

## CHAPTER-6a

# Results and Discussions

**Table1: Descriptive statistics of independent variables with respected to Mean, Standard Deviation values.**

Sl. no	Variables	Mean	SD
1	Age(x1)	48	5.753437
2	Education(x2)	6.1	3.68809447
3	Family Size(x3)	3.98	1.269581323
4	Occupation(x4)	6.116	0.601959386
5	Cropping Intensity(x5)	203.54	55.07701843
6	Farm Size(x6)	1.2	0.490812415
7	Annual Income(x7)	36928	12451.04766
8	Electricity Consumption(x8)	55.9242	13.96927724
9	Fuel Consumption(x9)	6.8206	0.510123674
10	Irrigation Index(x10)	0.2724	0.076919253
11	Independency(x11)	6.67	0.548504609
12	Innovation Proneness(x12)	7.6732	3.688876517
13	Risk Orientation(x13)	7.2198	0.528642814
14	Orientation Towards Competition(x14)	7.2394	0.563945322
15	Management(x15)	7.2232	0.521009381

<b>16</b>	Market Orientation(x16)	7.14	0.560255044
<b>17</b>	Information Seeking Behaviour(x17)	5.08	0.730948503
<b>18</b>	Distance Matrix(x18)	3.334	0.902759941
<b>19</b>	Drudgeries(x19)	6.335	0.738189318

**Table2: Coefficient of correlation (r ) between Adoption (y1) and 19 independent variables (x1-x19)**

Sl no	Variables	r value	Remarks
1	Age(x1)	0.055	
2	Education(x2)	-0.121	
3	Family Size(x3)	0.051	
4	Occupation(x4)	0.007	
5	CroppingIntensity(x5)	0.302	*
6	Farm Size(x6)	-0.182	
7	Annual Income(x7)	0.024	
8	Electricity Consumption(x8)	-0.201	
9	Fuel Consumption(x9)	-0.032	
10	Irrigation Index(x10)	-0.096	
11	Independency(x11)	-0.124	
12	Innovation Proneness(x12)	-0.028	
13	Risk Orientation(x13)	0.129	
14	Orientation Towards Competition(x14)	0.007	
15	Management(x15)	-0.227	
16	Market Orientation(x16)	0.155	
17	Information Seeking Behaviour(x17)	-0.030	
18	DistanceMatrix(x18)	-0.136	
19	Drudgeries(x19)	0.018	
	r>0.267 significant at p=0.05(*) r>0.360 significant at p=0.01(**)		

Table 2 presents the coefficient of correlation between Adoption (y1) and 19 independent variables.

**Results:** It has been found that the variable Cropping Intensity(x5) has recorded a positive significant correlation with Adoption (y1).

**Revelation:** With the increase of Cropping Intensity the application and socialization of required technology will keep on increasing. Cropping Intensity indicates the no of crop enterprises raised from unit area against unit time. So with the increase of crop enterprises, the no of adoption of appropriate technology, input, and package of practices will naturally be increasing.

**Table3: Coefficient of correlation (r ) between Reinvention (y2) and 19 independent variables (x1-x19)**

Slno	Variables	r value	Remarks
1	Age(x1)	-0.099	
2	Education(x2)	0.061	
3	Family Size(x3)	0.116	
4	Occupation(x4)	0.010	
5	Cropping Intensity(x5)	-0.182	
6	Farm Size(x6)	-0.101	
7	Annual Income(x7)	0.272	*
8	Electricity Consumption(x8)	0.141	
9	Fuel Consumption(x9)	-0.104	
10	Irrigation Index(x10)	-0.105	
11	Independency(x11)	-0.088	
12	Innovation Proneness(x12)	0.024	
13	Risk Orientation(x13)	0.043	
14	Orientation Towards Competition(x14)	-0.091	
15	Management(x15)	0.109	
16	Market Orientation(x16)	0.263	
17	Information Seeking Behavior(x17)	0.028	
18	Distance Matrix(x18)	0.232	
19	Drudgeries(x19)	0.045	

	r>0.267 significant at p=0.05(*)		
	r>0.360 significant at p=0.01(**)		

Table 3 presents the coefficient of correlation between Reinvention (y2) and 19 independent variables.

**Results:** It has been found that the variable Annual Income(x7) has recorded a positive significant correlation with Reinvention (y2).

**Revelation:**With the increase of Annual Income and the application and socialization of required technology will keep on increasing. People having more annual income will go for expending more in their farming enterprises. So the opportunities for reinventing the new technologies that require more expenses and were out of the reach of farmers, increases. So with the increase in Annual Income the Reinvention of new technologies will naturally increase.

**Table4: Coefficient of correlation (r) between Rejection (y3) and 19 independent variables (x1-x19)**

Sl. no	Variables	r value	Remarks
1	Age(x1)	-0.072	
2	Education(x2)	-0.079	
3	Family Size(x3)	0.002	
4	Occupation(x4)	-0.434	**
5	CroppingIntensity(x5)	0.294	*
6	Farm Size(x6)	-0.03	
7	Annual Income(x7)	0.134	
8	Electricity Consumption(x8)	0.163	
9	Fuel Consumption(x9)	-0.171	
10	Irrigation Index(x10)	0.111	
11	Independency(x11)	0.228	
12	Innovation Proneness(x12)	0.149	

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13	Risk Orientation(x13)	0.018	
14	Orientation Towards Competition(x14)	0.031	
15	Management(x15)	-0.125	
16	Market Orientation(x16)	0.016	
17	Information Seeking Behavior(x17)	-0.243	
18	Distance Matrix(x18)	0.009	
19	Drudgeries(x19)	-0.097	
	r>0.267 significant at p=0.05(*) r>0.360 significant at p=0.01(**)		

Table 4 presents the coefficient of correlation between Rejection (y3) and 19 independent variables.

