<br>• Orientation towards competition(x14)<br>• Planning Orientation(x15)<br>• Market Interaction(x16) | 0.517<br>0.638<br>0.563<br>0.461<br>0.585<br>0.849<br>0.902<br>0.512 | 22.004 | 22.004 | Resource Motivation |
| Factor 2 | • Operational land (X₆)<br>• Irrigation Index (X₇) | 0.977<br>0.977 | 16.453 | 38.456 | Agro-economy |
| Factor 3 | • Distance Matrix(X₁₂)<br>• Risk Orientation(X₁₉) | 0.558<br>0.590 | 8.957 | 47.413 | Strategic Location |
| Factor 4 | • Market Interaction(X₁₀)<br>• Electric consumption (X₈) | 0.410<br>0.770 | 8.393 | 55.806 | Entrepreneurial Modernization |
| Factor 5 | • Education(X₂)<br>• Idea Exchange Index (X₁₈) | 0.312<br>0.419 | 8.064 | 63.870 | Entrepreneurial Concept |
| Factor 6 | • Family Size (x₃)<br>• Decision Matrix(X₁₇) | 0.113<br>0.589 | 6.973 | 70.843 | Entrepreneurial Decision |
| Factor 7 | • Size of Holding (x₅) | 0.574 | 5.451 | 76.294 | Size of Holding |

Thus the **Factor 3** has following variables *i.e.* Distance Matrix(X12) and Risk Orientation(X19) which has contributed 8.957% of variance and has been renamed as Strategic Location. Thus the **Factor 4** has following variables *i.e.* Distance Matrix(X12) and Risk Orientation(X19) which has contributed 8.393% of variance and has been renamed as Strategic Location. Thus the **Factor 5** has following variables *i.e.* Education(X2) and Idea Exchange Index (X18) which has contributed 8.064% of variance and has been renamed as Enterprising Concept. Thus the **Factor 6** has following variables *i.e.* Family Size (x3) and Decision Matrix(x17) which has contributed 6.973% of variance and has been renamed as Entrepreneurial Decision. The **Factor 7** has only one variable *i.e.* Size of Holding (x5) which has contributed 5.451% of variance and has been left unchanged as Size of holding.

## Conclusion

Enterprise Ecology has got a systematic vision which keeps some weeding out and weeding in 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 Management (Y) has formed up a complex entrepreneurial status within which respondent have make their behavioral disposition to act and manage an enterprise and there from to pro-create a new enterprise. From correlation coefficient table, the variable Decision Matrix $(X_{17})$ has been found in creating predominant influence on Enterprise Management. So, for enterprise management one needs to take right decision at right time, which will ultimately promote Enterprise Management process  From Regression analysis, the variables Size of holding $(X_5)$, Market Interaction $(X_{10})$ and Decision Matrix $(X_{17})$ have made subsequent contribution to Enterprise Management. From Path analysis, It has been found that the decision matrix (x17) has exerted the highest Total Direct Effect on Enterprise Management. It is simply because, for any enterprise management, right decision is to be taken at right time. The other variables idea exchange index (x18) have exerted the highest Total Indirect Effect to elucidate that idea exchange index has got tremendous associative impact on Enterprise Management. So, 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.

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