Chapter–6

# Empirical Studies: Results and Revelation

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**Table 6.1: Descriptive Analysis of the Independent and Dependent variables**

| Variables | Range | | Mean | SD | CV (%) |
|---|---|---|---|---|---|
| | Max. | Min. | | | |
| 1. Age($X_1$) | 74 | 23 | 45.31 | 12.92 | 28.514 |
| 2. Education($X_2$) | 3 | 1 | 2.04 | 0.79 | 38.725 |
| 3.Family size($X_3$) | 7.00 | 2 | 4.68 | 1.26 | 26.923 |
| 4. Average cost of farm implements when purchased($X_4$) | 283.33 | 168.33 | 211.80 | 25.68 | 12.124 |
| 5. Average cost of farm implements at present($X_5$) | 485.00 | 373.33 | 425.97 | 26.89 | 6.312 |
| 6. Homestead land ($X_6$) | 0.37 | 0.05 | 0.16 | 0.06 | 37.5 |
| 7. Land under agricultural crop($X_7$) | 2.50 | 0.25 | 0.93 | 0.43 | 46.236 |
| 8. Cropping intensity ($X_8$) | 2.90 | 1.20 | 2.01 | 0.32 | 15.92 |
| 9. Land under bamboo ($X_9$) | 1.50 | 0.20 | 0.59 | 0.21 | 35.593 |
| 10. Material possessed ($X_{10}$) | 5.00 | 3.33 | 4.19 | 0.65 | 15.513 |
| 11. Annual income before bamboo ($X_{11}$) | 153750.00 | 5000.00 | 18679.68 | 15949.25 | 85.382 |
| 12. Mass media exposure ($X_{12}$) | 10.00 | 3.00 | 5.60 | 2.40 | 42.857 |

| | | | | | |
|---|---|---|---|---|---|
| 13. Number of rhizome planted ($X_{13}$) | 5000.00 | 1000.00 | 2699.49 | 848.02 | 31.414 |
| 14. Number of rhizome grown to the fullest ($X_{14}$) | 4500.00 | 850.00 | 2460.07 | 815.00 | 33.129 |
| 15. Training received($X_{15}$) | 15.00 | 3.00 | 9.49 | 4.12 | 43.414 |
| 16. Energy consumption ($X_{16}$) | 12300.00 | 1059.96 | 4668.50 | 2806.55 | 60.116 |
| 17. Distance to market($X_{17}$) | 8.00 | 2.00 | 5.60 | 1.53 | 27.321 |
| 18. Cost incurred in bamboo cultivation($X_{18}$) | 2640.00 | 300.00 | 917.18 | 354.97 | 38.702 |
| 19. Mode of selling($X_{19}$) | 5.00 | 3.00 | 4.02 | 0.77 | 19.154 |
| 20. Family income from bamboo enterprise($Y_1$) | 24425.00 | 3360.00 | 9535.06 | 3432.69 | 36 |
| 21. Family income from agricultural | 47500.00 | 1333.33 | 14177.51 | 7318.11 | 51.617 |
| enterprise($Y_2$) | | | | | |
| 22. Productivity of bamboo ($Y_3$) | 12762.50 | 1700.00 | 5004.80 | 1874.79 | 37.459 |
| 24. Mandays generated in bamboo | 45.00 | 12.85 | 21.36 | 7.83 | 36.657 |
| enterprise($Y_4$) | | | | | |
| 25. Wages generated in bamboo enterprise($Y_5$) | 6142.50 | 1735.40 | 2886.59 | 1053.38 | 36.492 |

Table-6.1.It presents the descriptive analysis on the distribution pattern and distribution nature of different independent and dependent variables.

The distribution pattern of variable **Age($X_1$)** depicts that the minimum age of the respondents is 23 and maximum is 74. Since the respondents belong to farming background and it was pre-decided, this distribution of age is quite natural. The mean age is 45.31 with standard deviation 12.92. The coefficient of variance (CV) is 28.514 per cent which indicates that the distribution pattern of the variable is consistent.

The distribution pattern of variable **Education($X_2$)** shows that the minimum standard of the respondents is 1 which means respondents studied up to class 8 only and the maximum is 3 which mean respondents' level of education is higher secondary. The mean education is 2.04 with S.D of 0.79. The coefficient of variance is 38.25 per cent which indicate distribution of the variables is fairly consistent.

The distribution pattern of variable **Family size ($X_3$)** depicts that the maximum family size of the respondents is 7 and the minimum is 2. This distribution shows that while some respondents have a small and nuclear family even others are having a joint family. The mean size of the family is 4.68 with standard deviation of 1.26. The coefficient of variance is 26.923 per cent which indicate the distribution of variable is fairly consistent.

The distribution pattern of variable **Average cost of farm implements when purchased ($X_4$)** depicts that the maximum average cost of implements is 283.33 and the minimum is 168.33. This distribution shows that due to variation in the time of purchasing of implement different respondents bought the implements at different prices. The mean price is 211.80 with standard deviation of 25.68. The coefficient of variance is 12.124 per cent which indicate the distribution of variable is fairly consistent.

The distribution pattern of variable **Average cost of farm implements at present ($X_5$)** depicts that the maximum average cost of implements is 485.00 and the minimum is 373.33. This distribution shows the variation in the knowledge of respondents regarding the prevailing price of implement

at market. The mean price is 425.97 with standard deviation of 26.89. The coefficient of variance is 6.312 per cent which indicate the distribution of variable is fairly consistent.

The distribution pattern of variable **size of Homestead land($X_6$)** shows that maximum homestead land is 0.37 Kani while the minimum is only 0.05 Kani. There is a quite narrow

Variation in the land holding of the respondents. This shows that while some respondents have enough land holding not only for a house to stay but also for some vegetable production others just having the only enough space for house only. The mean of the land holding size is 0.16 with a standard deviation of 0.06. The coefficient of variance is 37.5 per cent which indicates that the distribution of variable is quite consistent.

The distribution pattern of variable **land under agricultural crop ($X_7$)** shows that the maximum land own by the respondent is 2.50 kani while the minimum is 0.25 kani. The mean of own land is 0.93 with a standard deviation of 0.43. The coefficient of variance is 46.236 per cent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **cropping intensity ($X_8$)** shows that the maximum cropping intensity for different agricultural in the field of respondent is 2.90 while the minimum is 1.20. The mean of cropping intensity is 2.01 with a standard deviation of 0.32. The coefficient of variance is 15.92 per cent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **land under bamboo ($X_9$)** shows that the maximum land under bamboo owned by the respondent is 1.50 kani while the minimum is 0.20 kani. The mean of cropping land under bamboo is 0.59 with a standard deviation of 0.21. The coefficient of variance is 35.593 per cent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **material possessed ($X_{10}$)** shows that the maximum material possessed by the respondent is scored as 5.00 while the minimum is 3.33. The mean of material possession is 4.14 with a standard deviation of 0.65. The coefficient of variance is 15.513 per cent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **annual income before bamboo ($X_{11}$)** shows that the maximum income before bamboo by the respondent is Rs.153750.00 while the minimum is Rs.5000.00. The mean of income is 18679.68 with a standard deviation of 15949.25. The coefficient of variance is 85.382 per cent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **mass media exposure ($X_{12}$)** shows that the maximum score ranked by the respondent is 10 while the minimum is 3. The mean of exposure is 5.60 with a standard deviation of 2.40. The coefficient of variance is 42.857 per cent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **number of rhizome planted ($X_{13}$)** shows that the maximum rhizome planted by the respondent is 5000.00

while the minimum is 1000.00. The mean of number is 2699.49 with a standard deviation of 848.02. The coefficient of variance is 31.414 per cent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **number of rhizome grew to the fullest ($X_{14}$)** shows that the maximum number rhizome grew to fullest is 4500.00 while the minimum is 850.00. The mean of number of rhizome is 2460.00 with a standard deviation of 815.00. The coefficient of variance is 33.129 per cent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **training received ($X_{15}$)** shows that the maximum number of time of training received by the respondent is 15.00 while the minimum is 3.00. The mean of training received is 9.49 with a standard deviation of 4.12. The coefficient of variance is 43.414 per cent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **energy consumption ($X_{16}$)** shows that the maximum investment in energy consumption by the respondent is 12300.00 while the minimum is 1059.96. The mean of consumption is 4668.50 with a standard deviation of 2806.55. The coefficient of variance stands at 60.116 per cent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **distance to market ($X_{17}$)** shows that the maximum distance for the respondent is 8.00 while the minimum is 2.00. The mean of distance is 5.60 with a standard deviation of 1.53. The

coefficient of variance is 27.321 per cent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **cost incurred in bamboo cultivation ($X_{18}$)** shows that the maximum cost incurred by the respondent is 2640.00.00 while the minimum is 300.00. The mean of cost is 917.18 with a standard deviation of 354.97. The coefficient of variance is 38.702 per cent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable mode of selling (X19) shows that the maximum score ranked by the respondent according to schedule is 5.00 while the minimum is 3.00. The mean of score is 4.02 with a standard deviation of 0.77. The coefficient of variance is 19.154 percent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **family income from bamboo enterprise ($Y_1$)** shows that the maximum income by the respondent is Rs.24425.00 while the minimum is Rs.3360.00. The mean of income is Rs.9535.06 with a standard deviation of3432.69. The coefficient of variance is 36 percent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **family income from agricultural enterprise ($Y_2$)** shows that the maximum income by the respondent is Rs.47500.00 while the minimum is Rs.1333.33. The mean of income is Rs.14177.51 with a standard deviation of 7318.11. The coefficient of variance is 51.617 percent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **productivity of bamboo ($Y_3$)** shows that the maximum production is 12762.50 while the minimum is 1700.00. The mean of production is 5004.80 with a standard deviation of 1874.79. The coefficient of variance is 37.459 percent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **Mandays generated in bamboo enterprise ($Y_4$)** shows that the maximum Mandays is 45.00 while the minimum is 12.85. The mean of Mandays is 21.36 with a standard deviation of 7.83. The coefficient of variance stands at 36.657 percent which indicates that the distribution of the variable is quite consistent.

The distribution pattern of variable **wages generated in bamboo enterprise ($Y_5$)** shows that the maximum wages is Rs.6142.50 while the minimum is Rs.1735.40. The mean of wages is Rs.2886.59 with a standard deviation of 1053.38. The coefficient of variance is 36.492 percent which indicates that the distribution of the variable is quite consistent.

**Table 6.2: Co-efficient of correlation between The Family income from Bamboo enterprise ($Y_1$) and other 19 exogenous variable.**

| EXOGENOUS VARIABLE | DEPENDENT VARIABLE( $Y_1$) |
|---|---|
| 1. Age($X_1$) | 0.0855 |
| 2. Education($X_2$) | -0.1287 |
| 3.Family size($X_3$) | -0.4593** |
| 4. Average cost of farm implements when | -0.1953 |
| purchased($X_4$) | |
| 5. Average cost of farm implements at | 0.0465 |
| present($X_5$) | |

| | |
|---|---|
| 6. Homestead land ($X_6$) | -0.0154 |
| 7. Land under agricultural crop($X_7$) | 0.1999* |
| 8. Cropping intensity ($X_8$) | -0.0702 |
| 9. Land under bamboo ($X_9$) | 0.9937** |
| 10. Material possessed ($X_{10}$) | 0.0166 |
| 11. Annual income before bamboo ($X_{11}$) | 0.1448 |
| 12. Mass media exposure ($X_{12}$) | -0.0691 |
| 13. Number of rhizome planted ($X_{13}$) | 0.3055** |
| 14. Number of rhizome grown to the fullest ($X_{14}$) | 0.2920** |
| 15. Training received($X_{15}$) | 0.0408 |
| 16. Energy consumption ($X_{16}$) | 0.1978* |
| 17. Distance to market($X_{17}$) | 0.0439 |
| 18. Cost incurred in bamboo cultivation($X_{18}$) | 0.9722** |
| 19. Mode of selling($X_{19}$) | 0.1607 |
| 20. Family income from bamboo enterprise($Y_1$) | 1.0000** |
| 21. Family income from agricultural enterprise($Y_2$) | 0.3751** |
| 22. Productivity of bamboo ($Y_3$) | 0.8562** |
| 24. Mandays generated in bamboo enterprise($Y_4$) | 0.5221** |
| 25. Wages generated in bamboo enterprise($Y_5$) | 0.5222** |

** Significant at 1% level of significance

* Significant at 5% level of significance.

The Table-6.2 presents the co-efficient of correlation between the Family income from bamboo enterprise ($Y_1$) and other 19 independent variable.

It has been found that the following variables have been emerged as the significant predictors of income from Bamboo enterprise($Y_1$), and these predictor variables are family size($X_3$), land Uunder agricultural crop($X_7$), land under bamboo($X_9$), number of rhizome planted($X_{13}$),number of

rhizome grew to the fullest($X_{14}$), energy consumption($X_{16}$), cost incurred in bamboo cultivation($X_{18}$).

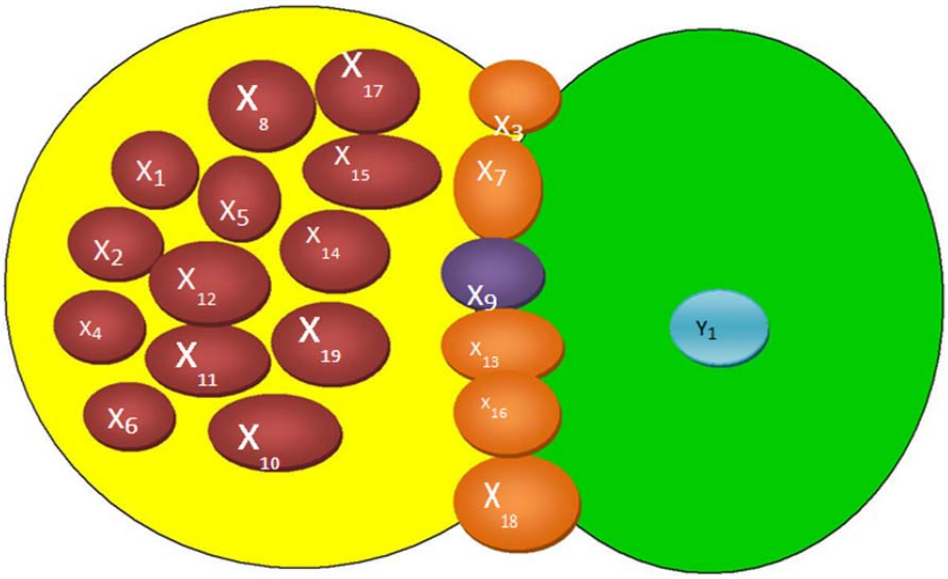



**Fig. 6.1: Co-efficient of correlation between The Family income from Bamboo enterprise (Y1) and other 19 exogenous variable.**

**REVEALATION**

The variable family size(X3) has been found negatively but significantly correlated to imply that family income from Bamboo enterprise ($Y_1$) has gone higher for a small size family. Small size family has got relatively less family cost to incur and hence higher level of savings and surplus.

Land under agricultural crop($X_7$) and land under bamboo($X_9$), on the other hand, have recorded a positive but significant correlation to imply that for the respondents having higher size of land holding, are also generating higher level of income.

Number of rhizome planted($X_{13}$) and number of rhizome grew to the fullest($X_{14}$) have been found to have positive but significant correlation to imply that for the respondents who planted and retained higher number of rhizome have acquired higher level of income.