**Results:** It has been found that the variables Occupation(x4) and Cropping Intensity (x5) have recorded a negative and positive significant correlation with Rejection (y3) respectively.

**Revelation:** With higher level of occupation the inclination and involvement towards farming and cultivation decreases. About 42 per cent of the farmers are now ready to quit Agriculture as their occupation (Farmers' Commission Report). Beside the staggered and seasonal nature of income from Agriculture has refrained the farm entrepreneurs to invest after Agriculture. When a motor-van puller can have a daily income, a rice grower has to wait till the end of the crop duration, say 3-4 months. People having greater opportunities towards higher level of employment hardly show interest towards farming and cultivation. So the policy makers have to take a serious look into this matter.

Again as the Cropping Intensity indicates the no of crop enterprises raised from unit area against unit time. So as the Cropping Intensity increases the people are shifting from traditional to modern Agriculture. They are

adopting the new technologies as well as new package of practices while rejecting the old ones. Hence with the increase in cropping Intensity the Rejection of conventional agricultural practices will naturally be increasing.

**Table5:Coefficient of correlation ( r ) between Discontinuance (y4) and 19 independent variables (x1-x19)**

S.L. No	Variables	r value	Remarks
1	Age(x1)	-0.157	
2	Education(x2)	0.132	
3	Family Size(x3)	-0.108	
4	Occupation(x4)	-0.073	
5	CroppingIntensity(x5)	0.041	
6	Farm Size(x6)	-0.025	
7	Annual Income(x7)	-0.121	
8	Electricity Consumption(x8)	0.074	
9	Fuel Consumption(x9)	-0.021	
10	Irrigation Index(x10)	0.087	
11	Independency(x11)	-0.158	
12	Innovation Proneness(x12)	-0.052	
13	Risk Orientation(x13)	0.068	
14	Orientation Towards Competition(x14)	0.035	
15	Management(x15)	0.015	
16	Market Orientation(x16)	0.133	
17	Information Seeking Behaviour(x17)	0.231	
18	DistanceMatrix(x18)	0.071	
19	Drudgeries(x19)	-0.315	*
	r>0.267 significant at p=0.05(*) r>0.360 significant at p=0.01(**)		

Table 5 presents the coefficient of correlation between Discontinuance (y4) and 19 exogenous variables.

**Results:** It has been found that the variable Drudgeries has shown a negative significant correlation with the dependent variable Discontinuance (y4).

**Revelation:** The Drudgeries are the physical as well as mental stress. The people engaged in farming undergo this kind of Drudgeries. The agricultural practices are physically stressful, while it shows disappointing results, it is mentally stressful also. Now to get rid of this stresses people are tending to discontinue their existing agricultural practices.

**Table6: Coefficient of correlation (r ) between Social Metabolism (y5) and 19 independent variables (x1-x19)**

Sl. no	Variables	r value	Remarks
1	Age(x1)	-0.089	
2	Education(x2)	-0.015	
3	Family Size(x3)	0.062	
4	Occupation(x4)	-0.142	
5	CroppingIntensity(x5)	0.207	
6	Farm Size(x6)	-0.201	
7	Annual Income(x7)	-0.149	
8	Electricity Consumption(x8)	-0.036	
9	Fuel Consumption(x9)	-0.149	
10	Irrigation Index(x10)	-0.078	
11	Independency(x11)	-0.106	
12	Innovation Proneness(x12)	0.014	
13	Risk Orientation(x13)	0.16	
14	Orientation Towards Competition(x14)	-0.029	
15	Management(x15)	-0.158	
16	Market Orientation(x16)	0.314	*
17	Information Seeking Behaviour(x17)	-0.019	
18	DistanceMatrix(x18)	0.065	
19	Drudgeries(x19)	-0.054	

	r>0.267 significant at p=0.05(*)		
	r>0.360 significant at p=0.01(**)		

Table 6 presents the coefficient of correlation between Social Metabolism (y5) and 19 exogenous variables.

**Results:** It has been found that the variable Market Orientation(x16) has recorded a positive significant correlation with Social Metabolism (y5).

**Revelation:** The Market Orientation denotes the market structure available for the farmers. The demand and supply for a product. If there a good market condition prevails then the farmers will get assured benefit from the market. While Social Metabolism is the process of inflow of inputs and the outflow of outputs in farm situation at one side, accordingly the Market Orientation will naturally boost this kind of energy transformation process.

#### REGRESSION ANALYSIS

**Table7: Regression analysis, Adoption (y1) vs 19 causal variables (x1-x19)  
Multiple r sq- 0.3378**

S.L. No.	Variables	Beta	Beta x R	Reg. coef. B	S, error B	t value
1	Age(x1)	0.138	2.269	0.011	0.020	0.562
2	Education(x2)	-0.172	6.135	-0.018	0.023	0.772
3	Family Size(x3)	-0.223	-3.357	-0.082	0.189	0.436
4	Occupation(x4)	0.031	0.062	0.024	0.134	0.182
5	CroppingIntensity(x5)	0.237	21.240	0.002	0.002	1.137
6	Farm Size(x6)	-0.274	14.805	-0.261	0.346	0.755
7	Annual Income(x7)	0.121	0.859	0.000	0.000	0.395
8	Electricity Consumption(x8)	-0.049	2.927	-0.002	0.007	0.221
9	Fuel Consumption(x9)	-0.085	0.811	-0.078	0.236	0.332
10	Irrigation Index(x10)	-0.158	4.488	-0.961	3.251	0.296

11	Independency(x11)	-0.166	6.121	-0.142	0.171	0.289
12	Innovation Proneness(x12)	-0.189	1.547	-0.024	0.025	0.968
13	Risk Orientation(x13)	0.134	5.128	0.119	0.151	0.787
14	Orientation Towards Competition(x14)	-0.173	-0.374	-0.144	0.182	0.790
15	Management(x15)	-0.335	22.524	-0.301	0.202	1.488
16	Market Orientation(x16)	0.142	6.490	0.118	0.146	0.809
17	Information Seeking Behaviour(x17)	-0.142	1.259	-0.091	0.128	0.709
18	DistanceMatrix(x18)	-0.178	7.183	-0.092	0.100	0.917
19	Drudgeries(x19)	-0.021	-0.116	-0.014	0.125	0.108

The Table7 presents the Regression Analysis to estimate that the respective causal contribution of 19 exogenous variables on the dependent variable, Adoption (y1).

