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Lamps - A Pattern of Financing to Tribes under Cooperative Sector in Mayurbhanj District of Odisha (India)

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Orissa is the 9th largest State with an area of 155,707 km2, and 11th largest in terms of population with 41.94 million people, about 3.47 percent of India"s population, as per the provisional estimates of 2011 census. In the development of the tribal areas, the cooperatives, of late, have been playing an important role, provision of credit, marketing and procurement of tribal produce, distribution of agricultural inputs, fertilizer, consumer goods etc, are all under taken by the cooperatives in tribal areas.

The objective of this paper is to critically review major tribal policies, programmes and an impact study on the socioeconomic status of the tribal's resulting from the service rendered by the LAMPS in Odisha. The paper also tries to review various methods i. e the quantative measurement and qualitative assessment of the services rendered by the LAMPS, the pattern of financing to the tribal's and conducting an impact study on the economic status of the tribal's resulting from the service rendered by the LAMPS in Mayurbhanj district in Odisha.

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I. Introduction

Odisha, one of the most illustrious states of India, is gifted with the oldest and richest cultural heritage. Mayurbhanj is the largest district of Odisha, in a developing stage, presents a panorama of many millennia in the human history. Mayurbhanj has crossed the geographical boundary and has achieved worldwide recognition for its beauty, vigor and Marvel of Arts. The forest is the important source of earning of the Government and the inhabitants as well. Timber fuel, wood, leather, cans, bamboo, kendu leaves constitute a major revenue of the district. Mayurbhanj district is divided into 4 subdivisions, 26 Tehsils, 26 C.D. Blocks, 382 gram Panchayats, 28 Police Stations, 4 Towns, 6 Fire Stations, 3950 Villages and 10 assembly constitutions .

II. Review of Literature Tribes of Mayurbhanj

Mayurbhanj is the largest and most tribally concentrated district of Odisha. Out of 62 tribal communities found in Odisha, 45 types of tribes are found in Mayurbhanj alone which comes under Tribal Sub-Plan Scheme. They belong to different social stock, speak languages from different families and show considerable variation in their basic economy. Economically, they are most vulnerable among the weaker sections of the community.

Inadequate health service is another matter of great concern. The health centers are not yet available in the backward, remote, hilly areas where the tribal concentration is very high.

Despite the progress made by Commercial Banks and Regional Rural Banks in dispensation of production and investment credit to seasonal agriculture operations and other allied activities, the agricultural credit co-operatives continued to be the principal institutional agencies in the sphere of agricultural activities. The main thrust at present is on gearing up the co-operative credit institutions to meet the credit needs of the weaker sections of the society. The Primary Agricultural Credit Societies (PACS) in the tribal areas have been restructured as Large sized Agricultural Multipurpose Society (LAMPS) so as to provide a package of service of credit, marketing and supply of consumer articles to the tribal at a single contact point.

LAMPS are functioning in the district of Mayurbhanj to provide credit facilities to the rural poor. The Large size Multipurpose Cooperative Societies are popularly known as LAMPS. Accordingly 223 LAMPS were set up in 118 Blocks spread over 9 Districts by the end of 1977-78 in Orissa while 53 LAMPS were organized in Mayurbhanj district in Odisha.

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III. Tribals in India and the Development Policy

Relating to the developmental proposition of the tribal in India different plan programmes and developmental strategies have been implemented since long back, right from 1949 to 21st century. Though various attempts have been made by the Government, Non-Government and Voluntary Organizations for the uplift of tribal people, but these efforts are found to be paralyzed because plan and performance are two means of economic development. Plan without performance is meaningless and performance without plan is uneconomic. Hence the Tribal in India have the focal point both state and Central Govt. for lifting them up and to create them as an asset for nation.

In Odisha the tribal population varies from district to district in the state. In Odisha there have been 62 tribal communities and 13 primitive tribal groups constituting 19.42 % of the total population of the state.

Mayurbhanj is a tribal dominated district. Out of 62 types of tribals in Odisha, Mayurbhanj houses 30 tribes according to 2001 census.