Energy consumption($X_{16}$) has been emerged as an important economic indicator to estimate the income from family income from Bamboo enterprise ($Y_1$) of the respondents. This implies that higher degree of energy consumption has gone positively with the income from the bamboo enterprise.

Cost incurred in bamboo cultivation($X_{18}$) has recorded to have positive but significant correlation with the family income from Bamboo enterprise ($Y_1$). Cost is an indicator to decide on and characterize the investment volume. When the cost scrolls up, it sometimes indicate that t income the also increasing.

**Table 6.3: Co-efficient of correlation between The family income from Agricultural enterprise ($Y_2$) and other 19 independent variables.**

| **EXOGENOUS VARIABLE** | **The family income from agricultural enterprise ($Y_2$)** |
|---|---|
| 1. Age($X_1$) | 0.1296 |
| 2. Education($X_2$) | -0.1569 |
| 3. Family size($X_3$) | -0.5528** |
| 4. Average cost of farm implements when purchased($X_4$) | 0.0077 |
| 5. Average cost of farm implements at present($X_5$) | 0.0123 |

| | |
|---|---|
| 6. Homestead land ($X_6$) | 0.2408* |
| 7. Land under agricultural crop($X_7$) | 0.7779** |
| 8. Cropping intensity ($X_8$) | -0.2178* |
| 9. Land under bamboo ($X_9$) | 0.3972** |
| 10. Material possessed ($X_{10}$) | 0.1443 |
| 11. Annual income before bamboo ($X_{11}$) | 0.3559** |
| 12. Mass media exposure ($X_{12}$) | 0.0176 |
| 13. Number of rhizome planted ($X_{13}$) | -0.0625 |
| 14. Number of rhizome grown to the fullest ($X_{14}$) | -0.0424 |
| 15. Training received($X_{15}$) | 0.0870 |
| 16. Energy consumption ($X_{16}$) | 0.4137** |
| 17. Distance to market($X_{17}$) | 0.1865 |
| 18. Cost incurred in bamboo cultivation($X_{18}$) | 0.3954** |
| 19. Mode of selling($X_{19}$) | 0.0722 |
| 20. Family income from bamboo enterprise($Y_1$) | 0.3751** |
| 21. Family income from agricultural enterprise($Y_2$) | 1.000** |
| 22. Productivity of bamboo ($Y_3$) | 0.3051** |
| 24. Mandays generated in bamboo enterprise($Y_4$) | 0.6505** |
| 25. Wages generated in bamboo enterprise($Y_5$) | 0.6558** |

** Significant at 1% level of significance

* Significant at 5% level of significance.

The Table-6.3 presents the co-efficient of correlation between the Family income from agricultural enterprise ($Y_2$) and other 19 independent variable. It has been found that the following variables have been emerged as the significant predictors of income from Agricultural enterprise($Y_2$), and these predictor variables are family size($X_3$),homestead land($X_6$),land under agricultural crop($X_7$), land under bamboo($X_9$),Annual income before

bamboo($X_{11}$), energy consumption($X_{16}$), cost incurred in bamboo cultivation($X_{18}$).

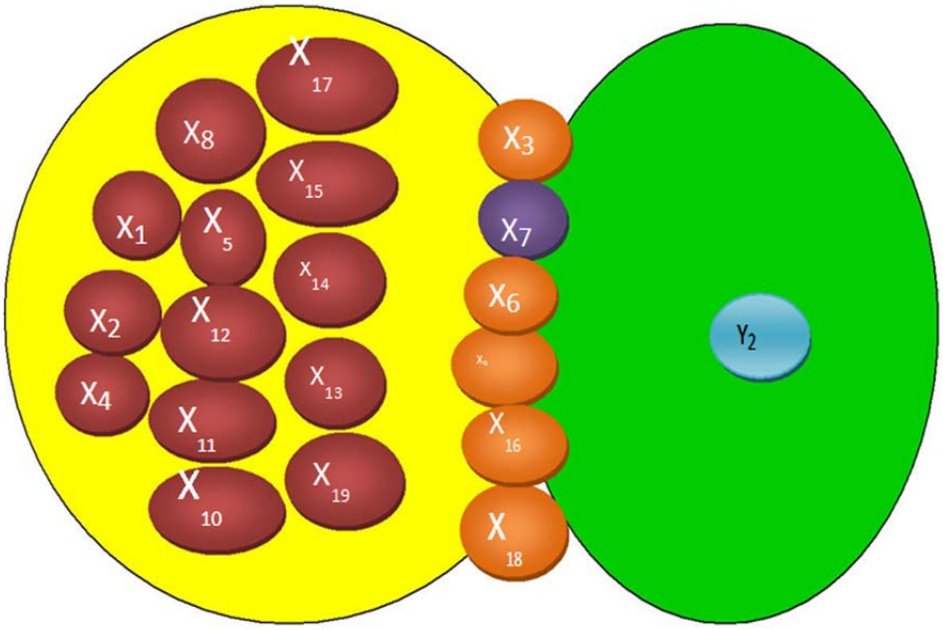



**Fig. 8.2: Co-efficient of correlation between The family income from Agricultural enterprise ($Y_2$) and other 19 independent variables.**

**REVEALATION**

The variable family size($X_3$) have been found negatively but significantly correlated to imply that family income from Agricultural enterprise ($Y_2$) has gone higher for a small size family. Small size family has got relatively less family cost to incur and hence higher level of savings and surplus.

Homestead land($X_6$), Land under agricultural crop($X_7$) and land under bamboo($X_9$) , on the other hand, have recorded a positive but significant correlation to imply that all type of lands are providing the resource support

for the optimum farm operation and the generation of farm income. The size of land acts in the form of a volume of operational resources and hence, can ensure better income and absorb any kind of risk.

Annual income before bamboo ($X_{11}$), have been found to have positive but significant correlation with the family income from agricultural enterprise ($Y_2$). This is to imply that it has got congenital impact.

Energy consumption($X_{16}$) has been emerged as an important economic indicator to estimate the income from family income from Agricultural enterprise ($Y_2$) of the respondents. This implies that high- energy – agriculture has also bee n the high yielding crop enterprise. The mechanization vis-a-vis energy intensification has gone positively to generate higher per unit family income from the agricultural enterprise.

Cost incurred in bamboo cultivation($X_{18}$) has recorded to have positive but significant correlation with the family income from Agricultural enterprise ($Y_2$). This implies that respondents those who have given higher investment in bamboo got higher income, and can reinvest this in agricultural enterprise and can get higher income from there too.

**Table 6.4: Co-efficient of correlation between Productivity of Bamboo ($Y_3$) and other 19 independent variable.**

| **EXOGENOUS VARIABLE** | **Productivity of Bamboo($Y_3$)** |
|---|---|
| 1. Age($X_1$) | 0.1362 |
| 2. Education($X_2$) | -0.1503 |
| 3. Family size($X_3$) | -0.3588** |

| | |
|---|---|
| 4. Average cost of farm implements when purchased($X_4$) | -0.1366 |
| 5. Average cost of farm implements at present($X_5$) | -0.0329 |
| 6. Homestead land ($X_6$) | -0.0279 |
| 7. Land under agricultural crop($X_7$) | 0.2049* |
| 8. Cropping intensity ($X_8$) | -0.0049 |
| 9. Land under bamboo ($X_9$) | 0.8619** |
| 10. Material possessed ($X_{10}$) | 0.0817 |
| 11. Annual income before bamboo ($X_{11}$) | 0.0776 |
| 12. Mass media exposure ($X_{12}$) | -0.0443 |
| 13. Number of rhizome planted ($X_{13}$) | 0.2705** |
| 14. Number of rhizome grown to the fullest ($X_{14}$) | 0.2629** |
| 15. Training received($X_{15}$) | 0.0110 |
| 16. Energy consumption ($X_{16}$) | 0.2222* |
| 17. Distance to market($X_{17}$) | 0.1346 |
| 18. Cost incurred in bamboo cultivation($X_{18}$) | 0.8489** |
| 19. Mode of selling($X_{19}$) | 0.1404 |
| 20. Family income from bamboo enterprise($Y_1$) | 0.8562** |
| 21. Family income from agricultural enterprise($Y_2$) | 0.3051** |
| 22. Productivity of bamboo ($Y_3$) | 1.0000** |
| 24. Mandays generated in bamboo enterprise($Y_4$) | 0.4225** |
| 25. Wages generated in bamboo enterprise($Y_5$) | 0.4220** |

** Significant at 1% level of significance

* Significant at 5% level of significance.

The table-6.4 presents the co-efficient of correlation between Productivity of Bamboo ($Y_3$) and other 19 independent variable.

It has been found that the following variables have been emerged as the significant predictors of Productivity of bamboo($Y_3$), and these predictor variables are family size($X_3$),land under agricultural crop($X_7$), land under bamboo($X_9$), number of rhizome planted($X_{13}$),number ofrhizome grew to

the fullest($X_{14}$), energy consumption($X_{16}$), cost incurred in bamboo cultivation($X_{18}$).

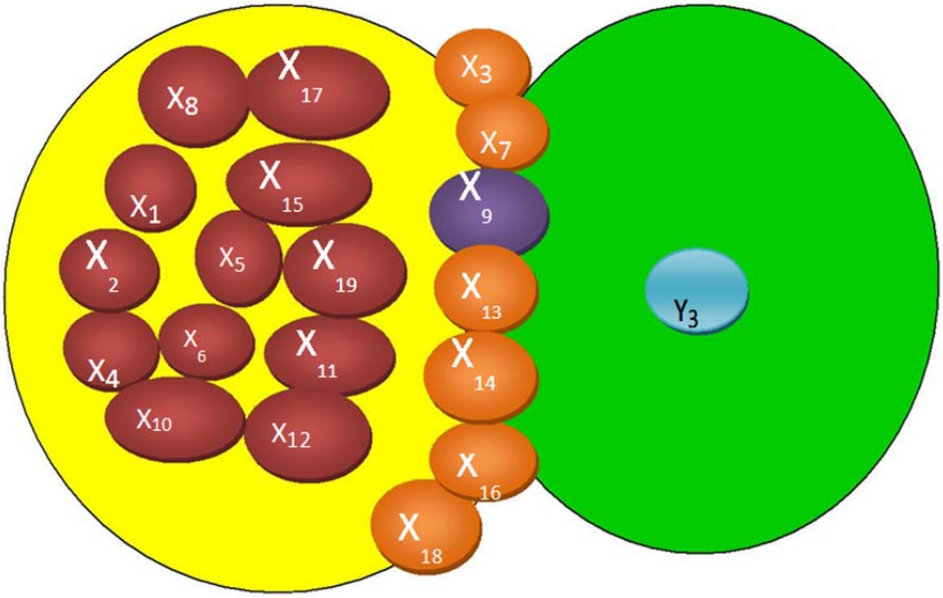



**Fig. 6. 3: Co-efficient of correlation between Productivity of Bamboo ($Y_3$) and other 19 independent variable.**

**REVEALATION**

The variable family size($X_3$) have been found negatively but significantly correlated to imply that productivity of Bamboo ($Y_3$) has gone higher for a small size family. Small size family has got relatively less family cost to incur and hence higher level of savings and surplus.

Land under agricultural crop($X_7$) and land under bamboo($X_9$), on the other hand, have recorded a positive but significant correlation to imply that from

the respondents having higher size of land holding they are getting higher level of production.

Number of rhizome planted($X_{13}$) and number of rhizome grew to the fullest($X_{14}$) have been found to have positive but significant correlation. Rhizomes are the basic biological inputs for the propagation and production of bamboo. The more the number of rhizomes, nurtured properly the more would be the production of bamboo vis-à-vis income from bamboo.

Energy consumption($X_{16}$) have been emerged as an important economic indicator to estimate productivity of Bamboo ($Y_3$) of the respondents. This implies that higher degree of energy consumption has gone positively with the higher production from bamboo plantation.

Cost incurred in bamboo cultivation($X_{18}$) has recorded to have positive but significant correlation with the productivity of Bamboo ($Y_3$). This implies that respondents those who

Gave proper attention to the plantation and took good care of the plantation got higher level of production from bamboo enterprise.

**Table 6.5: Co-efficient of correlation between the Mandays generation from Bamboo enterprise ($Y_4$) and other 19 independent variable.**

| **Exogenous variable** | **Mandays generated from Bamboo enterprise($Y_4$)** |
|---|---|
| 1. Age($X_1$) | -0.0116 |
| 2. Education($X_2$) | -0.0231 |
| 3. Family size($X_3$) | -0.9289** |
| 4. Average cost of farm implements when purchased($X_4$) | -0.1467 |

| | |
|---|---|
| 5. Average cost of farm implements at present($X_5$) | -0.0489 |
| 6. Homestead land ($X_6$) | 0.1658 |
| 7. Land under agricultural crop($X_7$) | 0.4721** |
| 8. Cropping intensity ($X_8$) | 0.0260 |
| 9. Land under bamboo ($X_9$) | 0.5329** |
| 10. Material possessed ($X_{10}$) | 0.0152 |
| 11. Annual income before bamboo ($X_{11}$) | 0.2704** |
| 12. Mass media exposure ($X_{12}$) | -0.1876 |
| 13. Number of rhizome planted ($X_{13}$) | -0.1239 |
| 14. Number of rhizome grown to the fullest ($X_{14}$) | -0.1210 |
| 15. Training received($X_{15}$) | -0.0396 |
| 16. Energy consumption ($X_{16}$) | 0.5013** |
| 17. Distance to market($X_{17}$) | 0.1167 |
| 18. Cost incurred in bamboo cultivation($X_{18}$) | 0.5282** |
| 19. Mode of selling($X_{19}$) | 0.1136 |
| 20. Family income from bamboo enterprise($Y_1$) | 0.5221** |
| 21. Family income from agricultural enterprise($Y_2$) | 0.6505** |
| 22. Productivity of bamboo ($Y_3$) | 0.4225** |
| 24. Mandays generated in bamboo enterprise($Y_4$) | 1.0000** |
| 25. Wages generated in bamboo enterprise($Y_5$) | 0.9992 |

** Significant at 1% level of significance

* Significant at 5% level of significance.

The Table-6.5 presents the co-efficient of correlation between Mandays generated from Bamboo enterprise ($Y_4$) and other 19 independent variable.

It has been found that the following variables have been emerged as the significant predictors of Mandays generated from bamboo enterprise($Y_4$), and these predictor variables are family size($X_3$),land under agricultural

crop($X_7$), land under bamboo($X_9$),Annual income before bamboo($X_{11}$), energy consumption($X_{16}$), cost incurred in bamboo cultivation($X_{18}$).