**Results:** It has been found that the variables Cropping Intensity(x5) and Management (x15) have contributed to the extent of 21.24 percent and 22.52 percent of variance to the total  $r^2$  value.

**Revelation:**So the Adoption level of the selected technologies has been well estimated to the variables Cropping Intensity (x5) and Management (x15).

Cropping Intensity implies more no of crop from a given unit area and unit time. So higher Cropping Intensity has well been conceived through higher technology adoption level as well.

Management of crop enterprises indicates the higher level of socialization as well as higher level of management proficiency as well.

So these two variables can be indicator variables to measure the technology adoption level.  $r^2$  Value being 0.3378 it is to conclude that 33.78 percent of the variability embedded with the consequent variable Adoption (y1) has been explained with the combination of the 19 causal variables.

Variable	Beta	t-value
CroppingIntensity(x5)	0.302	2.197

**Table8: Regression analysis, Reinvention (y2) vs 19 causal variables (x1-x19)Multiple r sq- 0.3079**

S.L. No.	Variables	Beta	Beta x R	Reg. coef. B	S, error B	t value
1	Age(x1)	-0.229	7.383	-0.019	0.020	0.909
2	Education(x2)	0.007	0.136	0.001	0.023	0.030
3	Family Size(x3)	0.301	11.299	0.111	0.193	0.573
4	Occupation(x4)	-0.116	-0.368	-0.090	0.137	0.660
5	CroppingIntensity(x5)	0.021	-1.220	0.000	0.002	0.097
6	Farm Size(x6)	0.382	-12.579	0.364	0.353	1.030
7	Annual Income(x7)	-0.464	40.968	0.000	0.000	1.478
8	Electricity Consumption(x8)	0.229	10.524	0.008	0.008	1.006
9	Fuel Consumption(x9)	0.141	-4.736	0.129	0.241	0.535
10	Irrigation Index(x10)	-0.204	6.933	-1.239	3.320	0.373
11	Independency(x11)	0.130	-3.702	0.110	0.175	0.631
12	Innovation Proneness(x12)	-0.039	-0.303	-0.005	0.025	0.195
13	Risk Orientation(x13)	0.155	2.143	0.137	0.154	0.890
14	Orientation Towards Competition(x14)	-0.071	2.078	-0.059	0.186	0.315
15	Management(x15)	-0.010	-0.340	-0.009	0.206	0.042
16	Market Orientation(x16)	0.261	22.270	0.217	0.149	1.456

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17	Information Seeking Behaviour(x17)	0.186	1.677	0.119	0.131	0.910
18	DistanceMatrix(x18)	0.229	17.258	0.118	0.103	1.155
19	Drudgeries(x19)	0.040	0.577	0.025	0.128	0.197

The Table8 presents the Regression Analysis to estimate that the respective causal contribution of 19 exogenous variables on the dependent variable, Reinvention (y2).

**Results:** It has been found that the variables Annual Income (x7) and Market Orientation(x16) have contributed to the extent of 40.97 percent and 22.27 percent of variance to the total  $r^2$  value .

**Revelation:**So the Reinvention level of the selected technologies has been well estimated to the variables Annual Income (x7) and Market Orientation(x16).

Annual Income implies the sum total of the income of each individual of a family in a given year. So higher Annual Income leads to higher technology Reinvention level. Again market orientation is the nature of the market i.e. the demand and supply conditions. Therefore the market orientation also determines the technology reinvention level.

Therefore these two variables can be indicator variables to measure the technology reinvention level.  $r^2$  Value being 0.3079it is to conclude that 30.79Percent of the variability embedded with the consequent variable Reinvention (y2) has been explained with the combination of the 19 causal variables.

Variable	Beta	t-value
Annual Income(x7)	-0.410	2.757

Electricity Consumption(x8)	0.319	2.146
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**Table9: Regression analysis, Rejection (y3) vs 19 causal variables (x1-x19)Multiple r sq- 0.4635**

S.L. No.	Variables	Beta	Beta x R	Reg. coef. B	S, error B	t value
1	Age(x1)	0.039	-0.611	0.001	0.003	0.177
2	Education(x2)	-0.227	4.655	-0.004	0.003	1.137
3	Family Size(x3)	-0.024	-0.012	-0.001	0.028	0.051
4	Occupation(x4)	-0.284	26.609	-0.037	0.020	1.831
5	CroppingIntensity(x5)	0.177	11.215	0.000	0.000	0.942
6	Farm Size(x6)	-0.377	2.464	-0.060	0.052	1.153
7	Annual Income(x7)	0.130	3.778	0.000	0.000	0.471
8	Electricity Consumption(x8)	0.157	5.531	0.001	0.001	0.786
9	Fuel Consumption(x9)	-0.393	14.517	-0.060	0.036	1.697
10	Irrigation Index(x10)	0.367	8.812	0.373	0.489	0.762
11	Independency(x11)	0.102	4.996	0.014	0.026	0.563
12	Innovation Proneness(x12)	0.145	4.649	0.003	0.004	0.824
13	Risk Orientation(x13)	-0.048	-0.184	-0.007	0.023	0.310
14	Orientation Towards Competition(x14)	0.048	0.315	0.007	0.027	0.241
15	Management(x15)	-0.065	1.753	-0.010	0.030	0.322
16	Market Orientation(x16)	0.022	0.076	0.003	0.022	0.138
17	Information Seeking Behaviour(x17)	-0.192	10.049	-0.020	0.019	1.065
18	DistanceMatrix(x18)	0.093	0.190	0.008	0.015	0.533
19	Drudgeries(x19)	-0.057	1.198	-0.006	0.019	0.320

