

Chapter-5

Empirical Study: The Results and Discussion

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This chapter deals with the results of the study or investigation discussed about it. At the end of this chapter, interpretation has been made, explanation has been tried to put down the inquiries and an attempt has been done to reveal the cause behind it.

Table 9: Distribution of variables in terms of Mean, Standard Deviation and Coefficient of Variance

Independent Variables	Mean	Std. deviation	CV
Age (X1)	48.22	10.637	22.05931
Education (X2)	9.40	2.733	29.07447
Family Size (X3)	4.26	1.712	40.18779
Income (X4)	26558	9515.446	35.82893
Size Of Holding (X5)	5.63	2.805	49.82238
Operational land (X6)	0.268	0.0999	37.27612
Irrigation Index (X7)	0.268	0.0999	37.27612
Electric Consumption (X8)	78.71	51.425	65.33477
Fuel Consumption (X9)	2816.75	752.832	26.72697
Market Interaction (X10)	12.70	6.159	48.49606
Group Interaction (X11)	5.90	1.575	26.69492
Distance Matrix (X12)	3.05	0.590	19.34426
Innovation Proneness (X13)	6.8670	0.54979	8.006262

Orientation Towards Competition (X14)	6.5650	0.85369	13.00366
Planning Orientation (X15)	5.6592	1.30201	23.00696
Marketing Orientation (X16)	6.70	0.616	9.19403
Decision Matrix (X17)	2.38	0.501	21.05042
Idea Exchange Index (X18)	2.7404	0.35738	13.04116
Risk Orientation (X19)	7.42	0.531	7.156334

Table 9 presents the distribution of 15 independent variables in terms of their **Mean, Standard Deviation** and **Co-efficient of Variation**.

The mean age of the respondents was about 48.22 years exhibiting a standard deviation of 10.637 and Co-efficient of variation was 22.059. The variables education and family size was recorded with mean values 9.40 & 4.26 with standard deviations 2.733 & 1.712 and Co-efficient of variations 29.07 & 40.18 respectively. The variables income and size of holding were measured with mean values 26558 & 5.63 exhibiting standard deviations 9515.446 & 2.805 and Coefficient of variations 35.82 & 49.82 respectively. The mean value of operational land and irrigation index was recorded as 0.268 exhibiting a standard deviation of 0.099 and co-efficient of variation of 37.27 each. The variable electric consumption recorded the mean value of 78.71 with the standard deviation of 51.425 and the co-efficient of variation of 65.3347. The independent variables market interaction and group interaction showed the mean values of 12.70 and 5.90 with std. deviation 6.159, 1.575 having coefficient of variance value 48.49 and 26.69 respectively. Distance matrix had the mean value of 3.05 exhibiting standard deviation of 0.590 with the co-efficient of variation of 19.344. The variables innovation proneness, orientation towards competition and planning orientation showed the mean values of 6.86, 6.56 & 5.65 with

exhibiting the standard deviations of 0.549, 0.853 & 1.302 and the coefficient of variations of 8.00, 13.00, and 23.00 respectively. The variables marketing orientation and decision matrix has shown the mean value 6.70, 2.38 and std. dev. value 0.616 and 0.501 with CV value 13.4 and 7.15 respectively. Lastly the variables idea exchange index and risk orientation have shown mean value 2.74, 7.42 with std. dev. value 0.357, 0.531 and CV value 13.04 and 7.15 respectively.

Coefficient of correlation

Table 10: Coefficient of correlation (r) between Enterprise Creation (y1) and 19 independent variables (x1-x19)

Variables	r value	Remarks
Age (x1)	-0.1500	
Education (x2)	-0.0368	
Family size (x3)	0.0105	
income (x4)	-0.0162	
Size of Holding (x5)	-0.0195	
Operational land (x6)	0.0112	
Irrigation Index (x7)	0.0112	
Electric consumption (x8)	0.1245	
Fuel consumption (x9)	0.1519	
Market Interaction (x10)	0.2079	*
Group Interaction (x11)	0.2399	*
Distance Matrix (x12)	-0.1120	
Innovation Proneness (x13)	0.1095	
Orientation Towards competition (x14)	0.1370	
Planning Orientation (x15)	0.1623	
Marketing Orientation (x16)	0.1023	
Decision Matrix (x17)	0.0058	
Idea Exchange Index (x18)	0.0340	
Risk Orientation (x19)	-0.0476	

Note: ** = Significant at 0.01 level of probability

* = Significant at 0.05 level of probability

Table 10 presents correlation coefficient between y1 and 19 independent variables i.e. x1 to x19.

Result: Two variables have been found significant at 5% level of significance and these are Market Interaction (x10) and Group Interaction (x11).

Revelation: For enterprise creation, it needs to have lots of market and group interaction which will ultimately promote the Enterprise Creation process. That is why these two variables have been found in creating predominant influence on Enterprise Creation.

Table 11: Coefficient of correlation (r) between Enterprise Management (y2) 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	

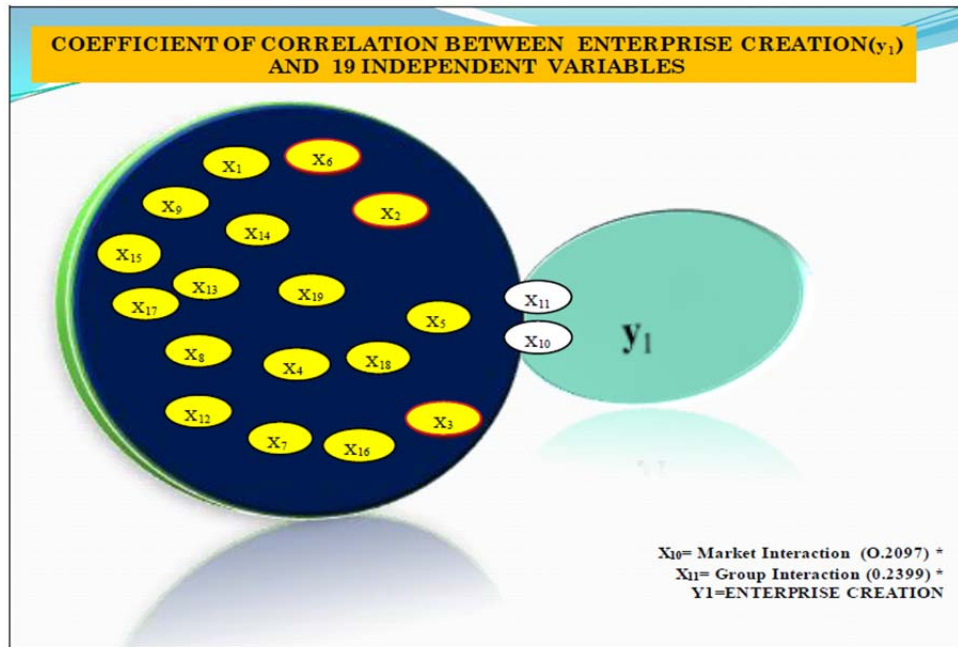
Note: ** = Significant at 0.01 level of probability

* = Significant at 0.05 level of probability

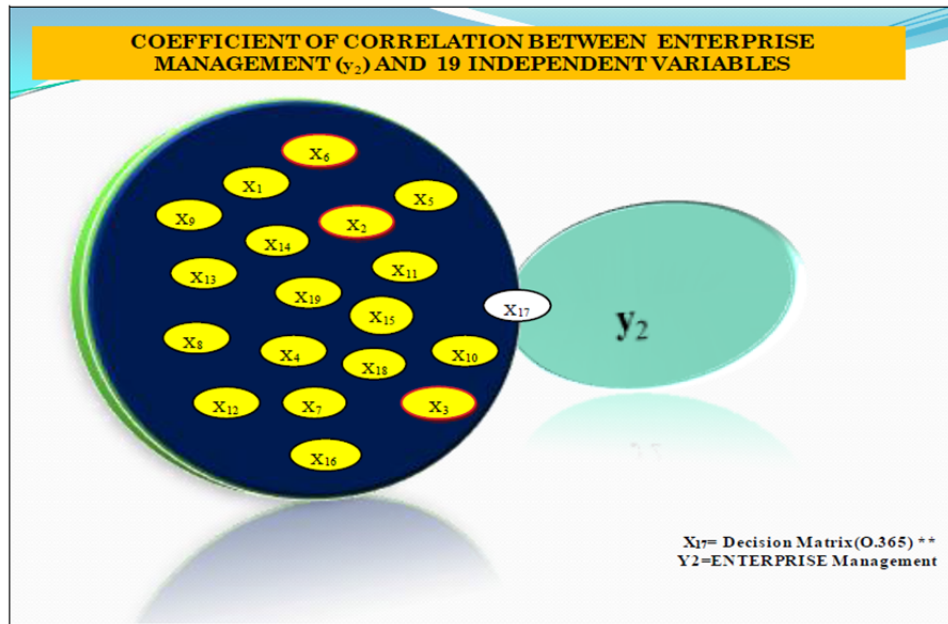
Table 11 presents correlation coefficient between y_2 and 19 independent variables i.e. x_1 to x_{19} .