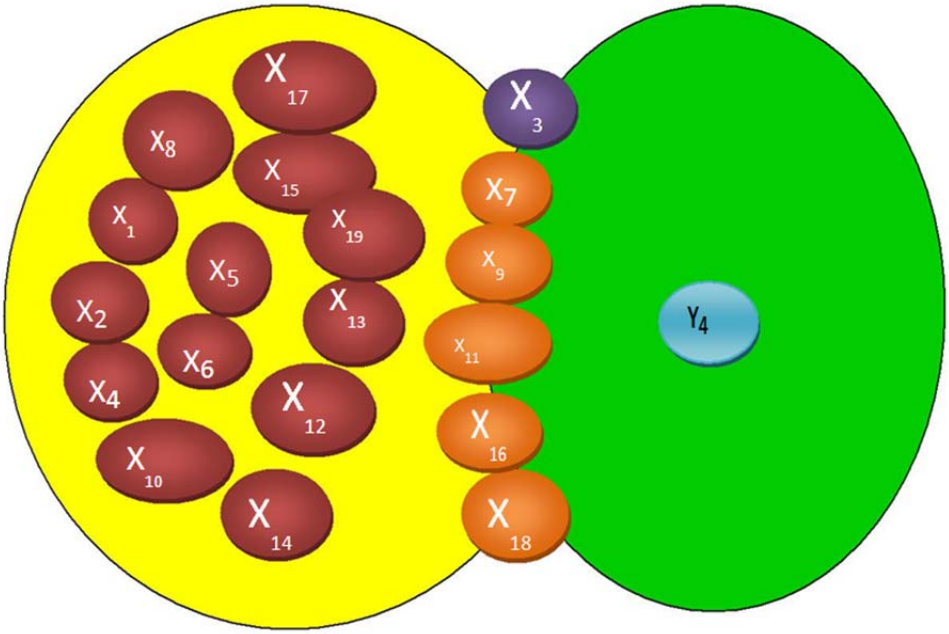



**Fig. 6.4: Co-efficient of correlation between the Mandays generation from Bamboo enterprise ($Y_4$) and other 19 independent variable.**

**REVEALATION**

The variable family size($X_3$) have been found negatively but significantly correlated to imply that Mandays generated from Bamboo enterprise ($Y_4$) has gone higher for a small size family. Small size family has got relatively less family cost to incur and hence higher level of savings and surplus.

Land under agricultural crop($X_7$) and land under bamboo($X_9$) , on the other hand, have recorded a positive but significant correlation to imply that all type of lands are providing the resource support for the optimum farm

operation and the generation of farm income. The size of land acts in the form of a volume of operational resources and hence can ensure better income and absorb any kind of risk.

Annual income before bamboo ($X_{11}$) has been found to have positive but significant correlation with Mandays generated from Bamboo enterprise ($Y_4$). This is to imply that it has got congenital impact.

Energy consumption($X_{16}$) have been emerged as an important economic indicator to estimate the income from Mandays generated from Bamboo enterprise ($Y_4$) of the respondents. This implies that the mechanization vis-a-vis energy intensification has gone positively to generate higher per unit Mandays generation from Bamboo enterprise.

Cost incurred in bamboo cultivation($X_{18}$) has recorded to have positive but significant correlation with Mandays generated from Bamboo enterprise ($Y_4$). This implies that respondents those who have invested high amount in bamboo plantation got higher income as well as higher Mandays generated thereafter.

**Table 6.6: Co-efficient of correlation between Wage generation from Bamboo eopnterprise(Y5) and other 19 independent variable.**

| **EXOGENOUS VARIABLE** | **Wage generation from Bamboo enterprise($Y_5$)** |
|---|---|
| 1. Age($X_1$) | -0.0072 |
| 2. Education($X_2$) | -0.0298 |
| 3. Family size($X_3$) | -0.9297** |
| 4. Average cost of farm implements when | -0.1476 |

| | |
|---|---|
| purchased($X_4$) | |
| 5. Average cost of farm implements at present($X_5$) | -0.0446 |
| 6. Homestead land ($X_6$) | 0.1693 |
| 7. Land under agricultural crop($X_7$) | 0.4769** |
| 8. Cropping intensity ($X_8$) | 0.0235 |
| 9. Land under bamboo ($X_9$) | 0.5328** |
| 10. Material possessed ($X_{10}$) | 0.0204 |
| 11. Annual income before bamboo ($X_{11}$) | 0.2710** |
| 12. Mass media exposure ($X_{12}$) | -0.1863 |
| 13. Number of rhizome planted ($X_{13}$) | -0.1242 |
| 14. Number of rhizome grown to the fullest ($X_{14}$) | -0.1212 |
| 15. Training received($X_{15}$) | -0.0416 |
| 16. Energy consumption ($X_{16}$) | 0.4973** |
| 17. Distance to market($X_{17}$) | 0.1219 |
| 18. Cost incurred in bamboo cultivation($X_{18}$) | 0.5277** |
| 19. Mode of selling($X_{19}$) | 0.1179 |
| 20. Family income from bamboo enterprise($Y_1$) | 0.5222** |
| 21. Family income from agricultural enterprise($Y_2$) | 0.6558** |
| 22. Productivity of bamboo ($Y_3$) | 0.4220** |
| 24. Mandays generated in bamboo enterprise($Y_4$) | 0.9992** |
| 25. Wages generated in bamboo enterprise($Y_5$) | 1.0000** |

** Significant at 1% level of significance

* Significant at 5% level of significance.

The Table-6.6 presents the co-efficient of correlation between Wage generated from Bamboo enterprise ($Y_5$) and other 19 independent variable. It has been found that the following variables have been emerged as the significant predictors of Wages generated from Bamboo enterprise($Y_5$), and these predictor variables are family size($X_3$),land under agricultural crop($X_7$), land under bamboo($X_9$),Annual income before bamboo($X_{11}$), energy consumption($X_{16}$), cost incurred in bamboo cultivation($X_{18}$).

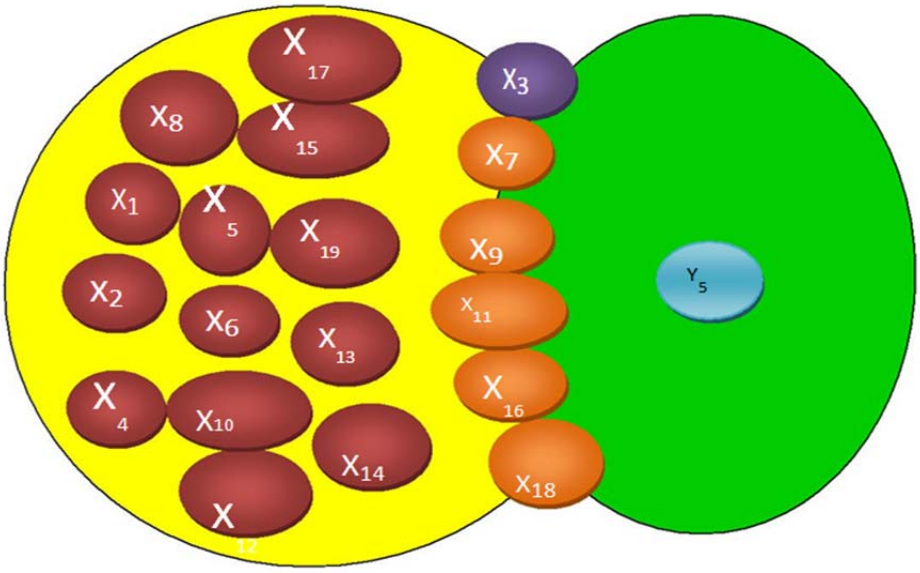



**Fig. 6.5: Co-efficient of correlation between Wage generation from Bamboo enterprise ($Y_5$) and other 19 independent variable.**

**REVEALATION**

The variable family size($X_3$) have been found negatively but significantly correlated to imply that Wages generated from Bamboo enterprise ($Y_5$) has gone higher for a small size family. Small size family has got relatively less family cost to incur and hence higher level of savings and surplus.

Land under agricultural crop($X_7$) and land under bamboo($X_9$) , on the other hand, have recorded a positive but significant correlation to imply that all type of lands are providing the resource support for the optimum farm operation and the generation of farm income. The size of land acts in the form of a volume of operational resources and hence can ensure better income and absorb any kind of risk.

Annual income before bamboo ($X_{11}$), have been found to have positive but significant correlation with Wages generated from Bamboo enterprise ($Y_5$). This is to imply that it has got congenital impact.

Energy consumption($X_{16}$) has been emerged as an important economic indicator to estimate the income from Wages generated from bamboo enterprise ($Y_5$) of the respondents. This implies that the mechanization vis-a-vis energy intensification has gone positively to generate higher per unit Wages generation from bamboo enterprise.

Cost incurred in bamboo cultivation($X_{18}$) has recorded to have positive but significant correlation with Wages generated from Bamboo enterprise ($Y_5$). This implies that those respondents who have invested high amount in bamboo plantation got higher income as well as higher Wages also.

**Table 6.7: Regression Analysis: Causal Effect of Independent Variables on Family income from Bamboo enterprise ($Y_1$), The consequent Variable.**

| CHAR | β-Value | β X R | REG COFF-B | SE OF B | T-VAL OF B |
|---|---|---|---|---|---|
| 1. Age($X_1$) | 0.018 | 0.154 | 4.735 | 5.428 | 0.872 |
| 2. Education($X_2$) | -0.001 | 0.013 | -4.312 | 92.053 | 0.047 |
| 3. Family size($X_3$) | **-0.026** | **1.228** | **-72.082** | **45.894** | **1.571** |
| 4. Average cost of farm implements when purchased($X_4$) | -0.033 | 0.649 | -4.398 | 1.757 | 2.503 |
| 5. Average cost of farm implements at present($X_5$) | 0.003 | 0.016 | 0.432 | 1.563 | 0.276 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6. Homestead land ($X_6$) | | 0.014 | -0.022 | 789.249 | 808.762 | 0.976 |
| 7. Land under agricultural crop($X_7$) | | -0.026 | -0.523 | -207.174 | 129.635 | 1.598 |
| | | | | | | |
| 8. Cropping intensity ($X_8$) | | -0.020 | 0.144 | -215.212 | 140.061 | 1.537 |
| 9. Land under bamboo ($X_9$) | | **0.948** | **95.138** | **15181.122** | **988.623** | **15.356** |
| 10. Material possessed ($X_{10}$) | | 0.011 | 0.018 | 55.922 | 74.204 | 0.754 |
| 11. Annual income before bamboo ($X_{11}$) | | -0.012 | -0.172 | -0.003 | 0.003 | 0.811 |
| 12. Mass media exposure ($X_{12}$) | | 0.001 | -0.007 | 1.357 | 20.989 | 0.065 |
| 13. Number of rhizome planted ($X_{13}$) | | -0.026 | -0.810 | -0.106 | 0.312 | 0.340 |
| 14. Number of rhizome grown to the | | 0.034 | 1.010 | 0.144 | 0.325 | 0.444 |
| fullest ($X_{14}$) | | | | | | |
| 15. Training received($X_{15}$) | | 0.002 | 0.009 | 1.880 | 12.989 | 0.145 |
| 16. Energy consumption ($X_{16}$) | | -0.029 | -0.587 | -0.036 | 0.019 | 1.873 |
| 17. Distance to market($X_{17}$) | | -0.004 | -0.017 | -8.337 | 28.215 | 0.295 |
| 18. Cost incurred in bamboo cultivation($X_{18}$) | | **0.038** | **3.779** | **0.372** | **0.569** | **0.654** |
| 19. Mode of selling($X_{19}$) | | -0.001 | -0.020 | -5.562 | 56.938 | 0.098 |
| Det. Of correlation matrix of predictor = 0.14133199E-04 | | | | | | |
| Multiple R – SQ = 0.9899 | Multiple R = 0.9950 | | | | | |
| F- VALUE FOR R= 393.37 | WITH 19 AND 76 DFS | | | | | |

R-BAR SQ(ADJUSTED R-SQ)=0.9874

Table-6.7 presents the estimation of cause effect relationship between the Family income from Bamboo enterprise ($Y_1$) and 19 causal variables. The beta x R presents the Parental contribution of the causal variable on the respective consequent variable in the total interaction. It is interesting to note that the $R^2$ value stands at 0.9899 to imply that almost entity of the variance has been explained by this causal variable Land under bamboo($X_9$).

**Revelation**

This is to imply that Land under bamboo has come up as one of the most important causal variable / precisely to infer, one of the most dependable indicator to estimate the income from bamboo enterprise, on the other way those respondents who are progressive in bamboo enterprises, are also owners of diverse and large area under bamboo plantation. Large amount of land under bamboo cultivation can also be the MOV (Means of verification) to estimate their income from bamboo enterprise.

The variable Cost incurred in bamboo cultivation($X_{18}$) has ranked the second so far its contribution on the consequent variable is 37 per cent. So, it reveals that cost incurred in bamboo cultivation has become one of the most important indicators to estimate the family income from bamboo enterprises. For the given income from bamboo enterprise it is the cost incurred in bamboo cultivation that impacts (in a discernable manner to) on the income of bamboo enterprise.

Family size($X_3$), next to the cost incurred in bamboo cultivation ($X_{18}$) has contributed in a substantive manner to the income from bamboo. Size of family and the family economy are inversely related and it is further being characterized with its impact on income from bamboo enterprise.

**Table 6.7(a): Step down Regression: Causal Effect of independent Variables on Family income from Bamboo enterprise ($Y_1$), the consequent variable.**

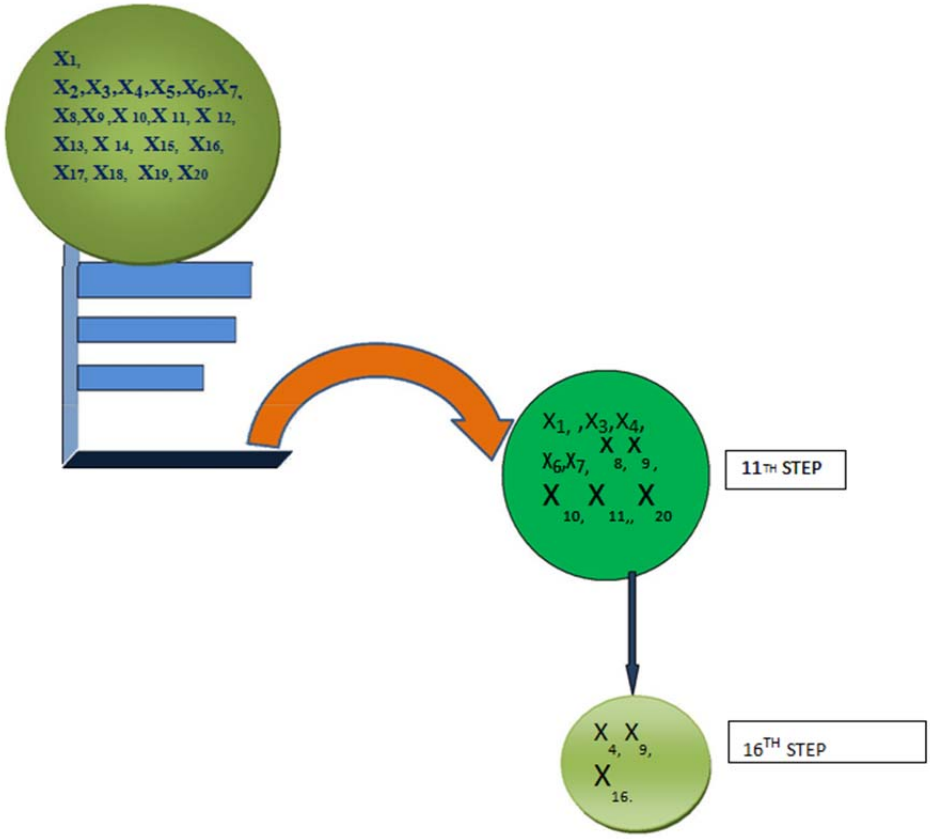
| CHAR | BETA | BETA X R | REG COEF –B | SE OF B | T-VAL OF B |
|---|---|---|---|---|---|
| Average cost of farm implements when Purchased ($X_4$). | -0.025 | 0.487 | -3.300 | 1.509 | 2.187 |
| Land under bamboo ($X_9$) | 0.995 | 100.017 | 15939.859 | 185.368 | 85.991 |
| Energy consumption ($X_{16}$) | -0.025 | -0.054 | -0.031 | 0.014 | 2.206 |

Table-6.8 - presents the step down regression analysis to imply that, which are the few variables out of the whole plethora of variables have been retained at the last step ($16^{th}$) to contribute substantially on the consequent variable that is family income from bamboo enterprise.