IV. The Tribal Problem

Tribals in India as well as Odisha and Mayurbhanj have been experiencing diverse problems. Taking the advantage of their illiteracy, simplicity and ignorance, the money lenders, the middle man and of unscrupulous trader enter in to the tribal regions and exploit them through various dubious means. Besides, they are also facing problems of land alienation, exorbitant rate of interest, wide spread poverty and indebtedness, bondage, exploitation, leading to sell of child and starvation death. The main problem among these is poverty and indebtedness. Majority tribes live under poverty line. Indebtedness is almost inevitable , since heavy interest is to be paid to these money lenders.These miseries of tribals are due to rapid growth of population, pressure on land holdings, illiteracy, deforestation, inadequate infrastructural and social service facilities etc.

V. Cooperative Approach for Tribal Development

To eliminate the age old exploitation and repression of tribals in different economic activities, LAMPS (Large sized Multipurpose Cooperative Societies) are created at block level with branches . Accordingly 223 LAMPS were setup in 118 Blocks spread over 9 districts by the end of 1977-78 in Odisha while 53 LAMPS were organized in Mayurbhanj District. For credit purposes, the LAMPS have to be serviced by the Central Cooperative banks (CCB), for supply of input and marketing and agricultural produce to the Regional Cooperative marketing Society (RCMS) and marketing for minor forest produce to the Tribal Development Cooperative Societies (TDCS).

To save the poor cultivators from the exploitation of the money-lenders, the cooperative movement started in Odisha as early as in 1903. By the cooperative credit societies Act, 1904 several cooperative societies were established in North Odisha.

VI. Relevance of the Study

The tribals live with inadequate food, insufficient clothes and temporary shelters. The tribals are where they were inspite of the implementation of many programmes specially meant for them. LAMPS are based on services motive. In the Cooperation philosophy, service predominates profit. LAMPS offer plentiful opportunities to empower the tribal to face the challenges and problems. Thus it is imperative to pursue a study on the role of the LAMPS in Mayurbhanj, an economically tribal district in Odisha.

VII. Objective of The Study

The purpose of the study endeavours to undertake a comprehensive enquiry into the following:

- Studying the membership coverage into cooperative fold and pattern of financing to the tribal's,
- Studying the marketing of agricultural and forest minor produce of tribal's by the LAMPS,
- Conducting an impact study on the economic status of the tribal's resulting from the service rendered by the LAMPS,
- Examining the socio-economic factors responsible in detaching the tribal's from the rest population,
- Observing the professionalism in the LAMPS ,and
- Suggesting necessary policy measure to be pursued by LAMPS to minimize the big gap between the tribal and non-tribal.

VIII. Scope and Limitation of the Study

The study pertains to both quantative measurement and qualitative assessment of the services rendered by the LAMPS to the tribals in Mayurbhanj district. While an indepth analysis on the role of the LAMPS in the uplift of the tribals in Mayurbhanj is undertaken, a general and brief discussion is devoted for the LAMPS operating in the other districts of Odisha. The study reference period of the study covers fifteen years viz. from 1992-93 to 2006-07.

IX. Hypothesis

Tribals are beset with numerous problems in respect of poverty, unemployment, indebtness, communication inability, depopulation and migration.

Still they are the people of simple living without high thinking. The exploitation of their simplicity by other worsens their economic status. LAMPS are the kingpins of the cooperative banking system. They are the base level institutions with direct contact with the tribals living in the countryside. LAMPS work with cooperative sprit and strength. They may persuade, motivate and socialize the tibals towards desirable direction.

X. Statistical Methodology

Mayurbhanj is an economically backward as well as a tribal district in Odisha. The study will be pursued with both primary and secondary data. The secondary data required for the study will be collected from the Audit reports of LAMPS of Mayurbhanj Central Cooperative Bank. For the impact study, out of 53 LAMPS, 5 LAMPS will be considered at random. Again 10% of tribal beneficiary from the LAMPS so selected will be examined and analysed in details.