Result: One variable have been found significant at 1% level of significance and this is Decision Matrix (x_{17}).

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.



Model 1

**Model 2**

Variables	r value	Remarks
Age (x1)	0.403	**
Education (x2)	-0.049	
Family size (x3)	0.383	**
income (x4)	-0.053	
Size of Holding (x5)	0.247	
Operational land (x6)	-0.346	*
Irrigation Index (x7)	-0.346	*
Electric consumption (x8)	-0.196	
Fuel consumption (x9)	-0.11	
Market Interaction (x10)	0.021	
Group Interaction (x11)	0.021	
Distance Matrix (x12)	-0.062	
Innovation Proneness (x13)	-0.025	
Orientation Towards competition (x14)	0.016	
Planning Orientation (x15)	0.176	
Marketing Orientation (x16)	-0.084	

Decision Matrix (x17)	-0.317	*
Idea Exchange Index (x18)	0.005	
Risk Orientation (x19)	-0.047	

Note: ** = Significant at 0.01 level of probability

* = Significant at 0.05 level of probability

Table 12 presents correlation coefficient between y3 and 19 independent variables i.e. x1 to x19.

Result: Five variables have been found significant i.e. these are Age (x1), Family size (x3) at 1% level and Operational Land (x6), Irrigation Index (x7) and Decision matrix (x17) at 5% level of significance.

Revelation: For adoption of a new enterprise it needs lots of experiences and knowledge regarding the cropping practices followed by most of the farmers. An age oldfarmer gathers lots of knowledge about enterprises. On the basis of this knowledge he adopts a new enterprise which will favorable to him. Family size is also an important factor to adopt a new enterprise. For fulfilment of family needs one have to adopt some additional enterprises to sustain the family, both economically and socially.

Operational land i.e. land under economic activity, is an important factor for adoption of a new enterprise. When a farmer has more operational land, he can go for adoption of additional as well as diverse enterprises in his farming activity.

Thus irrigation index is also an important factor. When someone has more irrigation facility tunes to his field then he can adopt more number of enterprises in his field.

Decision matrix is another important factor. That triggers and stimulates the process of selecting right enterprise adoption leading to a right path of socialization.

Table 13: Coefficient Of Correlation (R) Between Perceived Environmental Effect (y4) and 19 Independent Variables (X1-X19)

Variables	r value	Remarks
Age (x1)	0.081	
Education (x2)	-0.219	
Family size (x3)	0.238	
income (x4)	0.17	
Size of Holding (x5)	0.076	
Operational land (x6)	-0.24	
Irrigation Index (x7)	-0.24	
Electric consumption (x8)	0.052	
Fuel consumption (x9)	0.212	
Market Interaction (x10)	0.021	
Group Interaction (x11)	-0.188	
Distance Matrix (x12)	-0.115	
Innovation Proneness (x13)	0.102	
Orientation Towards competition (x14)	0.243	
Planning Orientation (x15)	0.232	
Marketing Orientation (x16)	-0.002	
Decision Matrix (x17)	-0.103	
Idea Exchange Index (x18)	-0.099	
Risk Orientation (x19)	0.002	

Note: ** = Significant at 0.01 level of probability

* = Significant at 0.05 level of probability

Table 13 presents correlation coefficient between y4 and 19 independent variables i.e. x1 to x19.

Result: Since none of the variables has been found significant at 1% or 5% level of significance, one variable i.e. Orientation towards Competition (x14) has recorded near significant influence on perceived Environmental Effect.

Revelation: Orientation towards Competition leads to greater Perceived Environmental Effect of an enterprise. Due to competitive attitudes

entrepreneur introduce ecological imbalances leading to entrepreneurial disruption ultimately. To play dominantly in the market, some producers use pesticides, hormones which lead to ecological imbalances for the entire enterprise ecology.

Table 14: Coefficient of correlation (r) between Enterprise Ecology (Y) and 19 independent variables (x1-x19)

Variables	r value	Remarks
Age (x1)	0.122	
Education (x2)	-0.007	
Family size (x3)	-0.202	
income (x4)	0.072	
Size of Holding (x5)	-0.275	
Operational land (x6)	0.184	
Irrigation Index (x7)	0.184	
Electric consumption (x8)	-0.034	
Fuel consumption (x9)	0.264	
Market Interaction (x10)	0.282	*
Group Interaction (x11)	0.294	*
Distance Matrix (x12)	-0.127	
Innovation Proneness (x13)	0.356	*
Orientation Towards competition (x14)	0.403	**
Planning Orientation (x15)	0.234	
Marketing Orientation (x16)	-0.016	
Decision Matrix (x17)	-0.21	
Idea Exchange Index (x18)	0.113	
Risk Orientation (x19)	-0.183	

Note: ** = Significant at 0.01 level of probability

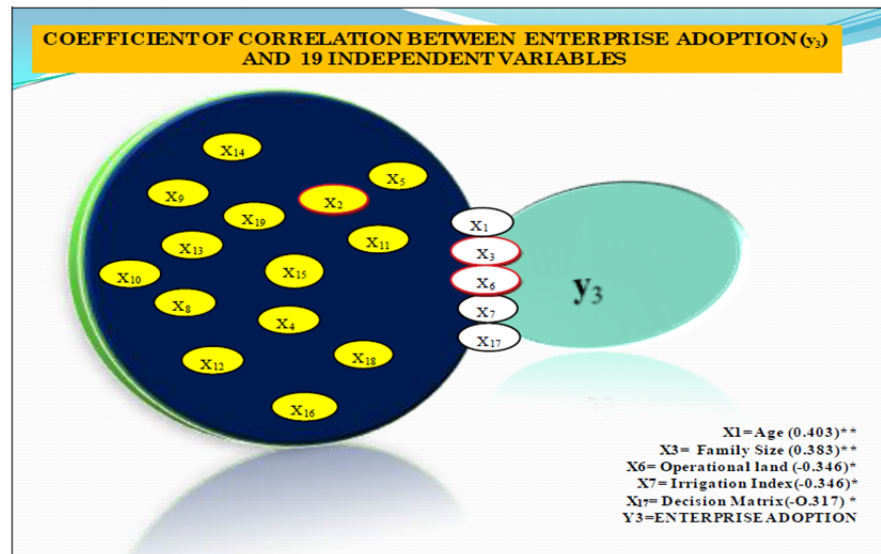
* = Significant at 0.05 level of probability

Table 14 presents correlation coefficient between Y and 19 independent variables i.e. x1 to x19.