The Table9 presents the Regression Analysis to estimate that the respective causal contribution of 19 exogenous variables on the dependent variable,

Rejection (y3). **Results:** It has been found that the variables Occupation(x4) and Fuel Consumption(x9) have contributed to the extent of 26.61 percent and 14.52 percent of variance to the total  $r^2$  value.

**Revelation:** So the Rejection level of the technologies has been well estimated to the variables Occupation(x4) and Fuel Consumption(x9).

Occupation indicates the job preferences on the part of the rural people. So, higher preferences for higher jobs leads to higher rejection level towards the farming as well as the technology socialization process.

Fuel consumption indicates the elements of modernity, their level and interaction which are reflected through the frequency of rejection of conventional and non profitable enterprises. That is why the Fuel Consumption has got a substantive effect on Rejection of conventional technology to avoid either getting rid of non performing enterprises or to invite innovative alternatives.

So these two variables can be indicator variables to measure the technology Rejection level.  $r^2$  Value being 0.4635 it is to conclude that 46.35 Percent of the variability embedded with the consequent variable Rejection (y3) has been explained with the combination of the 19 causal variables.

<b>Variable</b>	<b>Beta</b>	<b>t-value</b>
Occupation(x4)	-0.423	3.390
Cropping Intensity(x5)	0.272	2.159
Fuel Consumption(x9)	-0.275	2.198

**Table10: Regression analysis, Discontinuance (y4) vs 19 causal variables (x1-x19)Multiple r sq- 0.3790**

S.L. No.	Variables	Beta	Beta x R	Reg. coef. B	S, error B	t value
1	Age(x1)	- 0.234	9.688	-0.004	0.004	0.983
2	Education(x2)	0.135	6.404	0.003	0.004	0.626
3	Family Size(x3)	- 0.532	15.089	-0.038	0.035	1.071
4	Occupation(x4)	- 0.124	2.401	-0.019	0.025	0.745
5	CroppingIntensity(x5)	0.093	1.015	0.000	0.000	0.459
6	Farm Size(x6)	0.131	-0.882	0.024	0.065	0.373
7	Annual Income(x7)	- 0.227	7.260	0.000	0.000	0.764
8	Electricity Consumption(x8)	0.039	0.760	0.000	0.001	0.181
9	Fuel Consumption(x9)	- 0.098	0.542	-0.017	0.044	0.394
10	Irrigation Index(x10)	- 0.370	-8.476	-0.434	0.607	0.715
11	Independency(x11)	- 0.304	12.659	-0.050	0.032	1.565
12	Innovation Proneness(x12)	0.173	-2.370	0.004	0.005	0.918
13	Risk Orientation(x13)	0.194	3.479	0.033	0.028	1.176
14	Orientation Towards Competition(x14)	0.150	1.378	0.024	0.034	0.704
15	Management(x15)	0.204	0.791	0.035	0.038	0.936
16	Market Orientation(x16)	0.070	2.453	0.011	0.027	0.413
17	Information Seeking Behaviour(x17)	0.128	7.812	0.016	0.024	0.662
18	DistanceMatrix(x18)	0.101	1.905	0.010	0.019	0.538

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19	Drudgeries(x19)	- 0.458	38.094	-0.056	0.023	2.392
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The Table10 presents the Regression Analysis to estimate that the respective causal contribution of 19 exogenous variables on the dependent variable, Discontinuance (y4).

**Results:** : It has been found that the variables Drudgeries(x19) and Family Size(x3) have contributed to the extent of 38.09 percent and 15.09 percent of variance to the total  $r^2$  value.

**Revelation:** So the Discontinuance level of the selected technologies has been well estimated to the variables Drudgeries(x19) and Family Size(x3). Family Size presents the membership status at family level and at the same time the density of demand for any elements of sustenance and survival. Also there are kinetics of perceptual, educational and experiential exchanges amongst and between family members which will lead to higher frequency of Discontinuance of the conventional non remunerative practices or what we may call cryptic entrepreneurial pursuits.

Again drudgery refers to the physical, mental and motivational stress on the part of the farmers. The agricultural practices are laborious and physically stressful from one side and again uncertainty of desired and expected production makes it mentally stressful and disappointing also. Hence the adverse surroundings of this kind of occupation lead to discontinuance of farming or technologies or package of practices.

So these two variables can be indicator variables to measure the technologies Discontinuance level.  $r^2$  Value being 0.3790 it is to conclude

that 37.9 Percent of the variability embedded with the consequent variable Discontinuance (y3) has been explained with the combination of the 19 causal variables.