Consistent with the objective of the study different techniques are used for the analysis of data. The data analyses are undertaken mostly with the help of several managerial and statistical devices, comparative and experimental methods of analysis are adopted. Various statistical tools like Coefficient Variation, t-test, Correlation coefficient, Multiple Regression Analysis & Analysis of Variance (ANOVA) are adopted for analysis. Here, for regression analysis and for other statistical tool is used to examine the cause, result, effect and trend.

a) Functional Analysis

In order to examine the contribution of the factors in causing more development of tribal, linear model is used. The analysis is based on multiple regression technique. The specification and justification of variables included in the analysis are used as

$Y = f(X_1\ X_2\ X_3\ X_4\ X_5\ X_6\ X_7\ X_5\ X_9\ X_{10}\ X_{11}\ X_{12})$

Where Y = Development

Composition of members	-	X_1	Receipt of deposit	-	X_2
Borrowing & SAO	-	X_3	Loans & advances	-	X_4
Working capital	-	X_5	Investment	-	X_6
Cost of management	-	X_7	Consumer business		X_8
Working fund	-	X_9	Fund utilization	-	X_{10}
Total demand	-	X_{11}	Total collection	-	X_{12}

The form of equation fitted for production is given below linear model

$Y = C_0+C_1X_1+C_2X_2+C_3X_3+C_4X_4+C_5X_5+C_6X_6+C_7X_7+C_8X_8+C_9X_9+C_{10}X_{10}+C_{11}X_{11}+C_{12}X_{12}$ C.V. is used to know the data variation collected from the study area. Formula of coefficient of variation is $C.V. = \frac{\sigma}{x} x100$.

The correlation co-efficient is a statistic descriptive of the magnitude of the relation between two variables. The main purpose of the study is to find out the relationship between the variables.

b) Karl Pearson's Coefficient of Correlation

Correlation in statistics refers to relationship between any two, or more variables. Two variables are said to be correlated if with a change in the value of one variable there arises a change in the value of *another* variable.

1) that there is linear relationship between the two variables;
2) that the two variables are casually related which means that one of the variables is independent and the other one is dependent; and
3) a large number of independent causes are operating in both variables so as to produce a normal distribution.

There are different methods of studying correlation between any two or more series. But for measuring the correlation between any two variables i.e. simple correlation, Karl Pearson's co-efficient method is used.

Karl Pearson's Coefficient of Correlation (r) =

$$\frac{N\sum XY - \sum X.\sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}.\sqrt{N\sum Y^2 - (\sum Y)^2}}$$

X = given, or reduced values of the first variable
Y = given, or reduced value of the second variable, and
N = number of pairs of observations of X and Y.

The value of 'r' lies between ±1.

Positive value of 'r' indicates positive correlation between two variables, changes in both the variables take place in same direction, where as negative values of 'r' indicates a negative correlation i.e. changes in the two variables taking place in opposite direction. A zero value of 'r' indicates that there is no association between two variables.

c) The student's t-test of the null hypothesis

Which follows t-distribution with (n-1) degrees of freedom.

We compute the t-statistic for each Ci

The null hypothesis is $C_i = 0$. $\overset{*}{t} = \frac{\hat{C}_i - C_i}{S.E.(\hat{C}_i)}$

if $\overset{*}{t}$ < t (tabulated), we accept the null hypothesis i.e. we accept that $\hat{C}_i$ is not significant.

if $\overset{*}{t}$ > t (tabulated), we reject the null hypothesis and we accept the alternative one. i.e. $\hat{C}_i$ is statistically significant.

Thus, greater the value of $\overset{*}{t}$ the stronger the evidence that Ci is statistically significant.

d) Analysis of Variance test

In the analysis, the total variations are split into explained and unexplained variation. This suggests that one can compute an analysis of variance type of table for analysis.