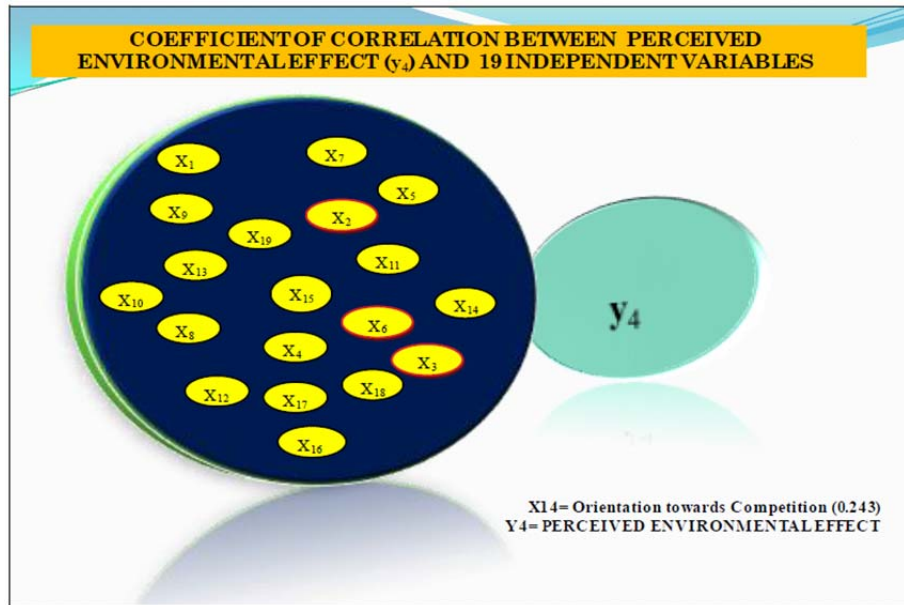
Result: Three variables have been found significant at 5% level of significance and these are Market Interaction (x10) and Group Interaction

(x11), Innovation Proneness (13) and one variable i.e. Orientation towards competition (x14) have been found significance at 1% level of significance.

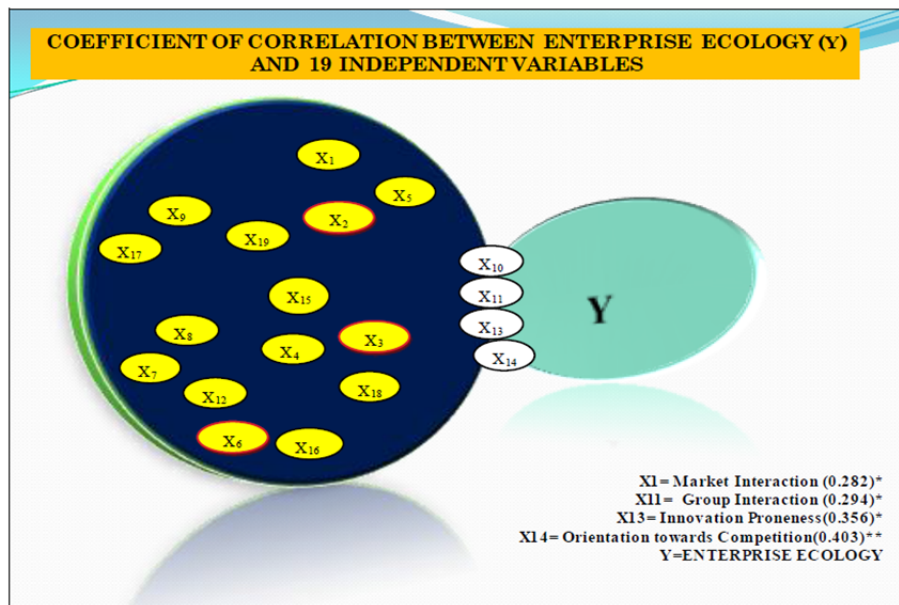
Revelation: For enterprise creation market and group interaction are immensely important to ultimately promote Enterprise ecology process. Innovation Proneness is also important for enterprise ecology since it is the prime mover in Thought process leads to enterprise selection and management. By the new innovations one should move from one enterprise to another. Competitiveness is also important to keep an enterprise in dynamic form. That is why these variables have been found significant in creating predominant influence on Enterprise Ecology.



Model 3



Model 4



Model 5

REGRESSION ANALYSIS**Table 15: Regression analysis of Enterprise Creation (y1) and 19 causal variables (x1-x19)**

Variables	Beta	Beta x R (%)	Reg. Cof.B	S. error	t value
Age (x1)	0.0000	0.001	0	0.02	0.001
Education (x2)	0.0840	-1.663	0.026	0.07	0.372
Family size (x3)	0.0820	0.464	0.04	0.239	0.17
income (x4)	-0.3010	2.6	0	0	1.089
Size of Holding (x5)	0.1700	-1.774	0.051	0.068	0.745
Operational land (x6)	-0.0030	-0.016	-0.022	11344.665	0
Irrigation Index (x7)	0.2450	1.466	2.064	11344.665	0
Electric consumption (x8)	0.1630	10.835	0.003	0.003	0.761
Fuel consumption (x9)	0.0400	3.27	0	0	0.146
Market Interaction (x10)	0.2330	25.895	0.032	0.035	0.896
Group Interaction (x11)	0.1910	24.512	0.102	0.131	0.778
Distance Matrix (x12)	-0.0500	2.998	-0.071	0.304	0.234
Innovation Proneness (x13)	-0.0910	-5.299	-0.138	0.379	0.365
Orientation Towards competition (x14)	0.1710	12.502	0.168	0.316	0.531
Planning Orientation (x15)	0.2730	23.672	0.176	0.247	0.712
Marketing Orientation (x16)	0.0290	1.606	0.04	0.403	0.099

Decision Matrix (x17)	0.1410	0.436	0.236	0.487	0.484
Idea Exchange Index (x18)	-0.0540	-0.987	-0.128	0.503	0.254
Risk Orientation (x19)	0.0200	-0.521	0.032	0.326	0.099

Multiple R² = 0.1870, Multiple R = 0.4325, Adjusted R² = -0.3279, F value for R= 0.36 with 19 and 30 DFS

Table 15 present the Regression Analysis to estimate the causal effect of 19 independent variables on the consequent variable y1 i.e. Enterprise Creation.

Result: It has been found that the variables Market Interaction (x10), Group Interaction (x11) and Planning Orientation (x12) have made subsequent percentile contribution to Enterprise Creation (y1). The contribution are 25.89%, 24.5% and 23.67% respectively.

Revelation: For Enterprise Creation one needs to have a survey on market behavior, market intelligence and consumer behavior. All these market data need to be discussed with enterprise members and to be thrown into decision making process. That is why the variables x10, x11 and x15 have been found to have causal impact on enterprise creation.

The R² value being 0.1870, it is to infer that 18.70% variance embedded with the consequent variable i.e. enterprise creation could have been explained with these 19 causal variables.

These suggest that more no of variables should be included.

Variable	β	t
X11	0.240	1.712
Variable	R ²	R
X11	0.0576	0.2399

Results: The step down regression analysis (forward) has retained one prominent causal variable i.e. Group Interaction (x_{11}) at the last step. So, this variable has got substantive strategic and operational impact on Enterprise Creation (y_1).

Revelation: The step down regression presents that at last step of step down analysis one variables. Only Group Interaction (x_{11}) has been retained at the last stage of Step-down Regression Analysis which have contributed of 5.76 percent to the total R^2 value i.e., to say that Group Interaction deserves to earn a special attention while we intend to make a serious intervention in the domain of Enterprise Creation.

Table 16: Regression Analysis of Enterprise Management (y_2) and 19 causal variables (x_1 - x_{19})

Variables	Beta	Beta x R (%)	Reg. Cof.B	S. error	t value
Age (x_1)	0.0300	-0.723	0.002	0.015	0.142
Education (x_2)	0.3270	14.31	0.09	0.052	1.749
Family size (x_3)	0.4650	7.149	0.205	0.177	1.159
income (x_4)	-0.1850	3.59	0	0	0.814
Size of Holding (x_5)	0.4080	22.258	0.11	0.051	2.169
Operational land (x_6)	0.0090	0.029	0.067	8408.672	0
Irrigation Index (x_7)	0.5720	1.853	4.327	8408.672	0.001
Electric consumption (x_8)	-0.0060	0.004	0	0.003	0.036
Fuel consumption (x_9)	-0.0400	0.341	0	0	0.175
Market Interaction (x_{10})	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 16 represent the Regression Analysis to estimate the causal effect of 19 independent variables on the consequent variable y₂ 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 R² 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.