The variables $X_4$ , $X_9$ , $X_{16}$ has been retained at the sttep 16 to imply that these variables are extremely important causal variable to interpret the re

ason and spectrum of variance of the consequent variable, in its behaviour and performance.

So, the cost of farm implements when purchased ($X_4$), land under bamboo($X_9$), Energy consumption($X_{16}$), ar e the 3 most important causal variable to interpret the variance embedded with the Family in come from Bamboo enterprise($Y_1$).




The variables retained at the last and 16th step

**Fig. 6.6: Paradigm of step down Regression: Causal Effect of independent Variables on Family income from Bamboo enterprise (Y1), the conseq uent variable.**

**Table 6.8: Regression Analysis: Causal Effect of Independent Variables on Family income from Agricultural enterprise ($Y_2$), the consequent Variable.**

| CHAR | BETA | BETA X R | REG | SE OF B | T-VALUE |
|---|---|---|---|---|---|
| | | | COEF-B | | OF B |
| 1. Age($X_1$) | 0.011 | 0.190 | 6.065 | 59.928 | 0.101 |
| 2. Education($X_2$) | -0.131 | 0.677 | -290.300 | 1016.394 | 0.286 |
| 3. Family size($X_3$) | **-0.240** | **18.166** | **-1392.490** | **506.739** | **2.748** |
| 4. Average cost of farm implements when purchased($X_4$) | 0.066 | 0.069 | 18.668 | 19.397 | 0.962 |
| 5. Average cost of farm implements at present($X_5$) | -0.022 | -0.038 | -6.100 | 17.255 | 0.354 |
| 6. Homestead land ($X_6$) | 0.039 | 1.258 | 4639.908 | 8929.890 | 0.520 |
| 7. Land under agricultural crop($X_7$) | **0.572** | **60.975** | **9755.168** | **1431.350** | **6.815** |
| 8. Cropping intensity ($X_8$) | -0.048 | 1.445 | -1097.740 | 1546.478 | 0.710 |
| 9. Land under bamboo ($X_9$) | 0.316 | 17.194 | 10789.995 | 10915.808 | 0.988 |
| 10. Material possessed ($X_{10}$) | 0.073 | 1.443 | 826.469 | 819.315 | 1.009 |
| 11. Annual income before bamboo ($X_{11}$) | 0.067 | 3.283 | 0.031 | 0.034 | 0.899 |
| 12. Mass media exposure ($X_{12}$) | 0.041 | 0.100 | 126.275 | 231.748 | 0.545 |

| | | | | | |
|---|---|---|---|---|---|
| 13. Number of rhizome planted ($X_{13}$) | 0.101 | -0.866 | 0.873 | 3.448 | 0.253 |
| 14. Number of rhizome grown to the fullest ($X_{14}$) | -0.174 | 1.008 | -1.558 | 3.584 | 0.435 |
| 15. Training received($X_{15}$) | 0.040 | 0.479 | 71.494 | 143.420 | 0.498 |
| 16. Energy consumption ($X_{16}$) | 0.013 | 0.738 | 0.034 | 0.212 | 0.160 |
| 17. Distance to market($X_{17}$) | 0.080 | 2.033 | 380.130 | 311.538 | 1.220 |
| 18. Cost incurred in bamboo cultivation($X_{18}$) | **-0.158** | **-8.562** | **-3.259** | **6.279** | **0.519** |
| 19. Mode of selling($X_{19}$) | 0.039 | 0.382 | 367.975 | 628.674 | 0.585 |

DET. of correlation matrix of predictors = 0. 14133199E -04
MULTIPLE R-SQ= 0.7300 MULTIPLE R = 0.8544
F-VALUE FOR R=10.81 WITH 19 AND 76 DFS
R- BAR SQ (ADJUSTED R-SQ) = 0.6625

Table-6.9 presents the estimation of cause effect relationship between the Family income from Agricultural enterprise ($Y_2$) and 19 causal variables. The beta x R presents the Parental contribution of the causal variable on the respective consequent variable in the total interaction. It is to note that the $R^2$ value stands at 0.7300.

**Revelation**

Regression analysis shows that the variable land under agricultural crop($X_7$) have got a distinct and discernable causal impact on income from agricultural enterprise. The percentile contribution of this variable on $Y_2$ i.e.; the family income from agricultural enterprise, has been elicited to the

tune of 60.97 per cent. It reflects that this variable has got a substantive causal contribution to the performance of consequent variable.

Family size($X_3$) has ranked 2nd so far its contribution on the consequent variable is18.16 per cent.Size of family and the family economy are inversely related and it is further being characterized with its impact on income from Agricultural enterprise.

The variable Cost incurred in bamboo cultivation($X_{18}$) has contributed 8.5 per cent to the consequent variable. So, it reveals that the cost incurred in bamboo cultivation has become one of the most important indicators to estimate the family income from agricultural enterprises.

**Table 6.8(a): Step down Regression: Causal Effect of independent Variables on Family income from Agricultural enterprise ($Y_2$), the consequent variable.**

| CHAR | BETA | BETA X R | REG COEF –B | SE OF B | T – VAL OF B |
|---|---|---|---|---|---|
| Family size($X_3$) | -0.243 | 19.146 | -1402.976 | 393.489 | 3.581 |
| Land under Agricultural crop($X_7$) | 0.657 | 72.883 | 11194.152 | 1049.581 | 10.665 |
| Land under bamboo ($X_9$) | 0.141 | 7.971 | 4802.129 | 2201.372 | 2.181 |

Table 6.10 - presents the step down regression analysis to imply that, which are the few variables out of the whole plethora of variables have been retained at the last step (16th) to contribute substantially on the consequent variable that is family income from Agricultural enterprise.

The variables $X_3$ , $X_7$ , $X_9$ has been retained at the step 16 to imply that these variables are extremely important causal variable to interpret the reason and spectrum of variance of the consequent variable, in its behaviour and performance.

So, family size (X3), land under agricultural crop(X7), land u nder bamboo($X_9$), are the 3 most important caus al variables to interpret the variance embeddeed with the Family income Agricultural enterpris e (Y2), the consequent variable.

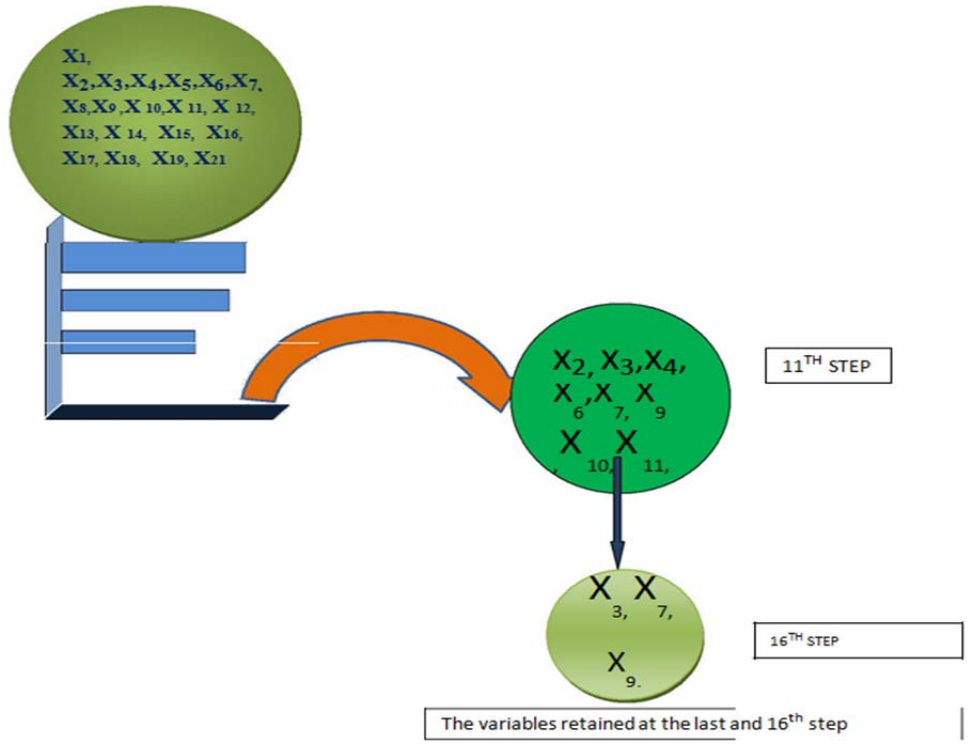



**Fig. 6.7: Paradigm of step down regression: Causal Effect of independent Variables on Family income from Agricultural enterprise ($Y_2$), the con sequent variable.**

**Table 6.9: Regression Analysis: Causal Effect of Independent Variables on Productivity of Bamboo ($Y_3$), The consequent Variable.**

| CHAR | BETA | BETA X R | REG COEF – B | SE OF B | T – VAL OF B |
|---|---|---|---|---|---|
| 1. Age($X_1$) | 0.081 | 1.430 | 11.789 | 14.065 | 0.838 |
| 2. Education($X_2$) | 0.015 | -0.297 | 36.081 | 238.537 | 0.151 |
| 3. Family size($X_3$) | 0.058 | -2.697 | 86.476 | 118.927 | 0.727 |
| 4. Average cost of farm implements when purchased($X_4$) | 0.020 | -0.356 | 1.473 | 4.552 | 0.324 |
| 5. Average cost of farm implements at present($X_5$) | -0.077 | 0.328 | -5.365 | 4.050 | 1.325 |
| 6. Homestead land ($X_6$) | -0.034 | 0.124 | -1047.749 | 2095.754 | 0.500 |
| 7. Land under agricultural crop($X_7$) | 0.031 | 0.813 | 133.925 | 335.923 | 0.399 |
| 8. Cropping intensity ($X_8$) | 0.043 | -0.027 | 252.447 | 362.943 | 0.696 |
| **9. Land under bamboo ($X_9$)** | **0.721** | **80.332** | **6306.094** | **2561.829** | **2.462** |
| 10. Material possessed ($X_{10}$) | 0.049 | 0.518 | 142.201 | 192.285 | 0.740 |

| | | | | | |
|---|---|---|---|---|---|
| 11. Annual income before bamboo ($X_{11}$) | -0.014 | -0.144 | -0.002 | 0.008 | 0.209 |
| 12. Mass media exposure ($X_{12}$) | -0.010 | 0.056 | -7.623 | 54.389 | 0.140 |
| 13. Number of rhizome planted ($X_{13}$) | -0.105 | -3.683 | -0.233 | 0.809 | 0.288 |
| **14. Number of rhizome grown to the fullest ($X_{14}$)** | **0.133** | **4.519** | **0.306** | **0.841** | **0.364** |
| 15. Training received($X_{15}$) | -0.031 | -0.044 | -13.993 | 33.659 | 0.416 |
| 16. Energy consumption ($X_{16}$) | 0.005 | 0.145 | 0.003 | 0.050 | 0.068 |
| 17. Distance to market($X_{17}$) | 0.087 | 1.518 | 106.749 | 73.115 | 1.460 |
| **18. Cost incurred in bamboo cultivation($X_{18}$)** | **0.156** | **17.088** | **0.822** | **1.474** | **0.558** |
| 19. Mode of selling($X_{19}$) | 0.021 | 0.378 | 50.846 | 147.543 | 0.345 |
| DET. of correlation matrix of Predictors = 0.14133199E-04 | | | | | |
| MULTIPLE R-SQ= 0.7734 MULTIPLE R = 0.8794 | | | | | |

F-VALUE FOR R = 13.65 WITH 19AND 76 DFS
R-BAR SQ (ADJUSTED R-SQ)= 0.7167

Table-6.11 presents the estimation of cause effect relationship between the Productivity of Bamboo ($Y_3$) and 19 causal variables. The beta x R presents the Parental contribution of the causal variable on the respective consequent variable in the total interaction. It is to note that the $R^2$ value stands at 0.7734.

**Revelation**

Regression analysis shows that the variable land under bamboo($X_9$) extracted here with as to have higher operating proficiency to characterize the greater behavior of causal variable productivity of bamboo. It implies that land under bamboo is an important variable for generating higher production in bamboo enterprise. The percentile contribution of this variable on $Y_3$ i.e; productivity of bamboo has been elicited to the tune of 80.33 per cent. It reflects that this variable has got a substantive causal contribution to the performance of consequent variable.

The variable cost incurred in bamboo cultivation(X18) has contributed 17.08 percent and followed by this; the variable Number of rhizome grew to the fullest(X14) has contributed 4.5 per cent in the causal variable Productivity of Bamboo (Y3). It implies that as high as number of rhizome grew to the fullest and as optimum as investment done during the plantation the productivity will be as high.

**Table 6.9(a): Step down Regression: Causal Effect of independent Variables on Productivity of Bamboo ($Y_3$), the consequent variable.**

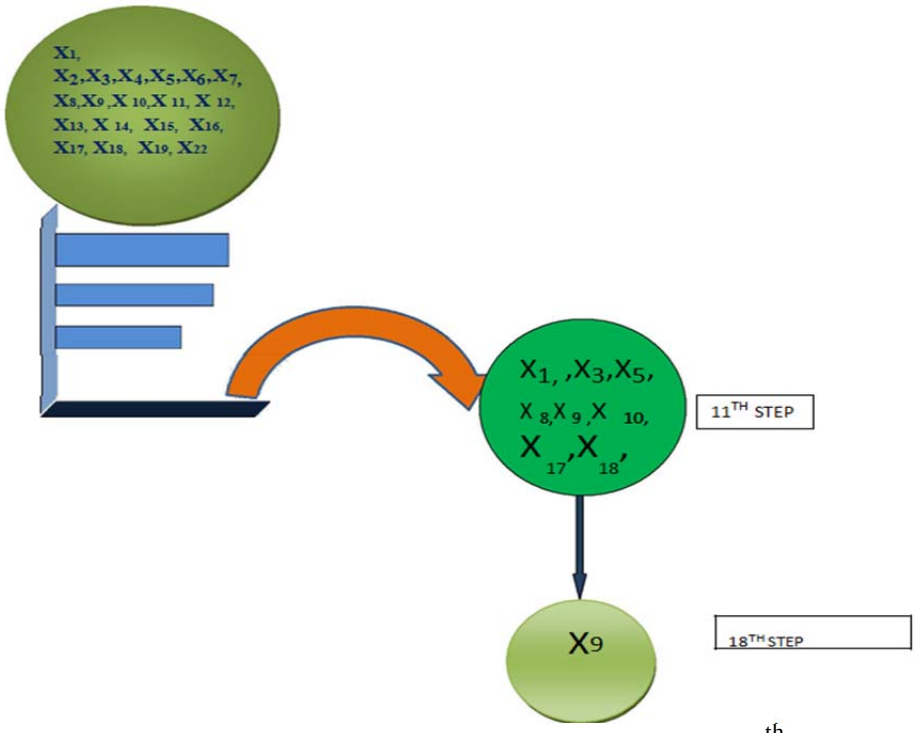
| CHAR | BETA | BETA X R | REG | SE OF B | T-VAL OF |
|---|---|---|---|---|---|
| | | | COEF – B | | B |
| Land under | 0.862 | 100.000 | 7539.606 | 457.585 | 16.477 |
| bamboo($X_9$) | | | | | |

Table-6.12 presents the step down regression analysis to imply that, which are the few variables out of the whole plethora of variables have been

retained at the last step ($18^{th}$) to contribute substantially on the consequent variable that is Productivity of Bamboo ($Y_3$).