Variable	Beta	t-value
Drudgeries(x19)	-0.315	2.300

**Table11: Regression analysis, Social Metabolism (Y) vs 19 causal variables (x1-x19)Multiple r sq- 0.3421**

S.L. No.	Variables	Beta	Beta x R	Reg. coef. B	S, error B	t value
1	Age(x1)	-0.066	1.732	-0.002	0.007	0.271
2	Education(x2)	-0.075	-0.017	-0.003	0.008	0.337
3	Family Size(x3)	-0.098	-1.783	-0.012	0.064	0.192
4	Occupation(x4)	-0.204	8.442	-0.054	0.045	1.184
5	CroppingIntensity(x5)	0.296	17.868	0.001	0.001	1.420
6	Farm Size(x6)	0.067	-3.937	0.022	0.117	0.186
7	Annual Income(x7)	-0.282	12.309	0.000	0.000	0.921
8	Electricity Consumption(x8)	0.090	-0.955	0.001	0.003	0.406
9	Fuel Consumption(x9)	-0.094	4.080	-0.029	0.080	0.366
10	Irrigation Index(x10)	-0.244	5.539	-0.505	1.103	0.458
11	Independency(x11)	-0.062	1.922	-0.018	0.058	0.310
12	Innovation Proneness(x12)	-0.091	-0.369	-0.004	0.008	0.467
13	Risk Orientation(x13)	0.248	11.636	0.075	0.051	1.462
14	Orientation Towards Competition(x14)	-0.131	1.128	-0.037	0.062	0.599
15	Management(x15)	-0.242	11.189	-0.074	0.069	1.080
16	Market Orientation(x16)	0.315	28.879	0.089	0.050	1.805
17	Information Seeking Behaviour(x17)	0.013	-0.075	0.003	0.043	0.067

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18	Distance Matrix(x18)	0.055	1.041	0.010	0.034	0.285
19	Drudgeries(x19)	-0.087	1.370	-0.019	0.043	0.442

The Table11 presents the Regression Analysis to estimate that the respective causal contribution of 19 exogenous variables on the dependent variable, Social Metabolism (y5).

**Results:** : It has been found that the variables Market Orientation(x16) and Cropping Intensity(x5) have contributed to the extent of 28.88 percent and 17.87percent of variance to the total  $r^2$  value respectively.

**Revelation:** Motivation driven by passion, by attitude or by knowledge, is the prime force for creating, managing and configuring Social Metabolism. The farmers vis-à-vis the respondents of the research locale are performing to contribute to Social Metabolism by disposing the motivational equivalences in the form of technology Adoption, Reinvention, Rejection and technology Discontinuance. So combination of interaction of all these motivational energies are creating a kind of social energy balance in a given social ecology where in Agriculture Production, management, and Entrepreneurship are the kind of processes.

The variable Market Orientation has contributed the highest percentile value of variance embedded with Social Metabolism. There is no denial to say that market demand and performance, market intelligence, seasonality, market segment and supply chain are the determinants of technology Adoption, Reinvention, Rejection and Discontinuance. Market through its organs and appendages, functions and elements are entering into the complex motivational network and are rightly dictating the basic processes

of Adoption, Rejection of prescribed technology. So no wonder Market Orientation will contribute substantially to the Social Metabolism.

Cropping Intensity is an estimator for auditing on the no. of crop or enterprises entering into an operational Enterprise Ecology to replace or substitute the score of conventional and non remunerative enterprises. Cropping Intensity, when increases it leads to diversification of enterprises and higher level of complexity. When a farmer shifts from monocropping to multi crop entrepreneurial pursuits The Social Metabolism takes up a unique character and hue.

So these two variables can be indicator variables to measure the Social Metabolism (y5).  $r^2$  Value being 0.3421 it is to conclude that 34.21 percent of the variability embedded with the consequent variable Social Metabolism(y5) has been explained with the combination of the 19 causal variables.

Variable	Beta	t-value
Market Orientation(x16)	0.314	2.290

#### PATH ANALYSIS

**Table12: Path Analysis: Direct, Indirect and Residual effect; Adoption (y1) Vs 19 Exogenous Variables(x1 to x19)**

#### Residual effect-0.6622

Sl no	Variables	Total Effect (r)	Direct Effect (DE)	Indirect Effect (IE)=r-DE	Highest Indirect Effect
1	Age(x1)	0.055	0.1384	-0.0834	-0.1474(x15)
2	Education(x2)	-0.121	-0.1716	0.0506	.0862(x1)

3	Family Size(x3)	0.051	-0.2234	0.1024	0.1679(x6)
4	Occupation(x4)	0.007	0.0315	-0.0245	-0.0402(x5)
5	CroppingIntensity(x5)	0.302	0.2374	0.0646	0.0411(x7)
6	Farm Size(x6)	-0.182	-0.2741	0.0921	0.1368(x3)
7	Annual Income(x7)	0.024	0.1214	-0.0974	0.1865(x6)
8	Electricity Consumption(x8)	-0.201	-0.0492	-0.1518	-0.1102(x6)
9	Fuel Consumption(x9)	-0.032	-0.0855	0.0535	0.1275(x3)
10	Irrigation Index(x10)	-0.096	-0.1582	0.0622	0.2025(x3)
11	Independency(x11)	-0.124	-0.1664	0.0424	0.0464(x18)
12	Innovation Proneness(x12)	-0.028	-0.1889	0.1609	0.0761(x15)
13	Risk Orientation(x13)	0.129	0.1341	-0.0051	-0.0628(x6)
14	Orientation Towards Competition(x14)	0.007	-0.1733	0.1803	0.0683(x18)
15	Management(x15)	-0.227	-0.3351	0.1081	0.0609(x1)
16	Market Orientation(x16)	0.155	0.1416	0.0134	-0.0318(x15)
17	Information Seeking Behaviour(x17)	-0.030	-0.1418	0.1118	0.0487(x3)
18	DistanceMatrix(x18)	-0.136	-0.1779	0.0419	0.0665(x14)
19	Drudgeries(x19)	0.018	-0.0214	0.0394	-0.0697(x12)

**Table 12** 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 Management(x15) has exerted the highest Total Direct Effect on Adoption (y1). It is simply because; management is a vital

factor when we go for adoption of something new. Well management leads to the successful Adoption of new technology or package of practices.