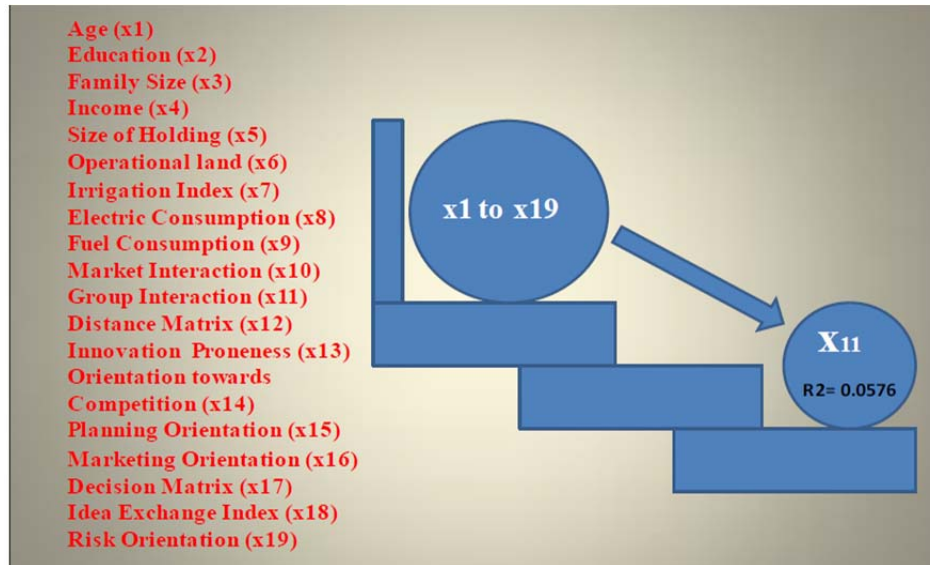
These suggest that more no of variables should be included.

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

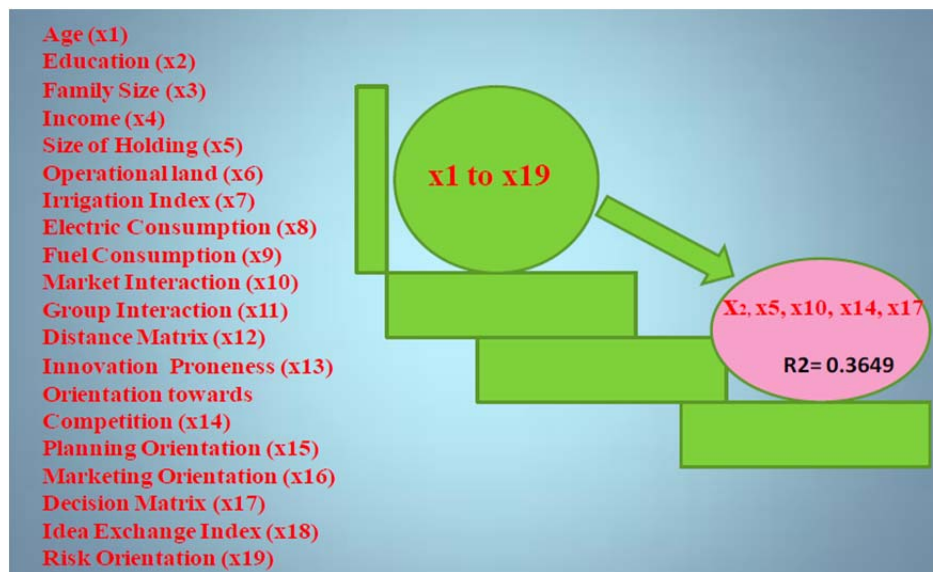
Variable	R ²	R
X2, x5, x10, x14, x17	0.3649	0.6041

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 (y2).

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 R² 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 6: Step Down Regression Analysis between Enterprise Creation (y₁) Vs 19 Causal Variables



Model 7: Step Down Regression Analysis between Enterprise Management (y₂) Vs 19 Causal Variables

Table 17: Regression Analysis of Enterprise Adoption (y3) and 19 causal variables (x1-x19)

Variables	Beta	Beta x R (%)	Reg. Cof.B	S. error	t value
Age (x1)	0.5680	87.645	0.032	0.014	2.322
Education (x2)	0.0050	-0.102	0.001	0.047	0.025
Family size (x3)	0.1550	22.689	0.054	0.161	0.334
income (x4)	-0.3440	6.936	0	0	1.305
Size of Holding (x5)	0.2810	26.528	0.06	0.046	1.293
Operational land (x6)	0.5500	-72.717	3.274	7661.784	0
Irrigation Index (x7)	0.3090	-40.924	1.842	7661.784	0
Electric consumption (x8)	-0.1160	8.658	-0.001	0.002	0.567
Fuel consumption (x9)	-0.1540	6.455	0	0	0.583
Market Interaction (x10)	-0.1160	-0.94	-0.011	0.024	0.468
Group Interaction (x11)	0.1090	0.861	0.041	0.088	0.467
Distance Matrix (x12)	0.1770	-4.196	0.179	0.205	0.87
Innovation Proneness (x13)	-0.1480	1.434	-0.16	0.256	0.625
Orientation Towards competition (x14)	-0.1570	-0.952	-0.109	0.213	0.513
Planning Orientation (x15)	0.7490	50.552	0.342	0.167	2.051
Marketing Orientation (x16)	-0.3870	12.418	-0.373	0.272	1.372
Decision Matrix (x17)	0.0510	-6.225	0.061	0.329	0.185

Idea Exchange Index (x18)	0.0650	0.113	0.108	0.339	0.318
Risk Orientation (x19)	-0.0990	1.771	-0.11	0.22	0.502

Multiple $R_2 = 0.2614$, Multiple $R = 0.5112$, Adjusted $R_2 = -0.2064$, F value for $R = 0.56$ with 19 and 30 DFS

Table 17 represent the Regression Analysis to estimate the causal effect of 19 independent variables on the consequent variable y3 i.e. Enterprise Adoption.

Result: It has been found that the variables Age (x1), Size of holding (x5) and Planning Orientation (x15) have made subsequent contribution to Enterprise Adoption (y3). The contributions are 87.645%, 26.528% and 50.552% respectively.

Revelation: Age has contributed substantially on the adoption of crop enterprise. So chronological age has got both motivational and experiential bearing on the process of enterprise socialization.

The second place is occupied by Planning Orientation (x15), it is to elaborate that for any kind of adoption, better planning is an essential ingredient.

The third variable having substantial impact on Enterprise Adoption is size of holding. So size of holding as resource endowment, has got tremendous causal impact to ensure higher degree of adoption.

The R_2 value being 0.2614, it is to infer that 26.14% variance embedded with the consequent variable i.e. enterprise adoption could have been explained with these 19 causal variables. These suggest that more no of variables should be included.

Variable	β	t
X1	0.533	4.159
X4	-0.445	3.011
X5	0.393	3.254
X15	0.359	2.461

Variable	R2	R
X1, x4, x5, x15	0.3984	0.6312

Results: The step down regression analysis (forward) has retained four prominent causal variables i.e. Age (x₁), Income (x₄), Size of holding (x₅) and Planning Orientation (x₁₅) at the last step. So, these variables have got substantive strategic and operational impact on Enterprise Adoption (y₃).

Revelation: The step down regression presents that at last step of step don analysis two variables. Only these four causal variables have been retained at the last stage of Step-down Regression Analysis which have contributed of 39.84 percent to the total R₂ value i.e., to say that Age (x₁), Income (x₄), Size of holding (x₅) and Planning Orientation (x₁₅) deserve to earn a special attention while we intend to make a serious intervention in the domain of Enterprise Adoption (y₃).

Table 18: Regression Analysis of Perceived Environmental Effect (y₄) and 19 causal variables (x₁-x₁₉)

Variables	Beta	Beta x R (%)	Reg. Cof.B	S. error	t value
Age (x ₁)	-0.1990	-5.653	-0.011	0.014	0.827
Education (x ₂)	-0.1990	15.337	-0.044	0.048	0.934
Family size (x ₃)	0.1060	8.919	0.038	0.163	0.233
income (x ₄)	0.2240	13.453	0	0	0.865
Size of Holding (x ₅)	0.0820	2.194	0.018	0.047	0.382

Result and Discussion

Operational land (x6)	-0.2990	25.318	-1.824	7733.23	0
Irrigation Index (x7)	0.1490	-12.631	0.91	7733.229	0
Electric consumption (x8)	0.3300	0.61	0	0.002	0.165
Fuel consumption (x9)	0.1160	8.7	0	0	0.448
Market Interaction (x10)	0.1950	1.474	0.019	0.024	0.801
Group Interaction (x11)	-0.4160	27.592	-0.161	0.089	1.803
Distance Matrix (x12)	0.0250	-1.017	0.026	0.207	0.125
Innovation Proneness (x13)	-0.0990	-3.572	-0.11	0.258	0.426
Orientation Towards competition (x14)	0.0820	7.016	0.059	0.215	0.272
Planning Orientation (x15)	0.1070	8.708	0.05	0.169	0.297
Marketing Orientation (x16)	0.0530	-0.04	0.053	0.275	0.193
Decision Matrix (x17)	-0.1410	5.092	-0.171	0.332	0.515
Idea Exchange Index (x18)	0.0430	-1.506	0.074	0.343	0.215
Risk Orientation (x19)	0.0100	0.007	0.011	0.222	0.049

Multiple $R_2 = 0.2837$, Multiple $R = 0.5327$, Adjusted $R_2 = -0.1699$, F value for $R = 0.63$ with 19 and 30 DFS

Table 18 represent the Regression Analysis to estimate the causal effect of 19 independent variables on the consequent variable y4 i.e. Perceived Environmental Effect.