The variable $X_9$ has been retained at the step 18 to imply that this variable is extremely important causal variable to interpret the reason and spectrum of variance of the consequent variable, in its behaviour and performance.

So, land under bamboo($X_9$), is the most important causal variables to interpret the variance embedded with the Productivity of Bamboo (Y3).




The variables retained at the last and $18^{th}$ step

**Fig. 6.8: Paradigm of step down regression: Causal Effec t of independent Variables on Productivity of Bamboo ($Y_3$), the consequent variable.**

**Table 6.10: Regression Analysis: Causal Effect of Independent Variables on Mandays generated from Bamboo enterprise ($Y_4$), the consequent Variable.**

| CHAR | BETA | BETA X R | REG COEF – B | SE OF B | T VAL OF B |
|---|---|---|---|---|---|
| 1. Age($X_1$) | 0.068 | -0.085 | 0.041 | 0.034 | 1.215 |
| 2. Education($X_2$) | 0.015 | -0.037 | 0.146 | 0.575 | 0.254 |
| **3. Family size($X_3$)** | **-0.767** | **77.097** | **-4.767** | **0.287** | **16.633** |
| 4. Average cost of farm implements when purchased($X_4$) | -0.062 | 0.988 | -0.019 | 0.011 | 1.732 |
| 5. Average cost of farm implements at present($X_5$) | 0.021 | -0.113 | 0.006 | 0.010 | 0.636 |
| 6. Homestead land ($X_6$) | 0.061 | 1.092 | 7.764 | 5.050 | 1.537 |
| 7. Land under agricultural crop($X_7$) | 0.087 | 4.448 | 1.589 | 0.809 | 1.964 |
| 8. Cropping intensity ($X_8$) | 0.051 | 0.144 | 1.239 | 0.875 | 1.416 |
| 9. Land under bamboo ($X_9$) | -0.124 | -7.138 | -4.525 | 6.173 | 0.733 |
| 10. Material possessed ($X_{10}$) | -0.091 | -0.149 | -1.099 | 0.463 | 2.372 |
| 11. Annual income before bamboo ($X_{11}$) | -0.002 | -0.047 | 0.000 | 0.000 | 0.041 |
| 12. Mass media exposure ($X_{12}$) | 0.023 | -0.473 | 0.076 | 0.131 | 0.581 |
| 13. Number of rhizome planted ($X_{13}$) | -0.042 | 0.562 | 0.000 | 0.002 | 0.199 |
| **14. Number of rhizome grown to the fullest ($X_{14}$)** | 0.012 | -0.152 | 0.000 | 0.002 | 0.055 |
| 15. Training received($X_{15}$) | 0.005 | -0.021 | 0.009 | 0.081 | 0.116 |
| **16. Energy consumption ($X_{16}$)** | **0.177** | **9.573** | **0.000** | **0.000** | **4.114** |
| 17. Distance to market($X_{17}$) | -0.001 | -0.008 | -0.003 | 0.176 | 0.019 |
| **18. Cost incurred in bamboo cultivation($X_{18}$)** | **0.247** | **14.132** | **0.005** | **0.004** | **1.537** |

| | | | | | |
|---|---|---|---|---|---|
| 19. Mode of selling($X_{19}$) | 0.015 | 0.188 | 0.156 | 0.356 | 0.438 |
| DET. of correlation matrix of Predictors = | 0.14133199E-04 | | | | |
| MULTIPLE R-SQ= 0.9246 MULTIPLE R = 0.9616 | | | | | |
| F-VALUE FOR R = 49.04 WITH 19AND 76 DFS | | | | | |
| R-BAR SQ (ADJUSTED R-SQ) = 0.9057 | | | | | |

Table-6.13 presents the estimation of cause effect relationship between the Mandays generated from Bamboo enterprise ($Y_4$) and 19 causal variables. The beta x R presents the Parental contribution of the causal variable on the respective consequent variable in the total interaction. It is interesting to note that the $R^2$ value stands at 0.9246 to imply that almost entity of the variance has been explained by this causal variable Family size($X_3$).

**Revelation**

This implies that the variable family size($X_3$) extracted here with as to have higher operating proficiency to characterize the greater behavior of causal variable Mandays generation from bamboo enterprise. While family size presents both stress and motivation to go for labour intensive work in individual to elicit a better choice out of basket of commodity to support the family and earn better social status for the family. The percentile contribution of this variable in the causal variable is 77.09 per cent.

Cost incurred in bamboo cultivation($X_{18}$) has ranked the second so far its contribution on the consequent variable is 14.13 per cent. It has its impact on Mandays generation in a discernable manner.

Energy consumption (X16) next to cost incurred in bamboo cultivation ($X_{18}$) has contributed in a substantive manner in the consequent variable Mandays generated from Bamboo enterprise ($Y_4$). It implies that those who have received higher Mandays also invest more in energy consumption.

Table-6.14 presents the step down regression analysis to imply that, which are the few variable out of the whole plethora of variables have been retained at the last step ($13^{th}$) to contribute substantially on the consequent variable that is Mandays generated from Bamboo enterprise.

**Table 6.10(a): Step down Regression: Causal Effect of independent Variables on Mandays generated from Bamboo enterprise ($Y_4$), the consequent variable**

| CHAR | BETA | BETA X R | REG | SE OF B | T-VAL OF |
|---|---|---|---|---|---|
| | | | COEF -B | | B |
| 3 | -0.755 | 76.640 | -4.688 | 0.243 | 19.294 |
| 7 | 0.129 | 6.655 | 2.353 | 0.674 | 3.491 |
| 8 | 0.069 | 0.195 | 1.661 | 0.814 | 2.042 |
| 10 | -0.086 | -0.143 | -1.043 | 0.434 | 2.404 |
| 16 | 0.165 | 9.027 | 0.000 | 0.000 | 4.171 |
| 18 | 0.0132 | 7.626 | 0.003 | 0.001 | 3.793 |

The variables$X_3$ , $X_7$ , $X_8$ ,$X_{10}$, $X_{16}$ , $X_{18}$ has been retainned at the step 16 to imply that these variables are extremely important causal variable to interpret the reason and spectrum of variance of the co nsequent variable, in its behaviour and perfo rmance.

So, Family size ($X_3$), Land under agricultural crop($X_7$),Cro pping intensity($X_8$), Material possessed($X_{10}$), Energy consumption($X_{16}$), Cost incurred in bamboo cultivation($X_{18}$)are the 6 most important causal variable to interpret the variance embedded with the Mandays generated from bamboo enterprise.

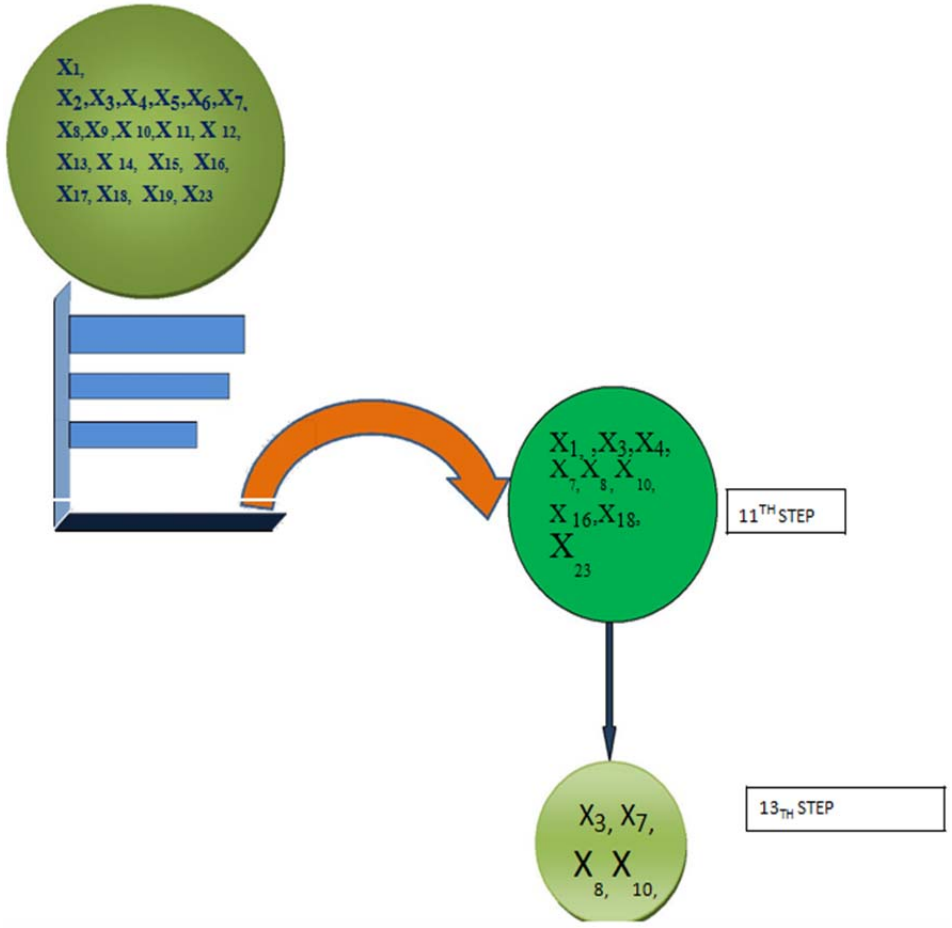



**Fig. 6.9: Paradigm of step down regression: Causal Effect of independent Variables on Mandays generated from Bamboo enterprise ($Y_4$), the consequent variable.**

**Table 6.11: Regression Analysis: Causal Effect of Independent Variables on Wages generated from bamboo enterprise ($Y_5$), The consequent Variable.**

| CHAR | BETA | BETA X R | REG COEF - B | SE OF B | T-VAL OF B |
|---|---|---|---|---|---|
| 1. Age($X_1$) | 0.067 | -0.053 | 5.494 | 4.535 | 1.212 |
| | | | | | |
| 2. Education($X_2$) | 0.009 | -0.029 | 11.844 | 76.906 | 0.154 |
| **3. Family size($X_3$)** | **-0.772** | **77.589** | **-645.274** | **38.343** | **16.829** |
| 4. Average cost of farm implements when purchased($X_4$) | -0.062 | 0.986 | -2.536 | 1.468 | 1.728 |
| 5. Average cost of farm implements at present($X_5$) | 0.024 | -0.116 | 0.943 | 1.306 | 0.722 |
| 6. Homestead land ($X_6$) | 0.064 | 1.163 | 1090.074 | 675.685 | 1.613 |
| 7. Land under agricultural crop($X_7$) | 0.091 | 4.669 | 222.319 | 108.304 | 2.053 |
| 8. Cropping intensity ($X_8$) | 0.047 | 0.119 | 153.293 | 117.015 | 1.310 |
| 9.Land under bamboo ($X_9$) | -0.114 | -6.573 | -561.099 | 825.951 | 0.679 |
| 10. Material possessed ($X_{10}$) | -0.080 | -0.176 | -130.190 | 61.994 | 2.100 |
| 11. Annual income before bamboo ($X_{11}$) | -0.001 | -0.041 | 0.000 | 0.003 | 0.036 |
| | | | | | |
| 12. Mass media exposure ($X_{12}$) | 0.023 | -0.472 | 10.296 | 17.535 | 0.587 |
| | | | | | |
| 13. Number of rhizome planted ($X_{13}$) | -0.039 | 0.530 | -0.049 | 0.261 | 0.188 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 14. | Number of rhizome grown to the fullest ($X_{14}$) | 0.010 | -0.126 | 0.012 | 0.271 | 0.046 |
| 15. | Training received($X_{15}$) | 0.002 | -0.008 | 0.457 | 10.852 | 0.042 |
| **16.** | **Energy consumption ($X_{16}$)** | **0.164** | **8.831** | **0.062** | **0.016** | **3.850** |
| 17.Distance to market($X_{17}$) | | 0.005 | 0.066 | 3.443 | 23.573 | 0.146 |
| **18.Cost incurred in bamboo cultivation($X_{18}$)** | | **0.235** | **13.396** | **0.697** | **0.475** | **1.467** |
| 19. | Mode of selling($X_{19}$) | 0.019 | 0.244 | 26.308 | 47.569 | 0.553 |

DET. of correlation matrix of Predictors = 0.14133199E-04
MULTIPLE R-SQ= 0.9254 MULTIPLE R = 0.9620
F-VALUE FOR R = 49.61 WITH 19AND 76 DFS
R-BAR SQ(ADJUSTED R-SQ)= 0.9067

Table-6.15 presents the estimation of cause effect relationship between the Wages generated from Bamboo enterprise ($Y_5$) and 19 causal variables. The beta x R presents the Parental contribution of the causal variable on the respective consequent variable in the total interaction. It is interesting to note that the $R^2$ value stands at 0.9254 to imply that almost entity of the variance has been explained by this causal variable Family size($X_3$).

**Revelation**

This implies that the variable family size($X_3$) extracted here with as to have higher operating proficiency to characterize the greater behavior of causal variable Wages generation from bamboo enterprise. While family size presents both stress and motivation to go for labour intensive work in individual to elicit a better choice out of basket of commodity to support the

family and earn better social status for the family. The percentile contribution of this variable in the causal variable is 77.58 per cent.

Cost incurred in bamboo cultivation(X18) has ranked the second so far its contribution on the consequent variable is 13.39 per cent. It has its impact on Wages generation in a discernable manner.

Energy consumption ($X_{16}$) next to cost incurred in bamboo cultivation ($X_{18}$) has contributed in a substantive manner in the causal variable Wages generated from Bamboo enterprise ($Y_5$). It implies that those who have received higher wages also invest more in energy consumption.

**Table 6.11(a): Step down Regression: Causal Effect of independent Variables on Wages generated from bamboo enterprise ($Y_5$), the consequent variable.**

| CHAR | BETA | BETA X R | REG | SE OF B | T-VAL OF |
|---|---|---|---|---|---|
| | | | COEF –B | | B |
| 1 | 0.066 | -0.052 | 5.343 | 2.631 | 2.031 |
| 3 | -0.802 | 81.772 | -670.117 | 32.433 | 20.662 |
| 7 | 0.0996 | 5.040 | 236.487 | 87.638 | 2.698 |
| 16 | 0.118 | 6.418 | 0.044 | 0.013 | 3.324 |
| 18 | 0.118 | 6.823 | 0.350 | 0.105 | 3.341 |

Table-6.16 presents the step down regression analysis to imply that, which are the few variables out of the whole plethora of variables have been retained at the last step ($14^{th}$) to contribute substantially on the consequent variable that is Wages generated from bamboo enterprise.

The variables $X_1$, $X_3$ , $X_7$ , $X_{16}$ , $X_{18}$ has been retained at the step 16 to imply that these variables are extremely important causal variable to interpret the reason and spectrum of variance of the consequent variable, in its behaviour and performance.

So, Age($X_1$),Family size ($X_3$), Land under agricultural crop($X_7$), Energy consumption($X_{16}$), Cost incurred in bamboo cultivation($X_{18}$)are the 6 most important causal variable to interpret the variance embedded with the wages generated from bamboo enterprise.