Another variable Orientation towards Competition(x14) has exerted the highest Total Indirect Effect to elucidate that the competitive nature of the farmers invites the Adoption of new technologies or practices. When a farmer introduces something new in his field situation, the competitiveness surrounds the neighbour farmers also, that ultimately invites the Adoption of that very technology to a great extent.

The same table also elucidate that variables Family Size(x3) and Farm Size(x6) have rooted the highest number of indirect effects i.e. four times on enterprise creation. This indicates that Family Size and Farm Size have an immense impact on the consequent variable Adoption. The more the periphery of the family increases the demand from the existing resources also increases that ultimately exerts a force on the adoption of new package of practices. Again as the Farm Size expands the opportunities for modern agriculture increases in the form of Farm Mechanization, or Share Cropping etc.

The Residual Effect is being 0.6622; it is to infer that a huge portion of variance in the consequent variable (66.22%) could not be explained. Social metabolism being a very complex structure and concept, more number of variables, if included, could have explained higher level of variance.

**Table13: Path Analysis: Direct, Indirect and Residual effect;  
Reinvention (y2)Vs 19 Exogenous Variables(x1 to x19)**

**Residual effect-0.6921**

Sl. no	Variables	Total Effect (r)	Direct Effect (DE)	Indirect Effect (IE)=r-DE	Highest Indirect Effect
1	Age(x1)	-0.099	-0.2288	0.1298	0.549(x6)
2	Education(x2)	0.061	0.0069	0.0541	0.1425(x1)
3	Family Size(x3)	0.116	0.3007	-0.1847	-0.2342(x6)
4	Occupation(x4)	0.010	-0.1163	0.1263	0.1030(x7)
5	CroppingIntensity(x5)	-0.182	0.0207	-0.2027	-0.1574(x7)
6	Farm Size(x6)	-0.101	0.3823	-0.4833	-0.3159(x7)
7	Annual Income(x7)	-0.272	-0.4645	0.1925	0.2600(x6)
8	Electricity Consumption(x8)	0.141	0.2291	-0.0881	-0.2013(x7)
9	Fuel Consumption(x9)	-0.104	0.1407	-0.2447	-0.1983(x7)
10	Irrigation Index(x10)	-0.105	-0.2041	0.0991	-0.2766(x7)
11	Independency(x11)	-0.088	0.1296	-0.2176	-0.0774(x7)
12	Innovation Proneness(x12)	0.024	-0.0389	0.0629	0.0537(x7)
13	Risk Orientation(x13)	0.043	0.1551	-0.1121	-0.1231(x7)
14	Orientation Towards Competition(x14)	-0.091	-0.0707	-0.0203	- 0.0879(x18)
15	Management(x15)	0.109	-0.0096	0.1186	-0.1006(x1)
16	Market Orientation(x16)	0.263	0.2605	0.0025	0.0466(x7)
17	Information Seeking Behaviour(x17)	0.028	0.1860	-0.158	-0.0656(x3)
18	DistanceMatrix(x18)	0.232	0.2290	0.003	0.0574(x6)
19	Drudgeries(x19)	0.045	0.0398	0.0052	0.0454(x18)

Table 13 explains the Path Analysis where in the total effects of the 19 exogenous variables decomposed into Total Direct Effects, Total Indirect Effects and Residual Effects.

It has been found that the variable Annual Income(x7) has exerted the highest Total Direct Effect on the consequent variable Reinvention (y2). It means Annual Income is a determinant factor for the Reinvention on improved technologies or package of practices. As the income of the farmers increases they are being able to reinvent the costly or expensive technologies into their field situation which were previously out of the reach of them.

The Farm Size is showing the Total Indirect effect on the variable Reinvention. It is simply because the farm size enables a farmer to determine whether he can apply the modern practices in his available field condition.

The table shows that the variable Annual Income has exerted the highest no of Indirect Effects which elucidates that it is a prime factor for the consequent variable Reinvention.

The Residual Effect being 0.6921 it is to infer that a huge portion of variance (69.21%) in the consequent variable could not be explained. The Social Metabolism being a complex and a diverse concept, if more numbers of variable are included then it would explain a higher level of variance.

**Table14: Path Analysis: Direct, Indirect and Residual effect; Rejection (y3)Vs 19 Exogenous Variables (x1 to x19)**

**Residual effect-0. 5365**

Sl. no	Variables	Total Effect (r)	Direct Effect (DE)	Indirect Effect (IE)=r-DE	Highest Indirect Effect

## Results and Discussions

1	Age(x1)	-0.072	0.0392	-0.1112	0.1417(x2)
2	Education(x2)	-0.079	-0.2275	0.1485	0.0895(x9)
3	Family Size(x3)	0.002	-0.0235	0.0255	- 0.3327(x10)
4	Occupation(x4)	-0.434	-0.2843	-0.1497	- 0.0652(x10)
5	CroppingIntensity(x5)	0.294	0.1770	0.117	-0.0714(x9)
6	Farm Size(x6)	-0.03	-0.3766	0.3466	0.2511(x10)
7	Annual Income(x7)	0.134	0.1303	0.0037	-0.2562(x6)
8	Electricity Consumption(x8)	0.163	0.1575	0.0055	0.1936(x10)
9	Fuel Consumption(x9)	-0.171	-0.3934	0.2224	0.1944(x10)
10	Irrigation Index(x10)	0.111	0.3670	-0.256	0.3670(x10)
11	Independency(x11)	0.228	0.1017	0.1263	0.0504(x17)
12	Innovation Proneness(x12)	0.149	0.1447	0.0043	- 0.0463(x10)
13	Risk Orientation(x13)	0.018	-0.0476	0.0656	-0.0863(x6)
14	Orientation Towards Competition(x14)	0.031	0.0476	-0.0166	0.0931(x9)
15	Management(x15)	-0.125	-0.0652	-0.0598	-0.1209(x9)
16	Market Orientation(x16)	0.016	0.0217	-0.0057	0.0400(x10)
17	Information Seeking Behaviour(x17)	-0.243	-0.1917	-0.0513	-0.0759(x9)
18	DistanceMatrix(x18)	0.009	0.0931	-0.0841	-0.0565(x6)
19	Drudgeries(x19)	-0.097	-0.0570	-0.04	-0.0571(x4)

The table 14 shows the Path Analysis where in the total effects of the 19 exogenous variables decomposed into Total Direct Effects, Total Indirect Effects and Residual Effects.