Result: It has been found that the variables Education (x2), Income (x4) and Operational Land (x6) have made subsequent contribution to Perceived Environmental Effect (y4). The contributions are 15.337%, 13.453% and 25.318% respectively.

Revelation: This table envisages that the causal variable Operational Land (x6) has exerted the highest percentile contribution to the variable of Perceived Environmental Effect. This interprets that respondent having higher operational land holding can present the environmental concern and can gradually transfer the conventional farming to organic farming.

While both Education and Income has exerted conspicuous impact on perceived environmental effect. It may elucidate that managing environmental in enterprise ecology have been characterized by the income of the entrepreneur as well as his/her educational pursuits.

The R² value being 0.2837, it is to infer that 28.37% variance embedded with the consequent variable i.e. perceived environmental effect could have been explained with these 19 causal variables. These suggest that more no of variables should be included.

Variable	β	t
X3	0.238	1.699

Variable	R ²	R
X3	0.0567	0.2382

Results: The step down regression analysis (forward) has retained one prominent causal variable i.e. Family size(x3) at the last step. So, this variable has got substantive strategic and operational impact on Cattle Energy Balance.

Revelation: The step down regression presents that at last step of step down analysis one variables. Only Family size (x3) have been retained at the last stage of Step-down Regression Analysis which have contributed of 5.67 percent to the total R² value i.e., to say that family size deserves to earn a special attention while we intend to make a serious intervention in the domain of Perceived Environmental Effect (y4).

Table 19: Regression Analysis of Enterprise Ecology (Y) and 19 independent variables (x1-x19)

Variables	Beta	Beta x R (%)	Reg. Cof.B	S. error	t value
Age (x1)	0.0880	2.847	0.021	0.055	0.394
Education (x2)	0.1540	-0.297	0.146	0.188	0.777
Family size (x3)	-0.1150	6.151	-0.173	0.642	0.27
income (x4)	-0.2420	-4.626	0	0	1.001
Size of Holding (x5)	0.0020	-0.152	0.002	0.184	0.011
Operational land (x6)	-0.1830	-8.932	-4.741	30511.221	0
Irrigation Index (x7)	-0.1480	-7.187	-3.815	30511.219	0
Electric consumption (x8)	-0.0820	0.73	-0.004	0.009	0.437
Fuel consumption (x9)	0.0980	6.873	0	0.001	0.407
Market Interaction (x10)	0.1120	8.364	0.047	0.095	493

Group Interaction (x11)	0.3360	26.148	0.551	0.352	1.563
Distance Matrix (x12)	0.0820	-2.741	0.358	0.817	0.438
Innovation Proneness (x13)	1.2090	19.71	0.983	1.019	0.965
Orientation Towards competition (x14)	0.5570	59.393	1.684	0.85	1.982
Planning Orientation (x15)	-0.1600	-9.918	-0.318	0.665	0.478
Marketing Orientation (x16)	-0.2180	0.906	-0.912	1.083	0.842
Decision Matrix (x17)	-0.0250	1.394	-0.129	1.31	0.099
Idea Exchange Index (x18)	0.0420	1.249	0.301	1.352	0.223
Risk Orientation (x19)	-0.0020	0.089	-0.009	0.876	0.01

Multiple $R_2 = 0.3780$, Multiple $R = 0.6148$, Adjusted $R_2 = -0.0160$, F value for $R = 0.96$ with 19 and 30 DFS

Table 19 represent the Regression Analysis to estimate the causal effect of 19 independent variables on the consequent variable Y i.e. Enterprise Ecology.

Result: It has been found that the variables Group Interaction (x11), Innovation Proneness (x14) and Orientation towards Competition (x14) have made subsequent contribution to Enterprise Ecology (Y). The contributions are 26.148%, 19.71% and 59.393% respectively.

Revelation: It is been revealed that orientation towards competition has characterized the Enterprise Ecology to the highest level. It means

increasing entrepreneurial competition within the agriculture based social ecology has been prime concerned for the substantiality of Enterprise Ecology. It has also been relegated group interaction which generates collective wisdom to make productive ecology relevant and diverse. No wonder innovation proneness has been characterized conspicuously enterprise ecology under the study. The R₂ value being 0.3780, it is to infer that 37.80% variance embedded with the consequent variable i.e. Enterprise Ecology, could have been explained with these 19 causal variables. These suggest that more no of variables should be included

Variable	β	t
X11	0.337	2.441
X14	0.467	3.433
X16	-0.352	2.400

Variable	R ₂	R
X11, x14, x16	0.2931	0.5414

Results: The step down regression analysis (forward) has retained three prominent causal variables i.e. Group Interaction (x₁₁), Orientation towards Competition (x₁₄) and Market Interaction (x₁₆) at the last step. So, these three variables have got substantive strategic and operational impact on Enterprise Ecology (Y).

Revelation: The step down regression presents that at last step of step down analysis three variables. Only Group Interaction (x₁₁), Orientation towards Competition (x₁₄) and Market Interaction (x₁₆) have been retained at the last stage of Step-down Regression Analysis which have contributed of 29.31 percent to the total R₂ value i.e., to say that Group Interaction (x₁₁),

Orientation towards Competition (x14) and Market Interaction (x16) deserve to earn a special attention while we intend to make a serious intervention in the domain of Enterprise Ecology (Y).

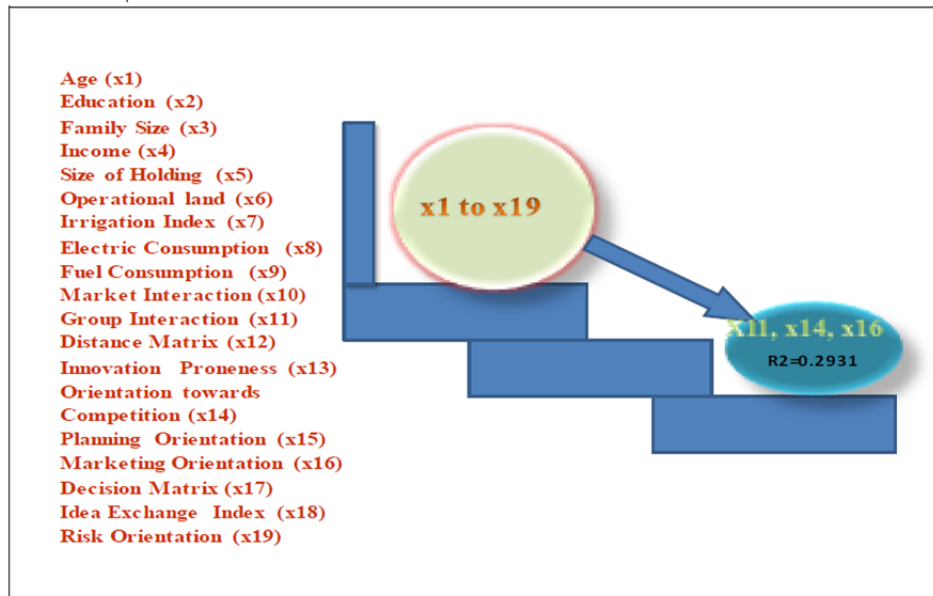
Model 8: Step Down Regression Analysis between Enterprise Adoption (y₃) Vs 19 Causal Variables



Model 9: Step Down Regression Analysis between Perceived Environmental Effect (y₄) Vs 19 Causal Variables