F-statistic is computed as

$$F = \frac{\text{Mean sum of square of explained sum square}}{\text{Mean sum of square of residual sum square}} = \frac{\sum y_i^2 / k-1}{\sum e_i^2 / n-k}$$

since our model consists of five explanatory variable

$$\text{so, } F = \frac{\sum y_i^2 / 4-1}{\sum e_i^2 / n-4} = \frac{\hat{C}^2 \sum x_i^2}{\sum e_i^2 / n-4}$$

The null hypothesis H_o is $C_i = 0$

if calculated F > tabulated F with (k-1) and (n-k) degrees of freedom with chosen level of significance we reject the null hypothesis and accept that the data is significant.
If calculated F < tabulated F, then we accept the null hypothesis and conclude that data is not significant

Table 1 : Analysis of variance Table for Two-way Anova

Source of variation	Sum of squares(SS)	Degrees of freedom (d.f.)	Mean square (MS)	F-ratio
Between columns treatment	$\sum \frac{(T_j)^2}{n_j} - \frac{(T)^2}{n}$	(c – 1)	SS between columns / (c - 1)	MS between columns / MS residual
Between rows treatment	$\sum \frac{(T_i)^2}{n_i} - \frac{(T)^2}{n}$	(r – 1)	SS between rows / (r - 1)	MS between rows / MS residual
Residential or error	Total SS – (SS between columns + SS between rows)	(c-1)(r-1)	MS residual / (c – 1) (r – 1)	
Total	$\Sigma X_{ij}^2 - \frac{(T)^2}{n}$	(c, r -1)		

Where, the total value of individual item (or their coded values as the case may be) in all the samples and call it *T*.

Steps involved

i. Use the coding device, if same simplifies the task.

ii. Find T = Total of all the values individual items (or their coded value)

iii. Correction factor = $\frac{(T)^2}{n}$

iv. Find out the square of all the item values (or coded value)

v. Total variance = sum of squares of deviation

$$S = \text{Total SS} = \Sigma X^{2}_{ij} - \frac{(T)^2}{n}$$

vi. SS between columns = $\Sigma \frac{T_j^{\ 2}}{n_j} - \frac{(T)^2}{n}$

vii. SS between rows = $\Sigma \frac{(T_i)^2}{n_i} - \frac{(T)^2}{n}$

viii. Error variance = SS for residual = Total SS – (SS between columns + SS between rows)

ix. Degree of freedom for total variance = (C.r – 1)

x. Degree of freedom for variance between columns = C – 1

xi. Degree of freedom for variance between rows = r – 1

xii. Degree of freedom for residual variance = (c-1) (r-1)

xiii. Mean square = MS (between column) = $\frac{\text{SS between columns}}{C - 1}$

xiv. MS (between rows) = $\frac{\text{SS between rows}}{r - 1}$

xv. MS (Residual error) = $\frac{\text{SS residual}}{(c-1)\ (r-1)}$

XI. Empirical Analysis of Tribal Development under Cooperative Sector Rendered by Lamps in Mayurbhanj District

The tribal of of Mayurbhanj district lives with inadequate food, insufficient clothes and temporary shelters. In spite of implementation of many programmes and policies the livelihoods of tribal are not so developed. Though LAMPS offer plentiful opportunities to empower tribal, the tribal faces many challenges. Statistical tools like Mean, standard deviation, co-efficient of variation, correlation co-efficient, multiple regression, ratio has been adopted to examine the cause, effect and trend for the development of tribal under co-operative sector. To accomplish the objectives of the study i.e. performance, professionalism, role, spirit and strength of the LAMPS in the uplift of the tribal in Mayurbhanj district different techniques considered for the following analysis.

Table 2 : Mean, Standard Deviation and Coefficient of Variation (C.V.) of various factors under the LAMPS [SIRSA]

Factors	Mean	S.D.	C.V.
Composition of members (X_1)	4504.40	± 322.71	7.16
Receipt of deposit (X_2)	23.60	±32.44	137.46
Borrowing & SAO (X_3)	11369.80	±4916.80	43.24
Loans & advances (X_4)	10787.20	±4940.10	45.80
Working capital (X_5)	13739.40	±49894.06	36.35
Investment (X_6)	1703.00	±609.48	35.79
Cost of management (X_7)	517.40	±174.14	33.66
Consumer business (X_8)	2993.40	±986.67	32.96
Working fund (X_9)	13671.80	±5006.24	36.62
Fund utilization (X_{10})	3145.60	±14530.65	461.94
Total demand (X_{11})	16965.60	±4495.61	26.50
Total collection (X_{12})	12321.40	±3673.59	29.81

In the above table it is observed that there is less variation in case of Composition of members (X_1) followed by Total demand (X_{11}), this shows more consistency of data collected from the study area. It is also found that in case of the Fund utilization (X_{10}) there is more variation i.e. 461.94, which shows less consistency of data in the study area so far as utilization of fund is concerned.