It has been found that the variable Irrigation Index(x10) has exerted the highest Total Direct Effect on the consequent variable Rejection (y3). It is

simply because the irrigation facility is the indication of well managed farming which implies the scope for modern agriculture significantly. The Rejection of old conventional practices in turn invites the Adoption of remunerative and sustainable agriculture as well.

The table also shows that the variable Farm Size(x6) has exerted the highest Total Indirect Effect on the consequent variable Rejection. The more the farm size increases farmer can find their way towards nonconventional as well as modern agriculture.

The variable Irrigation Index again finds the maximum no of Indirect Effects i.e. eight times on the resultant variable Rejection.

The Residual Effect being 0.5365 it is to infer that a huge portion of variance (53.65%) in the consequent variable could not be explained. The Social Metabolism being a complex and a diverse concept, if more numbers of variable are included then it would explain a higher level of variance.

**Table15: Path Analysis: Direct, Indirect and Residual effect; Discontinuance (y4)Vs 19 Exogenous Variables(x1 to x19)**

**Residual effect-0.6210**

Sl no	Variables	Total Effect (r)	Direct Effect (DE)	Indirect Effect (IE)=r-DE	Highest Indirect Effect
1	Age(x1)	-0.157	-0.2344	0.0774	-0.0921(x3)
2	Education(x2)	0.132	0.1348	-0.0028	0.1460(x1)
3	Family Size(x3)	-0.108	-0.5317	0.4237	0.3358(x10)
4	Occupation(x4)	-0.073	-0.1244	0.0514	- 0.0920(x19)
5	CroppingIntensity(x5)	0.041	0.0928	-0.0518	0.0786(x19)

## Results and Discussions

6	Farm Size(x6)	-0.025	0.1313	-0.1563	0.3257(x3)
7	Annual Income(x7)	-0.121	-0.2274	0.1064	0.2675(x3)
8	Electricity Consumption(x8)	0.074	0.0390	0.035	- 0.1954(x10)
9	Fuel Consumption(x9)	-0.021	-0.0984	0.0774	0.3034(x3)
10	Irrigation Index(x10)	0.087	-0.3704	0.4574	0.4820(x3)
11	Independency(x11)	-0.158	-0.3042	0.1462	0.1229(x19)
12	Innovation Proneness(x12)	-0.052	0.1735	-0.2255	- 0.1690(x12)
13	Risk Orientation(x13)	0.068	0.1940	-0.126	- 0.0878(x19)
14	Orientation Towards Competition(x14)	0.035	0.1497	-0.1147	-0.0896(x3)
15	Management(x15)	0.015	0.2041	-0.1891	-0.1031(x1)
16	Market Orientation(x16)	0.133	0.0699	0.0631	0.0542(x3)
17	Information Seeking Behaviour(x17)	0.231	0.1281	0.1029	0.1160(x3)
18	DistanceMatrix(x18)	0.071	0.1011	-0.0301	- 0.0908(x19)
19	Drudgeries(x19)	-0.315	-0.4582	0.1432	0.0816(x11)

The table 15 shows the Path Analysis where in the total effects of the 19 exogenous variables decomposed into Total Direct Effects, Total Indirect Effects and Residual Effects.

It has been found that the variable Family Size(x3) has exerted the highest Total Direct Effect on the consequent variable Discontinuance (y4). It implies that the increasing demand of the family compels a farmer to quit the conventional, non remunerative practices. He is forced to discontinue the existing practices so that he can adopt the new and profitable ones.

The table also shows that the variable Irrigation Index (x10) has exerted the highest Total Indirect Effect on the consequent variable Discontinuance (y4). The same way as the farmer becomes able to bear the cost of irrigation facility he tries to apply the improved and new technologies and package of practices, discontinuing the old ones.

The variable Family Size again finds the maximum no of Indirect Effects i.e. eight times on the resultant variable Discontinuance.

The Residual Effect being 0.6210 it is to infer that a huge portion of variance (62.1%) in the consequent variable could not be explained. The Social Metabolism being a complex and a diverse concept, it would be more effective if more numbers of variable are included.

**Table 16: Path Analysis: Direct, Indirect and Residual effect; Social Metabolism(y5) Vs 19 Exogenous Variables(x1 to x19)**

**Residual effect-0.6579**

Sl no	Variables	Total Effect (r)	Direct Effect (DE)	Indirect Effect (IE)=r-DE	Highest Indirect Effect
1	Age(x1)	-0.089	-0.0665	-0.0225	0.0559(x10)
2	Education(x2)	-0.015	-0.0747	0.0597	0.0506(x15)
3	Family Size(x3)	0.062	-0.0983	0.1603	0.2214(x10)
4	Occupation(x4)	-0.142	-0.2037	0.0617	0.0626(x7)
5	Cropping Intensity(x5)	0.207	0.2955	-0.0885	-0.0956(x7)
6	Farm Size(x6)	-0.201	0.0671	-0.2681	-0.1919(x7)
7	Annual Income(x7)	-0.149	-0.2821	0.1331	-0.2821(x7)
8	Electricity Consumption(x8)	-0.036	0.0901	-0.1261	- 0.1288(x10)
9	Fuel Consumption(x9)	-0.149	-0.0939	-0.0551	- 0.1293(x10)