Model 10: Step Down Regression Analysis between Enterprise Ecology (Y) Vs 19 Causal Variables

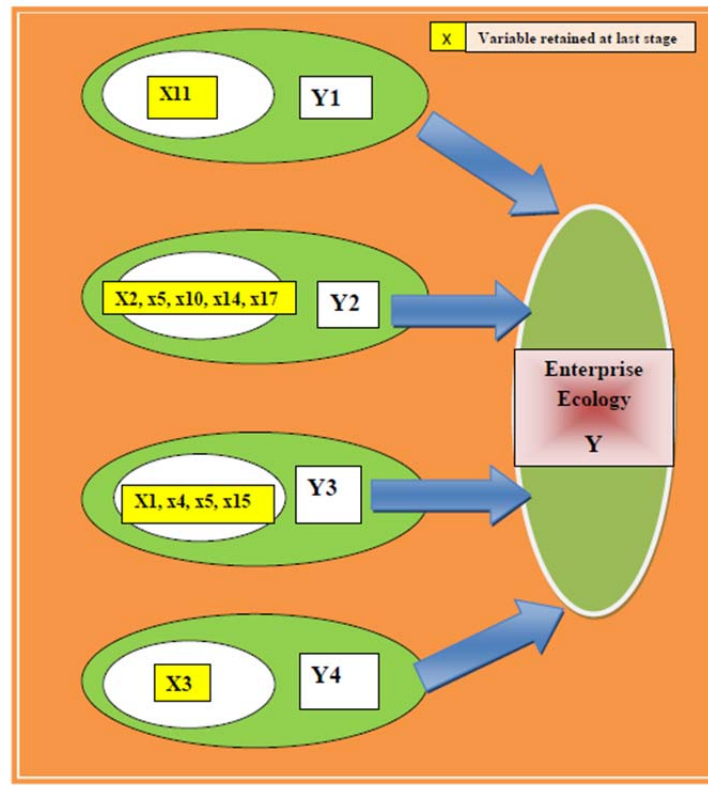


Model 11: A Complex and Composite Form of Enterprise Ecology

Enterprise Dynamics of Agribusiness: The System and Social Ecology

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N.B. Age (x1), Education (x2), Family Size (x3), Income (x4), Size of Holding (x5), Operational land (x6), Irrigation Index (x7), Electric Consumption (x8), Fuel Consumption (x9), Market Interaction (x10), Group Interaction (x11), Distance Matrix (x12), Innovation Proneness (x13), Orientation towards Competition (x14), Planning Orientation (x15), Marketing Orientation (x16), Decision Matrix (x17), Idea Exchange Index (x18), Risk Orientation (x19) and Enterprise Creation (y1), Enterprise Management (y2), Enterprise Adoption (y3), Perceived Environmental Effect (y4) and Enterprise Ecology (Y).

PATH ANALYSIS

**Table 20: Path Analysis: Direct, Indirect and Residual effect;
Enterprise Creation (y1) 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)	-0.1500	-0.002	-0.1480	0.0857 (x15)
2	Education (x2)	-0.0368	0.0845	-0.1213	-0.1085 (x15)
3	Family size (x3)	0.0105	0.0825	-0.0720	-0.2019 (x7)
4	income (x4)	-0.0162	-0.3008	0.0139	0.1546 (x15)
5	Size of Holding (x5)	-0.0195	0.1699	-0.1894	-0.0718 (x7)
6	Operational land (x6)	0.0112	0.000	0.0112	0.2209 (x7)
7	Irrigation Index (x7)	0.0112	0.2209	-0.2097	-0.0754 (x3)
8	Electric consumption (x8)	0.1245	0.1628	-0.0383	0.0340 (x10)
9	Fuel consumption (x9)	0.1519	0.0438	0.1081	0.1497 (x15)
10	Market Interaction (x10)	0.2079	0.2329	-0.0250	-0.0330 (x13)
11	Group Interaction (x11)	0.2399	0.1911	0.0488	0.1089 (x15)
12	Distance Matrix (x12)	-0.1120	-0.1501	0.0381	-0.0754 (x15)
13	Innovation Proneness (x13)	0.1095	-0.0905	0.2000	0.1495 (x15)

14	Orientation Towards competition (x14)	0.1370	0.1707	-0.0337	0.1996 (x15)
15	Planning Orientation (x15)	0.1623	0.1727	-0.0104	-0.1750 (x4)
16	Marketing Orientation (x16)	0.1023	0.2094	-0.1071	0.1294 (x15)
17	Decision Matrix (x17)	0.0058	0.1407	-0.1349	-0.1260 (x15)
18	Idea Exchange Index (x18)	0.0340	-0.1543	0.1883	0.0519 (x4)
19	Risk Orientation (x19)	-0.0476	0.0205	-0.0681	-0.0439 (x14)

Residual Effect = 0.8132, Highest Occurrence = x15

Table 20 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 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 to elucidate that Innovation Proneness has got tremendous associative impact on Enterprise Creation. In real sense entrepreneur means innovation and innovation is entrepreneurship.

The same table also elucidate that variable planning orientation has rooted 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 is being 0.8132; it is to infer that a huge portion of variance in the consequent variables (81.32%) 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.

Table 21: Path Analysis: Direct, Indirect and Residual effect; Enterprise Management (y2) 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

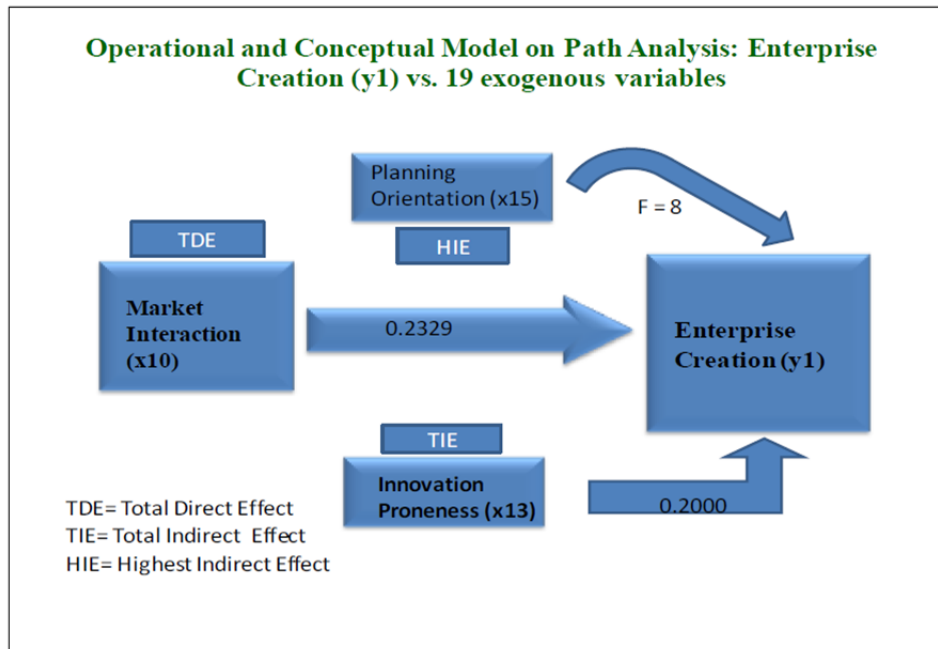
Table 21 presents the path analysis where in the total effects of exogenous variables decomposed into Total Direct, Total Indirect and Residual Effects. It has been found that the decision matrix (x17) has exerted the highest Total Direct Effect on Enterprise Management. It is simply because, for any 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.