Table 3 : Mean, Standard Deviation and Coefficient of Variation (C.V.) of various factors under the LAMPS [KULIANA]

Factors	Mean	S.D.	C.V.
Composition of members (X_1)	4010.80	± 456.64	11.39

Receipt of deposit (X_2)	242.80	±128.93	53.10
Borrowing & SAO (X_3)	12121.00	±7152.08	59.01
Loans & advances (X_4)	16489.40	±3912.47	23.73
Working capital (X_5)	20682.80	±4166.45	20.14
Investment (X_6)	3019.20	±835.68	27.68
Cost of management (X_7)	415.20	±100.51	24.21
Consumer business (X_8)	3218.00	±1751.23	54.42
Working fund (X_9)	20560.20	±4166.36	20.26
Fund utilization (X_{10})	45166.00	±7470.79	16.54
Total demand (X_{11})	22054.20	±3161.39	14.33
Total collection (X_{12})	13836.80	±3568.00	25.79

In the above table it is observed that there is less variation in case of Composition of members (X_1) followed by Total demand (X_{11}), this shows more consistency of data collected from the study area. It is also found that in case of the Borrowing (X_3) there is more variation i.e. 59.01, which shows less consistency of data in the study area so far as borrowing & SAO is concerned.

c) Mean, Standard Deviation and Coefficient of Variation (C.V.) of various factors under the LAMPS [DEULI]

It is observed that there is less variation in case of Composition of members (X_1) followed by Working fund (X_9), this shows more consistency of data collected from the study area. It is also found that in case of the Fund utilization(X_{10}) there is more variation i.e. 118.16, which shows less consistency of data in the study area so far as Fund utilization is concerned.

d) Mean, Standard Deviation and Coefficient of Variation (C.V.) of various factors under the LAMPS [CHITRADA]

It is observed from the analysis that there is less variation in case of Receipt of deposit (X_2) followed by Composition of members (X_2), this shows more consistency of data collected from the study area. It is also found that in case of the Borrowing (X_3) there is more variation i.e. 52.57, which shows less consistency of data in the study area so far as Fund utilization is concerned.

e) Mean, Standard Deviation and Coefficient of Variation (C.V.) of various factors under the LAMPS [BETNOTI]

It is also observed that there is less variation in case of Fund utilization (X_{10}) followed by Borrowing (X_3), this shows more consistency of data collected from the study area. It is also found that in case of the Working capital (X_5) there is more variation i.e. 245.63, which shows less consistency of data in the study area so far as working capital is concerned.

f) Mean, Standard Deviation and Coefficient of Variation (C.V.) of various factors under the LAMPS [BAISINGA]

It is observed that there is less variation in case of Composition of members (X_1) followed by Cost of management (X_7), this shows more consistency of data collected from the study area. It is also found that in case of the Investment (X_6) there is more variation i.e. 53.76, which shows less consistency of data in the study area so far as Investment is concerned.

g) Mean, Standard Deviation and Coefficient of Variation (C.V.) of various factors under the LAMPS [BANGRIPOSI]

It is also observed that there is less variation in case of Composition of members (X_1) followed by Cost of management (X_7), this shows more consistency of data collected from the study area. It is also found that in case of the Investment (X_6) there is more variation i.e. 53.76, which shows less consistency of data in the study area so far as Investment is concerned.

h) Mean, Standard Deviation and Coefficient of Variation (C.V.) of various factors under the LAMPS [BISOI]

It is observed that there is less variation in case of Composition of members (X_1) followed by Consumer business (X_8), this shows more consistency of data collected from the study area. It is also found that in case of the Receipt of deposit (X_2) there is more variation i.e. 131.19, which shows less consistency of data in the study area so far as Receipt of deposit is concerned.

i) Mean, Standard Deviation and Coefficient of Variation (C.V.) of various factors under the LAMPS [BADAMTALIA]

It is observed from the analysis table that there is less variation in case of Composition of members (X_1) followed by Total collection (X_{12}), this shows more consistency of data collected from the study area. It is also found that in case of the Consumer business (X_8) there is more variation i.e. 223.65, which shows less consistency of data in the study area so far as Consumer business is concerned.