## Results and Discussions

10	Irrigation Index(x10)	-0.078	-0.2442	0.1662	-0.1680(x7)
11	Independency(x11)	-0.106	-0.0621	-0.0439	-0.0470(x7)
12	Innovation Proneness(x12)	0.014	-0.0908	0.1048	0.0551(x15)
13	Risk Orientation(x13)	0.16	0.2483	-0.0883	-0.0748(x7)
14	Orientation Towards Competition(x14)	-0.029	-0.1310	0.102	-0.0293(x4)
15	Management(x15)	-0.158	-0.2425	0.0845	0.0383(x10)
16	Market Orientation(x16)	0.314	0.3148	-0.0008	0.0283(x7)
17	Information Seeking Behaviour(x17)	-0.019	0.0134	-0.0324	- 0.0413(x13)
18	DistanceMatrix(x18)	0.065	0.0551	0.0099	0.0502(x14)
19	Drudgeries(x19)	-0.054	-0.0872	0.0332	0.0476(x13)

The table 16 shows the Path Analysis where in the total effects of the 19 exogenous variables decomposed into Total Direct Effects, Total Indirect Effects and Residual Effects.

It has been found that the variable Market Orientation (x16) has exerted the highest Total Direct Effect on the consequent variable Social Metabolism (y5). It explains that Market Orientation is an important contributor to the resultant variable Social Metabolism. Market Orientation includes the mode of demand and supply to the market. Besides market intelligence, market management comes accordingly when we are going to explain the Social Metabolism in terms of Adoption, Reinvention, Rejection and Discontinuance. All these actions are closely related to the market structure available. Hence it is really a prime dictator of Social Metabolism.

The table also shows that the variable Farm Size(x6) has exerted the highest Total Indirect Effect on the consequent variable Social Metabolism. Farm

size is total land available to the farmer. Sometimes it is not possible for the farmer to go for the modern agriculture because of the lack of availability of the land. Moreover Farm Size is the main scope for the determinants of Social Metabolism i.e. Adoption, Reinvention, Rejection and Discontinuance.

The variable Annual Income(x7) again finds the maximum no of Indirect Effects i.e. eight times on the resultant variable Social Metabolism.

The Residual Effect being 0.6579 it is to infer that a huge portion of variance (65.79%) in the consequent variable could not be explained. The Social Metabolism being a complex and a diverse concept, it would be more effective if more numbers of variable are included.

### **FACTOR ANALYSIS**

**Table17- Factor Analysis:  
Conglomeration of 19 variables in 10 factors**

<b>Factor s</b>	<b>Variables</b>	<b>Factor Loadin g</b>	<b>% of Varianc e</b>	<b>Cumulativ e %</b>	<b>Factors Renamed</b>

## Results and Discussions

Factor 1	Farm Size(x6)	0.772	14.873	14.873	Farm Energy Capsule
	Annual Income(x7)	0.781			
	Electricity Consumption(x8)	0.558			
	Fuel consumption(x9)	0.671			
	Irrigation Index(x10)	0.880			
Factor 2	Independency(x11)	0.627	11.868	26.741	Conflict-Motivation
	Orientation Towards Competition(x14)	0.428			
Factor 3	Age(x1)	0.760	8.723	35.464	
Factor 4	Market Orientation(x16)	0.657	6.974	42.438	
Factor 5	Information Seeking Behavior(x17)	0.537	6.908	49.346	
Factor 6	Innovation Proneness(x12)	0.438	6.407	55.753	Regenerative Stress
	Drudgeries(x19)	0.393			
Factor 7	Management(x15)	0.439	5.825	61.578	Strategic Management
	Distance Matrix(x18)	0.411			
Factor 8	Education(x2)	0.143	4.795	66.372	

Factor 9	Family size(x3) Cropping Intensity(x5)	0.224 0.406	4.264	70.636	Farm Resources
Factor 10	Occupation(x4) Risk Orientation(x13)	0.437 0.401	3.493	74.130	Motivational Pursuits

The factor 1 has included following 5 no of variables i.e. Farm Size(x6), Annual Income(x7), Electricity Consumption(x8), Fuel Consumption(x9), and Irrigation Index(x10) which have contributed 14.873% of variance and has been renamed as **Farm Energy Capsule**. The factor 2 has included 2 no of variables i.e. Independency(x11) and Orientation Towards Competition(x14) that have contributed 11.868% of variance have been renamed as **Conflict-Motivation**. The factor 6 has included 2 no of variables i.e. Innovation Proneness(x12) and Drudgeries(x19) which have contributed 6.407% of variance and has been renamed as **Regenerative Stress**. Factor 7 has taken two variables under it i.e. Management(x15) and Distance Matrix(x18) which have contributed 5.825% of variance and has been renamed as **Strategic Management**. Factor 9 2 has included 2 no of variables i.e. Family Size(x3) and Cropping Intensity(x5) that have contributed 70.636% of variance has been renamed as **Farm Resources**. Factor 10 has included 2 no of variables i.e. Occupation(x4) and Risk Orientation(x13) that have contributed 74.130% of variance has been renamed as **Motivational Pursuits**.

### **Interpretation**

The factor Farm Energy Capsule (14.873) by becoming the prime mover of change process in agro ecosystem under study has also been contributed substantially towards creating Social Metabolism. While Social Metabolism is basically the flow of energy from one subsystem to another subsystem in given social ecology.

Farm Energy Capsule has rightly contributed the highest to become the prime factor in Social Metabolism.

Social Metabolism, on other way is the disposition of conflict and dissonance that is how and why there factor percentage has contributed substantially towards status of Social Metabolism.