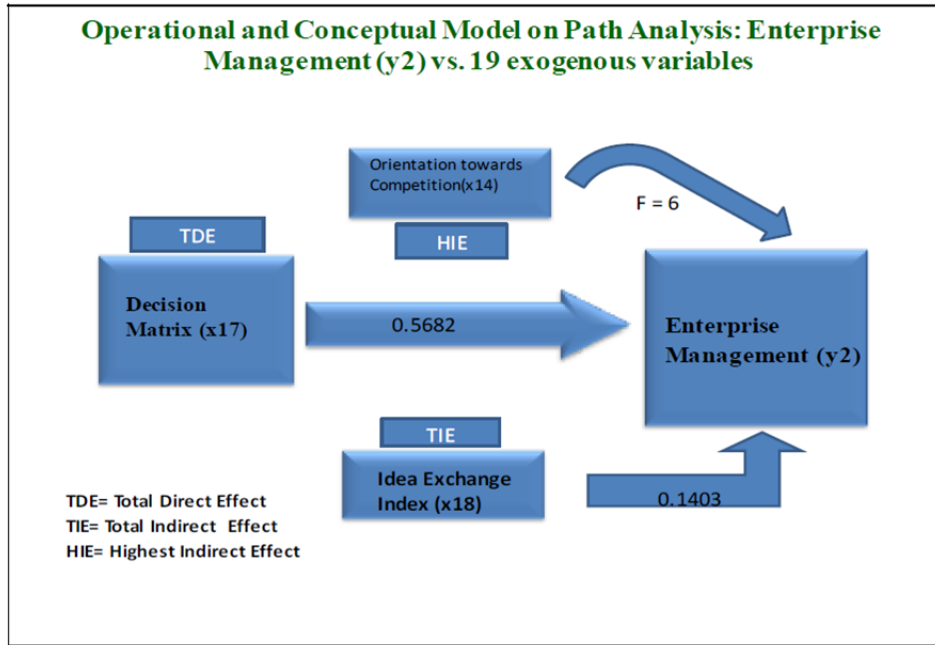
The same table also elucidates that variable Orientation towards Competition (x14) has rooted the highest number of indirect effects i.e. six times on enterprise management. This indicates that for enterprise

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.



Model 12



Model 13

Result and Discussion

Table 22: Path Analysis: Direct, Indirect and Residual effect; Enterprise Adoption (y3) 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)	0.403	0.5682	-0.1652	0.2355 (x15)
2	Education (x2)	-0.049	0.0055	-0.0545	-0.2981 (x15)
3	Family size (x3)	0.383	0.1548	0.2282	0.0876 (x5)

Result and Discussion

4	income (x4)	-0.053	-0.3436	0.2906	0.4246 (x15)
5	Size of Holding (x5)	0.247	0.2810	-0.034	-0.1859 (x15)
6	Operational land (x6)	-0.346	0.0000	-0.346	-0.1414 (x3)
7	Irrigation Index (x7)	-0.346	0.0242	-0.3702	-0.1414 (x3)
8	Electric consumption (x8)	-0.196	-0.1157	-0.0803	-0.0625 (x1)
9	Fuel consumption (x9)	-0.11	-0.1537	0.0437	0.4111 (x15)
10	Market Interaction (x10)	0.021	-0.1159	0.1369	0.1721 (x1)
11	Group Interaction (x11)	0.021	0.1093	-0.0883	0.2992 (x15)
12	Distance Matrix (x12)	-0.062	0.1771	-0.2391	-0.2071 (x15)
13	Innovation Proneness (x13)	-0.025	-0.1476	0.1226	0.4106 (x15)
14	Orientation Towards competition (x14)	0.016	-0.1569	0.1729	0.5482 (x15)
15	Planning Orientation (x15)	0.176	0.7491	-0.5731	-0.1947 (x4)
16	Marketing Orientation (x16)	-0.084	-0.3866	0.3026	0.3556 (x15)
17	Decision Matrix (x17)	-0.317	0.0514	-0.3684	-0.3462 (x15)
18	Idea Exchange Index (x18)	0.005	0.6048	-0.5998	-0.1248 (x15)
19	Risk Orientation (x19)	-0.047	-0.0986	0.0516	0.0671 (x5)

Residual Effect = 0.4500

Table 22 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 planning orientation has exerted the highest Total Direct Effect on Enterprise Adoption. It is simply because, for any adoption of any enterprise proper planning is very much important.

The other variables Marketing Orientation have exerted the highest Total Indirect Effect to elucidate that Marketing Orientation has got tremendous associative impact on Enterprise Adoption. After adoption of a new enterprise, marketing of the produce is also important to sustain the new enterprise.

The same table also elucidate that variable planning orientation has rooted the highest number of indirect effects i.e. twelve times on enterprise adoption. This indicates that for enterprise adoption planning has got highest structural contribution for its much needed success.

The Residual Effect is being 0.4500; it is to infer that a huge portion of variance in the consequent variables (45.00%) 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.

Table 23: Path Analysis: Direct, Indirect and Residual effect; Perceived Environmental Effect (y4) 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)	0.081	-0.1992	0.2802	0.0901 (x4)
2	Education (x2)	-0.219	-0.1990	-0.02	0.0649 (x1)
3	Family size (x3)	0.238	0.1063	0.1317	0.1321 (x7)
4	income (x4)	0.17	0.2243	-0.0543	-0.1315 (x11)
5	Size of Holding (x5)	0.076	0.0817	-0.0057	-0.0500 (x2)
6	Operational land (x6)	-0.24	0.0000	-0.24	-0.1445 (x7)
7	Irrigation Index (x7)	-0.24	-0.1445	-0.0955	-0.0971 (x3)
8	Electric consumption (x8)	0.052	0.0332	0.0188	-0.0645 (x11)
9	Fuel consumption (x9)	0.212	0.1163	0.0957	0.0705 (x2)
10	Market Interaction (x10)	0.021	0.1954	-0.1744	-0.0711 (x11)
11	Group Interaction (x11)	-0.188	-0.4157	0.2277	0.0709 (x4)
12	Distance Matrix (x12)	-0.115	0.0251	-0.1401	-0.0582 (x2)
13	Innovation Proneness (x13)	0.102	-0.0992	0.2012	-0.0778 (x11)
14	Orientation Towards competition (x14)	0.243	0.0820	0.161	0.1099 (x4)

15	Planning Orientation (x15)	0.232	0.1067	0.1253	-0.1661 (x11)
16	Marketing Orientation (x16)	-0.002	0.0535	-0.0555	-0.1803 (x11)
17	Decision Matrix (x17)	-0.103	-0.1406	0.0376	0.1220 (x11)
18	Idea Exchange Index (x18)	-0.099	0.0432	-0.1422	-0.0637 (x2)
19	Risk Orientation (x19)	0.002	0.0095	-0.0075	0.0406 (x11)

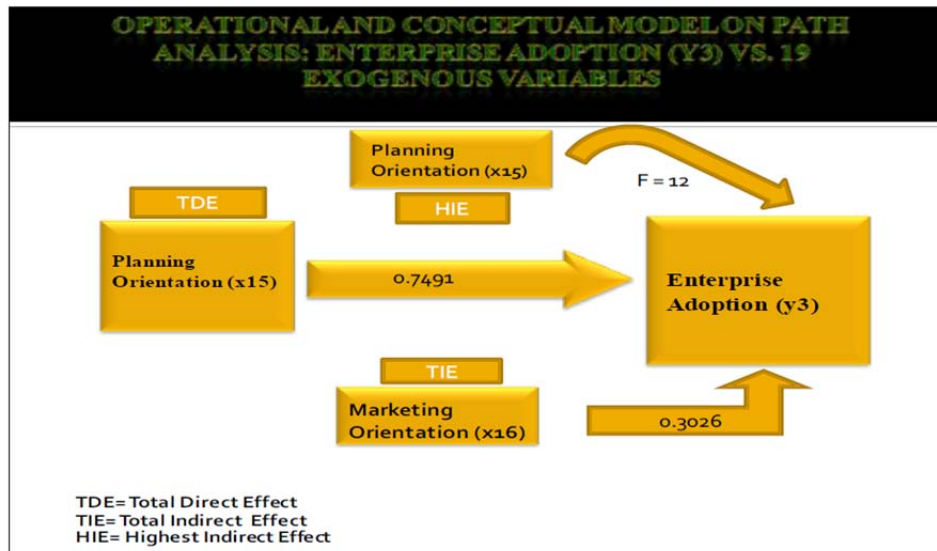
Residual Effect = 0.7175

Table 23 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 income (x4) has exerted the highest Total Direct Effect on Perceived Environmental Effect.