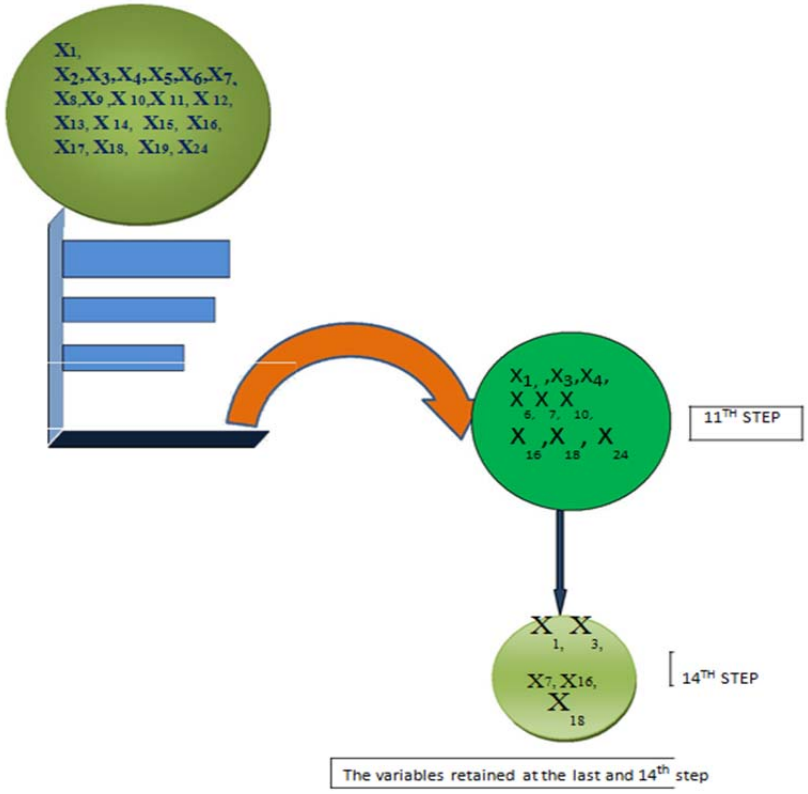



**Fig. 6.10: Paradigm of s tep down regression: Causal Effect of indepeendent Variables on Wages generated from bambo o enterprise ($Y_5$), the consequent variable.**

**Table 6.12: PATH ANALYSIS: Family income from Bamboo enterprise ($Y_1$) and Other 19 exogenous variables**

| VARIABLE | TOTAL EFFECT(r) | TOTAL DIRECT EFFECT(TDE) | TOTAL INDIRECT EFFECT( r-TDE) | HIGHEST INDIRECT EFFECT VIA |
|---|---|---|---|---|
| 1. Age($X_1$) | 0.0855 | 0.0178 | 0.0677 | 0.747 |
| | | | | |
| 2. Education($X_2$) | -0.1287 | -0.0010 | -0.1277 | -0.1144 |
| | | | | |
| 3. Family size($X_3$) | -0.4593 | -0.0265 | -0.4328 | -0.4394 |
| | | | | |
| 4. Average cost of farm implements when purchased($X_4$) | -0.1953 | -0.0329 | -0.1624 | -0.1613 |
| 5. Average cost of farm implements at present($X_5$) | 0.0465 | 0.0034 | 0.0431 | 0.0413 |
| 6.Homestead land ($X_6$) | -0.0154 | 0.0141 | -0.0295 | -0.0149 |
| 7. Land under agricultural crop($X_7$) | 0.1999 | -0.0259 | 0.2258 | 0.2080 |
| 8. Cropping intensity ($X_8$) | -0.0702 | -0.0202 | -0.05 | -0.0594 |
| **9. Land under bamboo ($X_9$)** | **0.9937** | **0.9478** | 0.0459 | 0.9478 |
| 10. Material possessed ($X_{10}$) | 0.0166 | 0.0105 | 0.0061 | 0.0206 |

| | | | | | |
|---|---|---|---|---|---|
| 11. | Annual income before bamboo ($X_{11}$) | 0.1448 | -0.0117 | 0.1565 | 0.1469 |
| 12. | Mass media exposure ($X_{12}$) | -0.0691 | 0.0009 | -0.07 | 0.2845 |
| 13. | Number of rhizome planted ($X_{13}$) | 0.3055 | -0.0262 | 0.3317 | 0.2722 |
| 14. | Number of rhizome grown to the fullest ($X_{14}$) | 0.2920 | 0.0342 | 0.2578 | O.2722 |
| 15. | Training received($X_{15}$) | 0.0408 | 0.0023 | 0.0379 | 0.0371 |
| | | | | | |
| 16. | Energy consumption ($X_{16}$) | 0.1978 | -0.0294 | 0.2272 | 0.2136 |
| | | | | | |
| 17.Distance to market($X_{17}$) | | 0.0439 | -0.0037 | 0.0476 | 0.0459 |
| | | | | | |
| **18.Cost incurred in bamboo cultivation($X_{18}$)** | | 0.9722 | 0.0385 | 0.9348 | **0.9261** |
| | | | | | |
| 19. | Mode of selling($X_{19}$) | 0.1607 | -0.0012 | 0.1619 | 0.1483 |
| | | | | | |

**Residual effect** = 0.0101

Table-6.17 presents the path analysis for decomposing the total effect(r) of the antecedent variables into direct, indirect and residual effect on the consequent variable, Family income from bamboo enterprise ($Y_1$).

**REVELATION**: It has been found that the variable land under bamboo($X_9$) has exerted the highest direct effect to characterize the income from bamboo. It is well discernable that the land size of the bamboo orchard is extremely proportionate with its income generating capacity.

The variable cost incurred in bamboo cultivation($X_{18}$) has also been exerted the highest indirect effect to imply that this variable has got highest associational property to characterize the income from bamboo enterprise.

Again, it has been found that the variable land under bamboo($X_9$) has routed highest indirect effect of all the variables to ultimately functionalize the performance of income from bamboo enterprise. This indicates the behavioural as well as operational viscosity of this variable income from bamboo enterprise. The value of the residual effect indicates that with the combination of these 19 variables, more than 98 per cent variance of family income from bamboo enterprise ($Y_1$) has been explained.

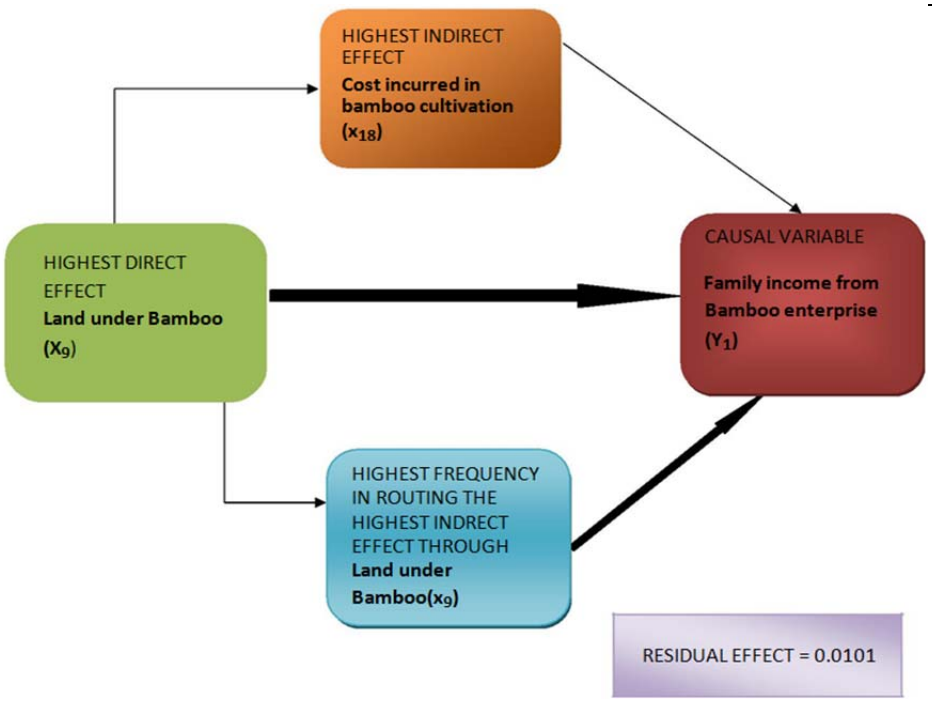



**Fig. 6.11: Paradigm of path analysis of causal variable Family income from Bamboo enterprise ($Y_1$) vs. other 19 exogenous variables.**

**Table 6.13: PATH ANALYSIS: Family income from Agricultural enterprise ($Y_2$) and other 19 variable.**

| VARIABLE | TOTAL EFFECT (r) | TOTAL DIRECT EFFECT (TDE) | TOTAL INDIRECT EFFECT (r-TDE) | HIGHEST INDIRECT EFFECT VIA |
|---|---|---|---|---|
| 1. Age($X_1$) | 0.1296 | 0.0107 | 0.1189 | 0.0776 |
| 2. Education($X_2$) | -0.1569 | -0.0315 | 0.1254 | -0.0721 |
| 3. Family size($X_3$) | -0.5528 | -0.2399 | -0.3129 | -0.2399 |

| | | | | | |
|---|---|---|---|---|---|
| **4. Average cost of farm implements when purchased($X_4$)** | | **0.0077** | **0.0655** | **-0.0578** | **0.0655** |
| **5. Average cost of farm implements at present($X_5$)** | | **0.0123** | **-0.0224** | **0.0347** | **0.0311** |
| **6. Homestead land ($X_6$)** | | **0.2408** | **0.0389** | **0.2019** | **0.1477** |
| **7. Land under agricultural crop($X_7$)** | | **0.7779** | **0.5722** | **0.2057** | **0.5722** |
| **8. Cropping intensity ($X_8$)** | | **-0.2178** | **-0.0484** | **-0.1694** | **-0.1735** |
| **9. Land under bamboo ($X_9$)** | | **0.3972** | **0.3160** | **0.0812** | **0.3160** |
| **10.** | **Material possessed ($X_{10}$)** | **0.1443** | **0.0730** | **0.0713** | **0.0749** |
| **11.** | **Annual income before bamboo ($X_{11}$)** | **0.3559** | **0.0673** | **0.2886** | **0.21699** |
| **12.** | **Mass media exposure ($X_{12}$)** | **0.0176** | **0.0414** | **-0.0238** | **-0.0515** |
| **13.** | **Number of rhizome planted ($X_{13}$)** | **-0.0625** | **0.1012** | **-0.1637** | **0.1012** |
| **14.** | **Number of rhizome grown to the fullest ($X_{14}$)** | **-0.0424** | **-0.1736** | **0.216** | **0.0994** |
| **15.** | **Training received($X_{15}$)** | **0.0870** | **0.0402** | **0.0468** | **0.0402** |
| **16.** | **Energy consumption ($X_{16}$)** | **0.4137** | **0.0130** | **0.4007** | **0.2153** |
| **17. Distance to market($X_{17}$)** | | **0.1865** | **0.0796** | **0.1069** | **0.0903** |

| | | | | | |
|---|---|---|---|---|---|
| **18. Cost incurred in bamboo cultivation($X_{18}$)** | | **0.3954** | **0.1581** | **0.2373** | **0.3087** |
| **19.** | **Mode of selling($X_{19}$)** | **0.0722** | **0.0386** | **0.0336** | **0.0494** |

**Residual effect=0.2700**

Table-6.18 presents the path analysis for decomposing the total effect(r) of the antecedent variables into direct, indirect and residual effect on the consequent variable, Family income from bamboo enterprise ($Y_1$).

**REVELATION**: It has been found that the variable land under agricultural crop($X_7$) has exerted the highest direct effect to characterize the income from agricultural enterprise. It is well discernable that the land size of the agricultural crop is extremely proportionate with its income generating capacity.

The variable Energy consumption($X_{16}$) has also been exerted the highest indirect effect to imply that this variable has got highest associational property to characterize the income from agricultural enterprise.

Again, it has been found that the variable land under agricultural crop($X_7$) has routed highest indirect effect of all the variables to ultimately functionalize the performance of income from agricultural enterprise. This indicates the behavioural as well as operational viscosity of this variable income from agricultural enterprise. The value of the residual effect indicates that with the combination of these 19 variables, more than 98 per cent variance of family income from agricultural enterprise ($Y_2$) has been explained.

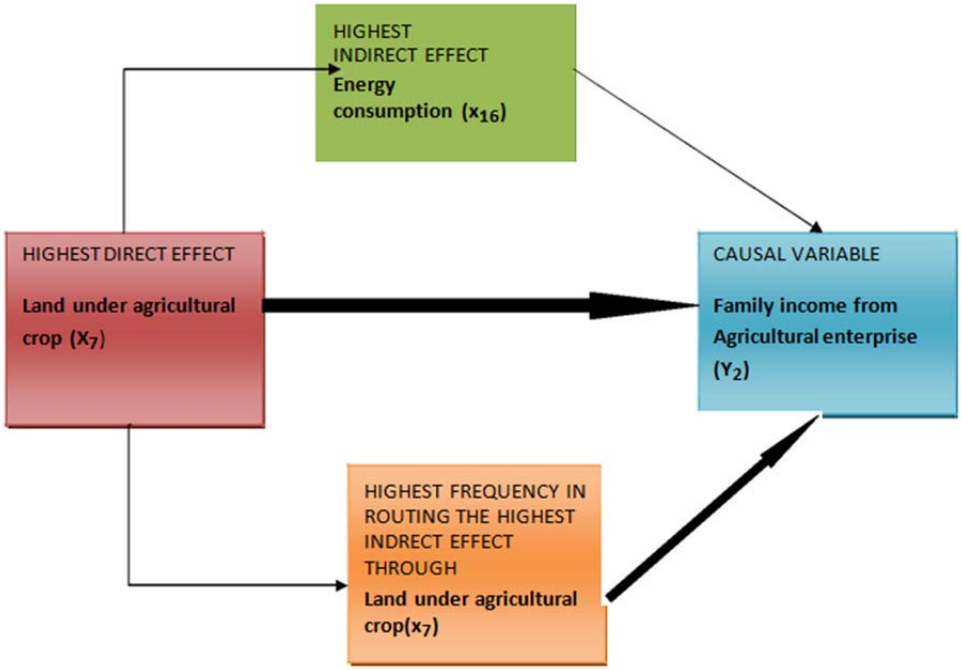



**Fig. 6.12: Paradigm of path analysis of causal variable Family income from Agricultural enterprise ($Y_2$) vs. other 19 exogenous variables.**

**Table 6.14: PATH ANALYSIS: Productivity of Bamboo ($Y_3$) and other 19 exogenous variables**

| VARIABLE | TOTAL EFFECT (r) | TOTAL DIRECT EFFECT (TDE) | TOTAL INDIRECT EFFECT (r-TDE) | HIGHEST INDIRECT EFFECT VIA |
|---|---|---|---|---|
| 1. Age($X_1$) | 0.1362 | 0.0812 | 0.055 | 0.0812 |
| 2. Education($X_2$) | -0.1503 | 0.0153 | -0.1656 | -0.0870 |
| | | | | |
| 3. Family size($X_3$) | -0.3588 | 0.0582 | -0.417 | -0.3342 |

| | | | | |
|---|---|---|---|---|
| implements when purchased($X_4$) | -0.1366 | 0.0202 | -0.1568 | -0.1227 |
| implements at present($X_5$) | -0.0329 | -0.0770 | 0.0441 | -0.0770 |
| 6. Homestead land ($X_6$) | -0.0279 | -0.0343 | 0.0622 | -0.0343 |
| 7. Land under agricultural crop($X_7$) | 0.2049 | 0.0307 | 0.1742 | 0.1582 |
| 8. Cropping intensity ($X_8$) | -0.0049 | 0.0435 | -0.0484 | -0.0452 |
| **9. Land under bamboo ($X_9$)** | **0.8619** | **0.7209** | 0.141 | 0.7209 |
| 10. Material possessed ($X_{10}$) | 0.0817 | 0.0490 | 0.0327 | 0.0490 |
| 11. Annual income before bamboo ($X_{11}$) | 0.0776 | -0.0143 | 0.0919 | 0.1117 |
| 12. Mass media exposure ($X_{12}$) | -0.0443 | -0.0098 | -0.0345 | -0.0513 |
| planted ($X_{13}$) | 0.2705 | -0.1053 | 0.3758 | 0.2164 |
| 14. Number of rhizome grown to the fullest ($X_{14}$) | 0.2629 | 0.1329 | 0.13 | 0.2080 |
| 15. Training received($X_{15}$) | 0.0110 | -0.0307 | 0.0417 | -0.0307 |
| 16. Energy consumption ($X_{16}$) | 0.2222 | 0.0051 | 0.2171 | 0.1624 |
| 17. Distance to market($X_{17}$) | 0.1346 | 0.0872 | 0.0474 | 0.0872 |
| **18. Cost incurred in bamboocultivation ($X_{18}$)** | 0.8489 | 0.1557 | **0.6939** | 0.7043 |
| 19. Mode of selling($X_{19}$) | 0.1404 | 0.0208 | 0.1196 | 0.1128 |

**Residual effect= 0.2266**

Table-6.19 presents the path analysis for decomposing the total effect(r) of the antecedent variables into direct, indirect and residual effect on the consequent variable, Productivity of bamboo ($Y_3$).

**REVELATION**

It has been found that the variable land under bamboo($X_9$) has exerted the highest direct effect to characterize the productivity of bamboo. It is well discernable that the land size of the bamboo orchard is extremely proportionate with its production capacity.

The variable Cost incurred in bamboo cultivation($X_{18}$) has also been exerted the highest indirect effect to imply that this variable has got highest associational property to characterize the productivity of bamboo.

Again, it has been found that the variable land under bamboo($X_9$) has routed highest indirect effect of all the variables to ultimately functionalize the performance of productivity of bamboo. This indicates the behavioural as well as operational viscosity of this variable productivity of bamboo. The value of the residual effect indicates that with the combination of these 19 variables, more than 98 per cent variance of productivity of bamboo ($Y_3$) has been explained.

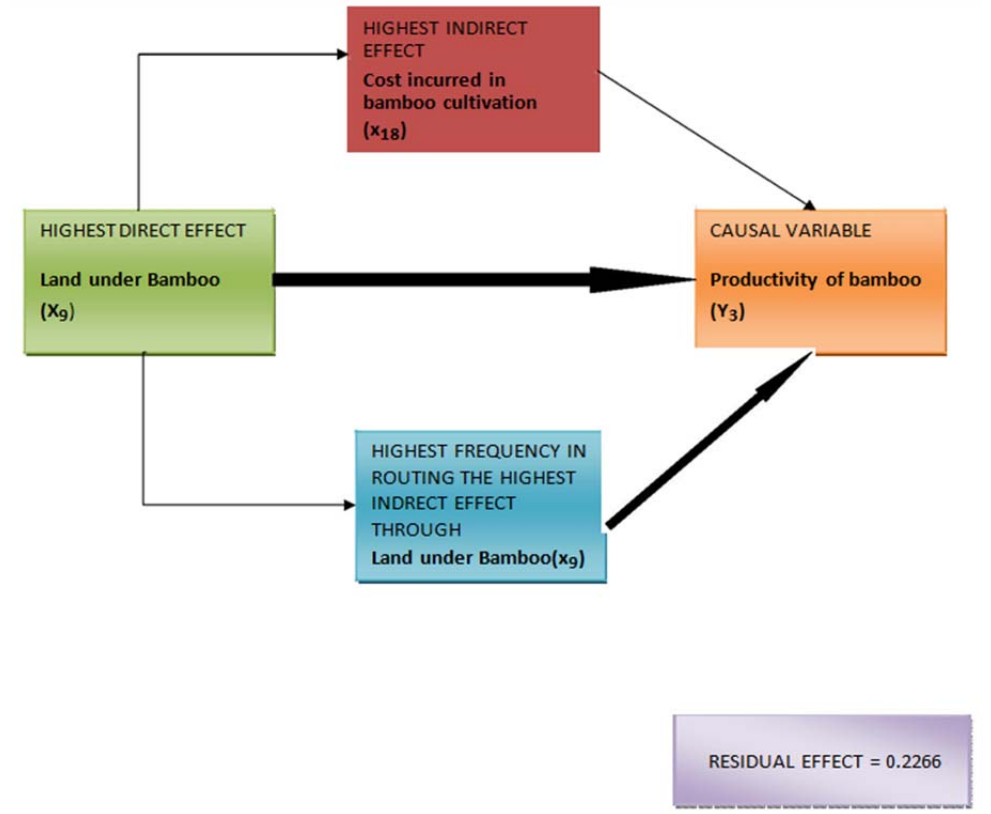



**Fig. 6.13: Paradigm of path analysis of causal variable Productivity of Bamboo ($Y_3$) vs. other 19 exogenous variables.**

**Table 6.15: PATH ANALYSIS: Mandays generated from Bamboo enterprise ($Y_4$) and other 19 exogenous variables.**

| VARIABLE | TOTAL EFFECT (r) | TOTAL DIRECT EFFECT (TDE) | TOTAL INDIRECT EFFECT(r-TDE) | HIGHEST INDIRECT EFFECT VIA |
|---|---|---|---|---|
| 1. Age($X_1$) | -0.0116 | 0.0680 | -0.0796 | -0.0871 |

| | | | | |
|---|---|---|---|---|
| 2. Education($X_2$) | -0.0231 | 0.0148 | -0.0379 | -0.0545 |
| **3. Family size($X_3$)** | **-0.9289** | **-0.7674** | -0.1615 | -0.7674 |
| 4. Average cost of farm implements when purchased($X_4$) | -0.1476 | -0.0623 | -0.0844 | -0.0891 |
| 5. Average cost of farm implements at present($X_5$) | -0.0489 | -0.0213 | -0.0702 | -0.0668 |
| 6. Homestead land ($X_6$) | 0.1658 | 0.0609 | 0.1049 | 0.0687 |
| 7. Land under agricultural crop($X_7$) | 0.4721 | 0.0871 | 0.385 | 0.2862 |
| 8. Cropping intensity ($X_8$) | 0.0260 | 0.0511 | -0.0251 | -0.0264 |
| | | | | |
| **9. Land under bamboo ($X_9$)** | 0.5329 | -0.1238 | **0.6567** | 0.3558 |
| 10. Material possessed ($X_{10}$) | 0.0152 | -0.0907 | 0.1059 | 0.0775 |
| 11. Annual income before bamboo ($X_{11}$) | 0.2704 | -0.0016 | 0.272 | 0.1708 |
| 12. Mass media exposure ($X_{12}$) | -0.1876 | 0.0233 | -0.2109 | -0.1648 |
| 13. Number of rhizome planted ($X_{13}$) | -0.1239 | -0.0402 | -0.0819 | -0.1245 |
| 14. Number of rhizome grown to the fullest ($X_{14}$) | -0.1210 | 0.0116 | -0.0445 | -0.0516 |
| 15. Training received($X_{15}$) | -0.0396 | 0.0049 | -0.0445 | -0.0516 |
| 16. Energy consumption ($X_{16}$) | 0.5013 | 0.1765 | 0.3248 | 0.3042 |
| 17. Distance to market($X_{17}$) | 0.1167 | -0.0006 | 0.1173 | 0.0597 |

| | | | | |
|---|---|---|---|---|
| 18. Cost incurred in bamboo cultivation($X_{18}$) | 0.5282 | 0.2474 | 0.2808 | 0.3421 |
| 19. Mode of selling($X_{19}$) | 0.1136 | 0.0153 | 0.0983 | 0.0781 |

**Residual effect = 0.0754**

Table-6.20 presents the path analysis for decomposing the total effect(r) of the antecedent variables into direct, indirect and residual effect on the consequent variable, Mandays generation from Bamboo enterprise ($Y_4$).

**REVELATION**

It has been found that the variable family size($X_3$) has exerted the highest direct effect to characterize the Mandays generation from Bamboo enterprise. It is well discernable that family size presents both stress and motivation to go for labour intensive work in individual to elicit a better choice out of basket of commodity to support the family and earn better social status for the family.

The variable land under bamboo($X_9$) has also been exerted the highest indirect effect to imply that this variable has got highest associational property to characterize the productivity of bamboo.

Again, it has been found that the variable family size($X_3$) has routed highest indirect effect of all the variables to ultimately functionalize the performance of Mandays generation from Bamboo enterprise. This indicates the behavioural as well as operational viscosity of this variable productivity of bamboo. The value of the residual effect indicates that with

the combination of these 19 variables, more than 98 per cent variance of Mandays generation from Bamboo enterprise ($Y_4$) has been explained.

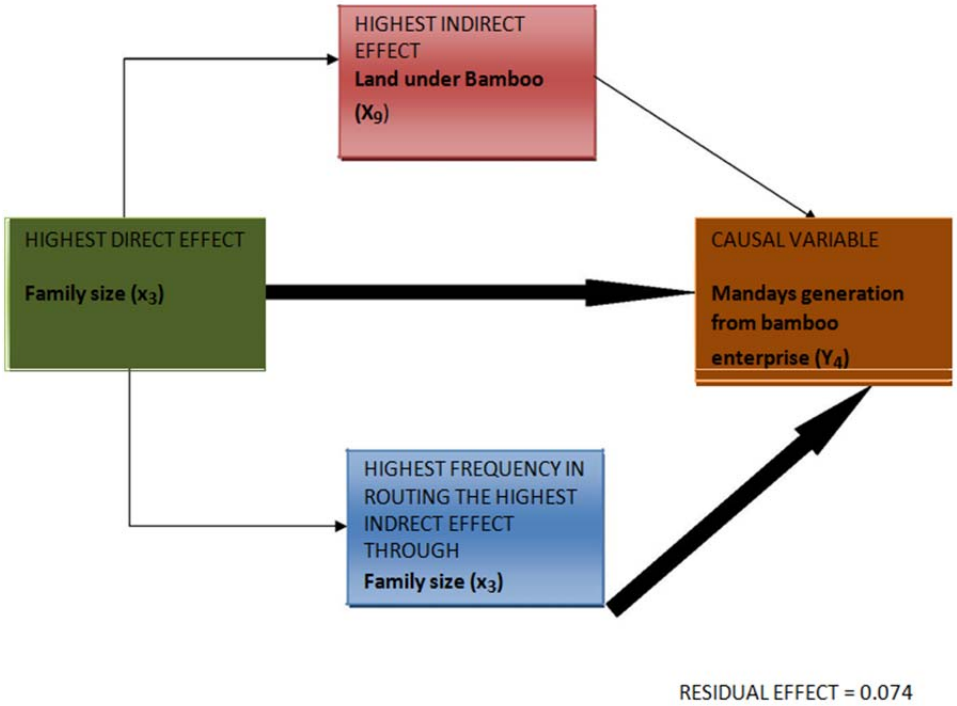



**Fig. 6.14: Paradigm of path analysis of causal variable Mandays Generated from Bamboo enterprise ($Y_4$) vs. other 19 exogenous variables.**

**Table 6.16: PATH ANALYSIS: Wages generated from Bamboo enterprise ($Y_5$) and other 19 exogenous variables.**

| VARIABLE | | TOTAL | TOTAL DIRECT | TOTAL | HIGHEST |
|---|---|---|---|---|---|
| | | EFFECT(r) | EFFECT (TDE) | INDIRECT | INDIRECT |
| | | | | EFECT(r-TDE) | EFFECT VIA |

| | | | | |
|---|---|---|---|---|
| 1. Age($X_1$) | -0.0072 | 0.0674 | -0.0746 | -0.0877 |
| 2. Education($X_2$) | -0.0298 | 0.0089 | -0.0387 | -0.0540 |
| **3. Family size($X_3$)** | **-0.9297** | **-0.7723** | -0.1574 | -0.7723 |
| 4. Average cost of farm implements when purchased($X_4$) | -0.1476 | -0.0618 | -0.0858 | -0.0896 |
| 5. Average cost of farm implements at present($X_5$) | -0.0446 | 0.0241 | -0.0687 | -0.0672 |
| 6. Homestead land ($X_6$) | 0.1693 | 0.0636 | 0.1057 | 0.0691 |
| 7. Land under agricultural crop($X_7$) | 0.4769 | 0.0909 | 0.3803 | 0.2880 |
| 8. Cropping intensity ($X_8$) | 0.0235 | 0.0470 | -0.0235 | 0.0470 |
| **9. Land under bamboo ($X_9$)** | 0.5328 | -0.1142 | **0.647** | 0.3581 |
| 10. Material possessed ($X_{10}$) | 0.0204 | -0.0799 | 0.1003 | -0.0799 |
| 11. Annual income before bamboo ($X_{11}$) | 0.2710 | -0.0014 | 0.2724 | 0.1718 |
| 12. Mass media exposure ($X_{12}$) | -0.1863 | 0.0235 | -0.2098 | -0.1659 |
| 13. Number of rhizome planted ($X_{13}$) | -0.1242 | -0.0395 | -0.0847 | -0.1253 |
| 14. Number of rhizome grown to the fullest ($X_{14}$) | -0.1212 | 0.0096 | -0.1308 | -0.1241 |
| 15. Training received($X_{15}$) | -0.0416 | 0.0018 | -0.0434 | -0.052 |
| 16. Energy consumption ($X_{16}$) | 0.4973 | 0.1643 | 0.333 | 0.3062 |
| 17. Distance to market($X_{17}$) | 0.1219 | 0.0050 | 0.1169 | 0.0601 |
| 18. Cost incurred in bamboo cultivation($X_{18}$) | 0.5277 | 0.2349 | 0.2928 | 0.3443 |
| 19. Mode of selling($X_{19}$) | 0.1179 | 0.0196 | 0.0983 | 0.0786 |

**Residual effect=0.0746**

Table-6.21 presents the path analysis for decomposing the total effect(r) of the antecedent variables into direct, indirect and residual effect on the consequent variable, Wages generation from Bamboo enterprise ($Y_5$).

**REVELATION**: It has been found that the variable family size($X_3$) has exerted the highest direct effect to characterize the wages generation from bamboo enterprise. It is well discernable that family size presents both stress and motivation to go for labour intensive work in individual to elicit a better choice out of basket of commodity to support the family and earn better social status for the family.

The variable land under bamboo($X_9$) has also been exerted the highest indirect effect to imply that this variable has got highest associational property to characterize the productivity of bamboo.

Again, it has been found that the variable family size($X_3$) has routed highest indirect effect of all the variables to ultimately functionalize the performance of wage generation from bamboo enterprise. This indicates the behavioural as well as operational viscosity of this variable productivity of bamboo. The value of the residual effect indicates that with the combination of these 19 variables, more than 98 per cent variance of wages generation from ($Y_5$) has been explained.