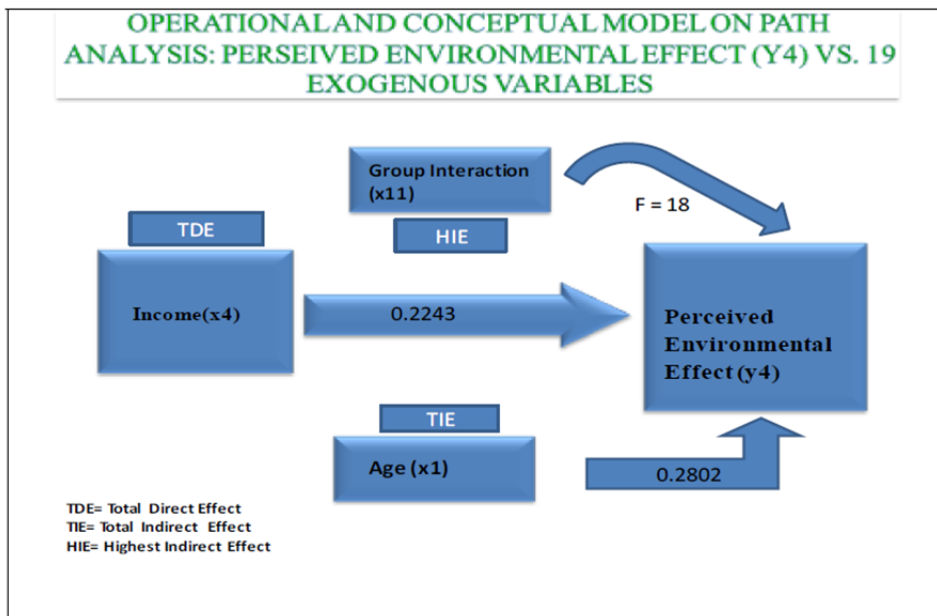
The other variables Age (x1) have exerted the highest Total Indirect Effect to elucidate that Age has got tremendous associative impact on Perceived Environmental Effect.

The same table also elucidate that variable Group Interaction (x11) has rooted the highest number of indirect effects i.e. eight times on Perceived Environmental Effect.

The Residual Effect is being 0.7125; it is to infer that a huge portion of variance in the consequent variables (71.25%) 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.



Model 14



Model 15

**Table 24: Path Analysis: Direct, Indirect and Residual effect;
Enterprise Ecology (Y) Vs 19 Exogenous Variables (x1 to x19)**

SI No	Variables	Total Effect (r)	Total Direct Effect (TDE)	Total Indirect Effect (TIE)=r-DE	Highest Indirect Effect
1	Age (x1)	0.122	0.0884	0.0336	0.2065 (x14)
2	Education (x2)	-0.007	0.1544	-0.1614	-0.1986 (x14)
3	Family size (x3)	-0.202	-0.1149	-0.0871	-0.1261 (x7)
4	income (x4)	0.072	-0.2418	0.3138	0.2728 (x14)
5	Size of Holding (x5)	-0.275	0.0021	-0.2771	-0.1855 (x14)
6	Operational land (x6)	0.184	0.0000	0.184	0.1380 (x7)
7	Irrigation Index (x7)	0.184	0.1384	0.0456	0.1050 (x3)
8	Electric consumption (x8)	-0.034	-0.0818	0.0478	0.0521 (x11)
9	Fuel consumption (x9)	0.264	0.0983	0.1657	0.2924 (x14)
10	Market Interaction (x10)	0.282	0.1120	0.17	0.0763 (x13)
11	Group Interaction (x11)	0.294	0.3358	-0.0418	0.1315 (x14)
12	Distance Matrix (x12)	-0.127	0.0817	-0.2087	-0.1569 (x14)
13	Innovation Proneness (x13)	0.356	0.2092	0.1468	0.2188 (x14)
14	Orientation Towards competition (x14)	0.403	0.5567	-0.1537	-0.1185 (x4)

15	Planning Orientation (x15)	0.234	-0.1602	0.3942	0.4074 (x14)
16	Marketing Orientation (x16)	-0.016	-0.2177	0.2017	0.2269 (x14)
17	Decision Matrix (x17)	-0.21	-0.0251	-0.1849	-0.2410 (x14)
18	Idea Exchange Index (x18)	0.113	0.0416	0.0714	-0.1036 (x14)
19	Risk Orientation (x19)	-0.183	-0.0018	-0.1812	-0.1433 (x14)

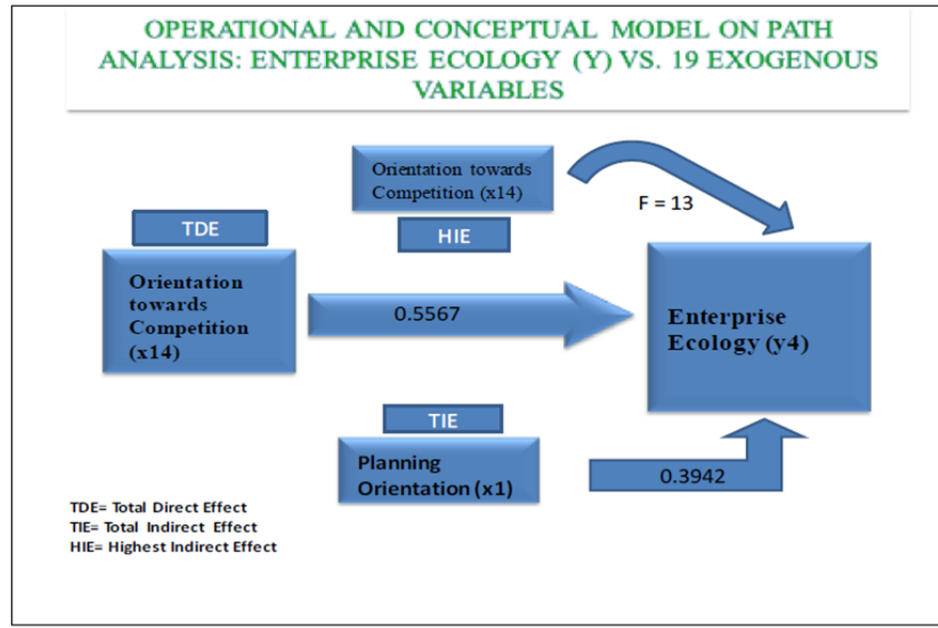
Residual Effect = 0.5357

Table 24 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 Orientation towards competition (x14) has exerted the highest Total Direct Effect on Enterprise Ecology.

The other variables Planning Orientation (x15) have exerted the highest Total Indirect Effect to elucidate that Planning Orientation (x15) has got tremendous associative impact on Enterprise Ecology.

The same table also elucidate that variable Orientation towards competition (x14) has rooted the highest number of indirect effects i.e. thirteen times on enterprise ecology. This indicates that for enterprise ecology, Orientation towards competition (x14) has got highest structural contribution.

The Residual Effect is being 0.5357; it is to infer that a huge portion of variance in the consequent variables (53.57%) 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.



Model 16

Factor Analysis

Table 25: Factor analysis for clubbing of variables into factor based on factor loading [Rotated Component Matrix, Including Perception on Enterprise Ecology (Y)]

Factors	Variables Accounted	Factor loading	% of variance	Cumulative %	Factor rename
Factor 1	<ul style="list-style-type: none"> • Age (X1) • Income(X4) • Fuel Consumption (X9) • Group Interaction (X11) • Innovation Proneness(X13) 	0.517 0.638 0.563 0.461 0.585	22.004	22.004	Resource Motivation

	<ul style="list-style-type: none"> • Orientation towards competition(x14) • Planning Orientation(x15) • Market Interaction(x16) 	0.849 0.902 0.512			
Factor 2	<ul style="list-style-type: none"> • Operational land (X6) • Irrigation Index (X7) 	0.977 0.977	16.453	38.456	Agro-economy
Factor 3	<ul style="list-style-type: none"> • Distance Matrix(X12) • Risk Orientation(X19) 	0.558 0.590	8.957	47.413	Strategic Location
Factor 4	<ul style="list-style-type: none"> • Market Interaction(X10) • Electric consumption (X8) 	0.410 0.770	8.393	55.806	Entrepreneurial Modernization
Factor 5	<ul style="list-style-type: none"> • Education(X2) • Idea Exchange Index (X18) 	0.312 0.419	8.064	63.870	Entrepreneurial Concept
Factor 6	Family Size (x3) Decision Matrix(x17)	0.113 0.589	6.973	70.843	Entrepreneurial Decision
Factor 7	Size of Holding (x5)	0.574	5.451	76.294	Size of Holding

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.

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.