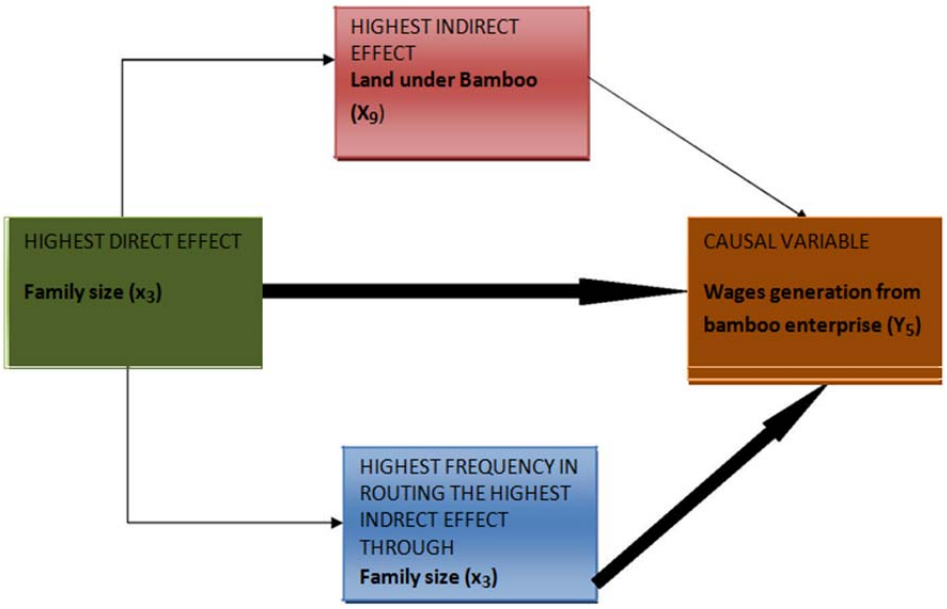



**Fig. 6.15: Paradigm of path analysis: causal variable Wages genereted from Bamboo enterprise ($Y_5$) vs. other 19 exogenous variables.**

**Table 6.17: Factor analysis: Conglomeration of variables based on factor loading and renaming of factors.**

| Factors | Variables | Factor loading | Variance (%) | C.V. (%) | Factor Renaming |
|---|---|---|---|---|---|
| **Factor-1** | Family size ($X_3$) | -0.564 | 15.96 | 15.96 | Family Resource |
| | Land under agricultural | -0.557 | | | Entrepreneurship |
| | crop ($X_7$) | | | | |
| | Area under bamboo($X_9$) | 0.849 | | | |
| | Energy consumption | | | | |
| | ($X_{16}$) | | | | |
| | Mode of | 0.154 | | | |

| | | | | | |
|---|---|---|---|---|---|
| | selling($X_{19}$) | | | | |
| **Factor-2** | Mass media exposure ($X_{12}$) | -0.301 | 12.761 | 28.677 | Input Media Interaction |
| | Number of rhizome planted ($X_{13}$) | 0.716 | | | |
| | Number of rhizome grew to the fullest($X_{14}$) | 0.743 | | | |
| **Factor-3** | Age ($X_1$) | 0.697 | 11.017 | 39.694 | Home and Human Resource Support |
| | Education ($X_2$) | -0.670 | | | |
| | Homestead land ($X_6$) | 0.414 | | | |
| **Factor-4** | Material possessed($X_{10}$) | 0.556 | 7.541 | 56.052 | Resource Status |
| | Annual income before bamboo ($X_{11}$) | -0.552 | | | |
| **Factor-5** | Training received($X_{15}$) | 0.559 | 6.971 | 63.023 | |
| **Factor-6** | Distance to market ($X_{17}$) | 0.498 | 5.844 | 68.867 | |
| **Factor-7** | Average cost of farm implements at present($X_5$) | 0.668 | 5.353 | 68.867 | |
| **Factor-8** | Average cost of farm implements when purchased($X_4$) | 0.620 | 4.860 | 79.081 | Input Enterprise |
| | Mode of selling($X_{19}$) | 0.532 | | | |
| **Factor-9** | Cropping intensity($X_8$) | 0.638 | 4.746 | 83.827 | |

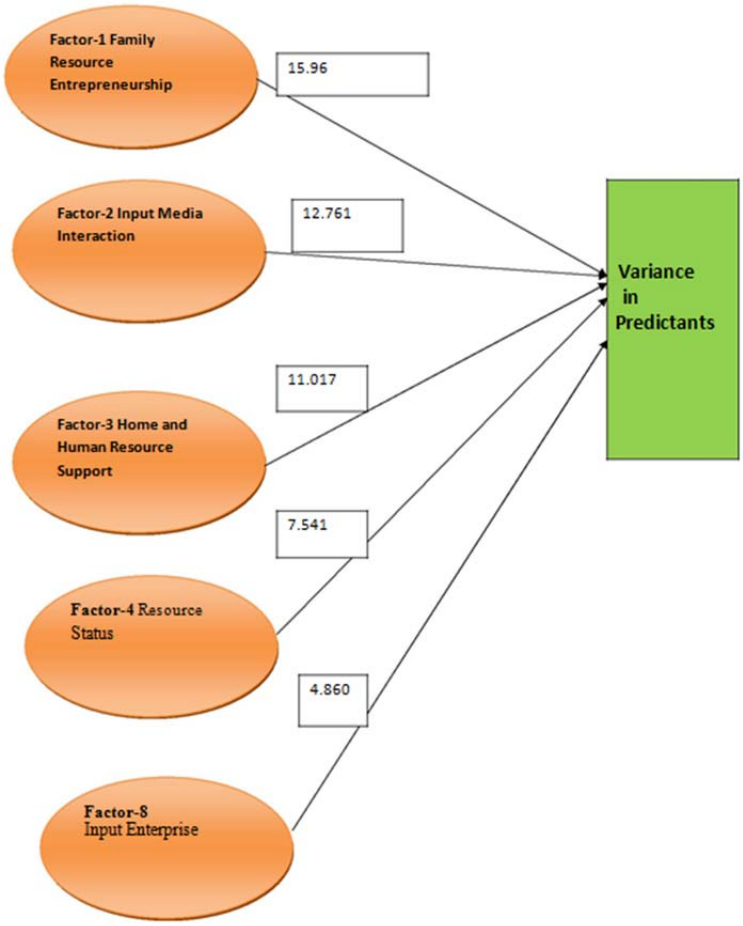



**Fig. 6.16: Factor analysis: Conglomeration of variables based on factor loading and renaming of factors.**

Table-6.22 presents the factor analysis to estimate the degree of conglomeration of apparently different exogenous variables, based on Eigen values into some discernable factor. It has been found from the table that **Factor-1** has accommodated the following variables

Family size ($X_3$)

Land under agricultural crop ($X_7$) Area under bamboo($X_9$)

Energy consumption ($X_{16}$) Mode of selling($X_{19}$)

And this factor can be renamed as Family Resource entrepreneurship. This has contributed 15.96% of variance.

**Factor-2** has accommodated the following variables

Mass media exposure ($X_{12}$)

Number of rhizome planted ($X_{13}$)

Number of rhizome grew to the fullest($X_{14}$)

And this factor can be renamed as Input media interaction. This has contributed 12.761% of variance.

**Factor-3** has accommodated the following variables

Age ($X_1$) Education ($X_2$)

Homestead land ($X_6$)

And this factor can be renamed as Home and human resource support. This has contributed 11.017% of variance.

**Factor-4** has accommodated the following variables

Material possessed($X_{10}$)

Annual income before bamboo ($X_{11}$)

And this factor can be renamed as Resource status. This has contributed 4.86% of variance.

**Factor-8** has accommodated the following variables

Average cost of farm implements when purchased($X_4$)

Mode of selling($X_{19}$)

And this factor can be renamed as Input enterprise. This has contributed 7.541% of variance.

Since the rest of the factor have accommodated solitary variable in each of the cases, no renaming is required.

The cumulative variance is 87% which is fairly enough to explain any kind of interpretative variation as well as interaction amongst and between the whole plethora of variable including both dependent and independent variables.

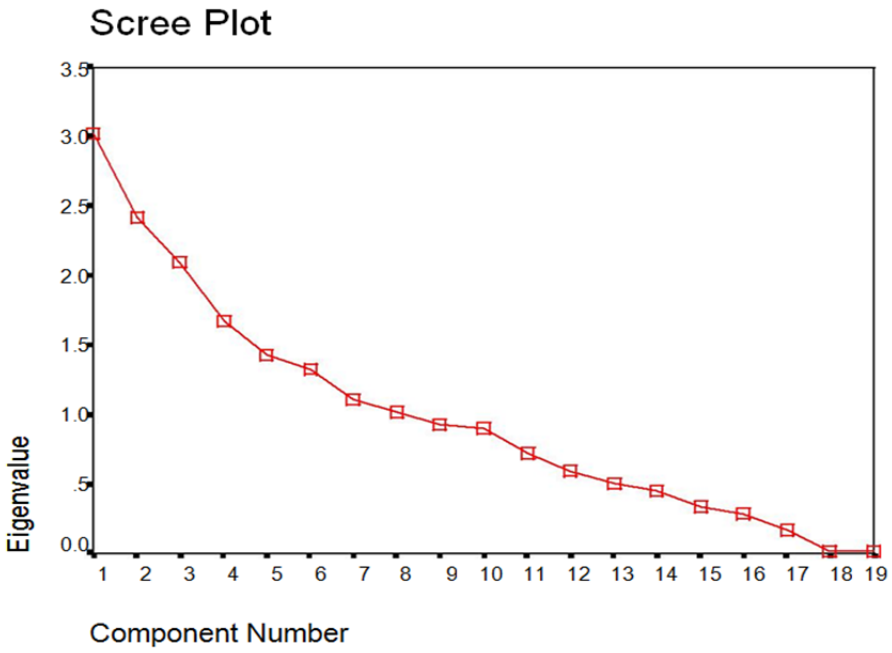



**Fig. 6.17: Scree Plot**

A Scree plot is presents the level of conglomeration of variables based on factor loading. The graph shows that after reaching component 11 the Eigen values start plateuing and the number of components after this point has been proved to be insignificant.

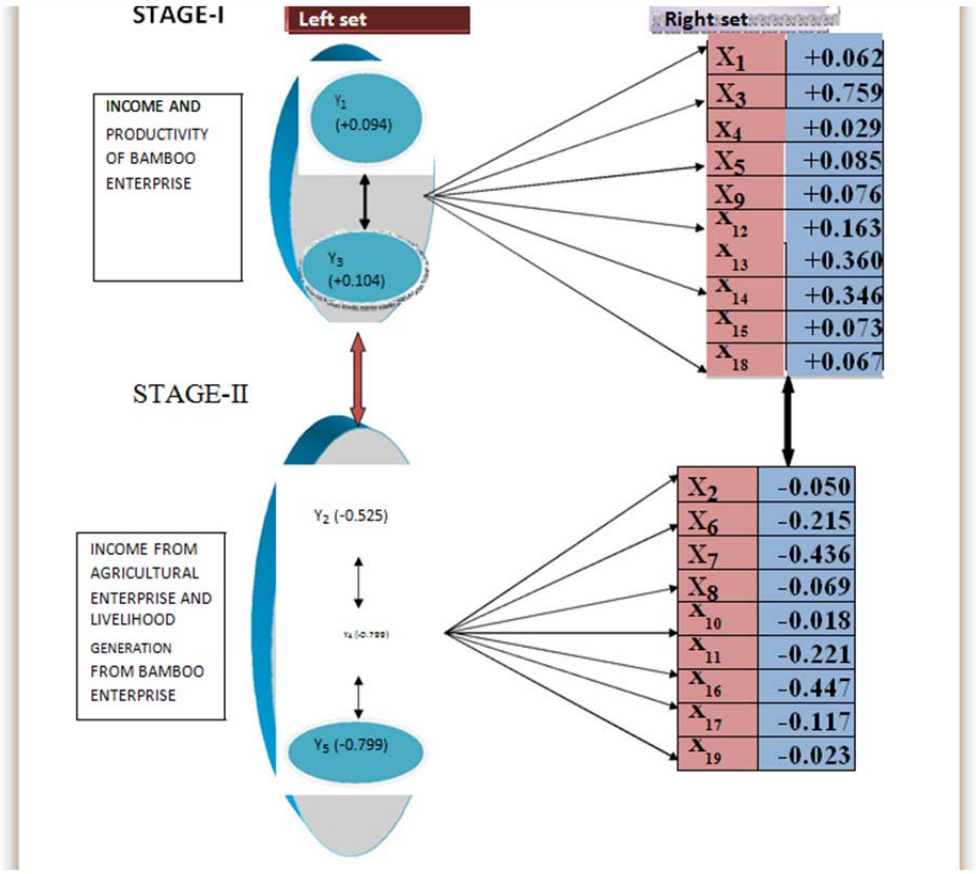



**Fig. 6.18: CANONICAL CORRELATION ANALYSIS:**

**REVEALATION**

Canonical covariate analysis has been carried out to depict the clandestine interactive and combination between two sets of variables i.e., left and right side sets of variables. This analysis has got tremendous strategic importance.

The model depicts that from the left side (Set-I) the following consequent variables viz;

$Y_1$= Family income from bamboo enterprise.

$Y_3$= Productivity of bamboo.

Have got clear choices to select the following exogenous variable i.e. from right set of variables viz,

$X_1$=Age

$X_3$ =Family size

$X_4$= Average cost of farm implements when purchased

$X_5$= Average cost of farm implements at present

$X_9$= Land under bamboo.

$X_{12}$= Mass media exposure.

$X_{13}$= Number of rhizome planted.

$X_{14}$= Number of rhizome grown to the fullest.

$X_{15}$= Training received.

$X_{18}$ = Cost incurred in bamboo cultivation.

From the cross loading of the canonical covariates, it can be inferred that, while the entire Y set of variable are in interactive relationship, the two left side variables i.e. Family income from bamboo enterprise($Y_1$) and Productivity of bamboo($Y_3$) have respondent and dovetailed these X set of variable.

So, it can be concluded that the increase of income through increase of productivity needs a collective support from the causal variable like Age($X_1$) ,Family size ($X_3$), Average cost of farm implements when purchased ($X_4$)

Average cost of farm implements at present($X_5$), Land under bamboo ($X_9$), Mass media exposure($X_{12}$), Number of rhizome planted($X_{13}$), Number of rhizome grown to the fullest ($X_{14}$), Training received($X_{15}$), Cost incurred in bamboo cultivation($X_{18}$ ). So the left set of variable ($Y_1$ & $Y_3$) combinedly can be branded as ***Productive Economy Of Bamboo Enterprise*** with a clandestine support from ***Resource-Investment Factor.***

In case of Set-II From the cross loading of the canonical covariates, it can be inferred that, while the entire Y set of variable are in interactive relationship, the three left side variables i.e. Family income from agricultural enterprise($Y_2$),Mandays generated from bamboo enterprise($Y_4$) and Wages generated from bamboo enterprise($Y_5$) have respondent and dovetailed these X set of variable.

So, it can be concluded that the increase of income through increase of productivity needs a collective support from the causal variable like Education($X_2$), Homestead land ($X_6$), Land under agricultural crop ($X_7$), Cropping intensity($X_8$), Material possessed ($X_{10}$), Annual income before bamboo($X_{11}$), Energy consumption($X_{16}$), Distance to market ($X_{17}$), Mode of selling($X_{19}$). So the left set of variable ($Y_2$, $Y_4$ & $Y_5$) combinedly can be branded as ***Farm Family Economy*** with a clandestine support from right side variable which also can be branded combinedly as ***Management – Communication Variable.***