Table 4 : Mean, Standard Deviation and Coefficient of Variation (C.V.) of various factors under the LAMPS [JOSHIPUR]

Factors	Mean	S.D.	C.V.
Composition of members (X_1)	6318.40	± 1201.19	19.01
Receipt of deposit (X_2)	59.20	82.68	139.66
Borrowing & SAO (X_3)	14885.80	11159.14	74.97
Loans & advances (X_4)	14018.40	4896.43	34.93
Working capital (X_5)	15029.60	3724.41	24.78
Investment (X_6)	1389.00	815.64	58.72
Cost of management (X_7)	477.60	164.82	34.51
Consumer business (X_8)	2895.40	1954.54	67.51
Working fund (X_9)	1925.00	3577.36	185.84
Fund utilization (X_{10})	31261.20	8990.13	28.76
Total demand (X_{11})	19255.00	8598.22	44.65
Total collection (X_{12})	16148.20	5541.97	34.32

In the above table it is observed that there is less variation in case of Composition of members (X_1) followed by Working capital (X_4), this shows more consistency of data collected from the study area. It is also found that in case of the Working fund (X_9) there is more variation i.e. 185.84, which shows less consistency of data in the study area so far as Working fund is concerned.

It is observed from the above tables that in most of the Large size multipurpose cooperative societies (LAMPS) there are less variation in case of Composition of members. But there diverge among the LAMPS so far as more variation is concerned.

i) In case of Co-operative Sector SIRSA, DEULI and CHITRDA the study reveals that Fund utilization as the less consistency.
ii) In case of Co-operative Sector KULIANA the study reveals that Borrowing as the less consistency.
iii) In case of Co-operative Sector BETNATI the study reveals that Working capital as the less consistency.
iv) In case of Co-operative Sector BAISINGA and BANGRIPOSI the study reveals that Investment as the less consistency.
v) In case of Co-operative Sector BISOI the study reveals that Receipt of deposit as the less consistency.
vi) In case of Co-operative Sector BADAMITALIA the study reveals that Consumer business as the less consistency.
vii) In case of Co-operative Sector JOSHIPUR the study reveals that Working fund as the less consistency.

However, it is more importance to examine the relationship of one factor to another than to measure performance in either alone, relationship among factors can be studied by adopting the method of correlation (r).

To evaluate performance of LAMPS in the study area it is customary in measurement to describe the correlation between two tests as high, marked or substantial, low or negligible. Here the descriptive level applied as –

* `r' from 0.00 to ±0.20 denotes negligible relationship (weak)
** `r' from ±0.20 to ±0.40 denotes low correlation (moderate)
*** `r' from ±0.40 to ±0.70 denotes substantial or marked relationship (good)
**** `r' from ±0.70 to ±1.00 denotes high or very high relationship (strong).

XII. Coefficient of Correlation (r)

Table 5 : Correlation Coefficient (`r' value) between factors in case of SIRSA

Factors	Compo-sition of members (X_1)	Receipt of deposit (X_2)	Borro-wing & SAO (X_3)	Loans & advances (X_4)	Working capital (X_5)	Invest-ment (X_6)	Cost of management (X_7)	Cons-umer business (X_8)	Working fund (X_9)	Fund utilization (X_{10})	Total demand (X_{11})	Total collection (X_{12})
Composition of members (X_1)	1.00											
Receipt of deposit (X_2)	-0.70**	1.00										

	*											
Borrowing & SAO (X_3)	0.93***	-0.56***	1.00									
Loans & advances (X_4)	0.98***	-0.67***	0.97***	1.00								
Working capital (X_5)	0.96***	-0.54***	0.97***	0.99***	1.00							
Investment (X_6)	0.66***	-0.77***	0.91***	0.98***	0.95***	1.00						
Cost of management (X_7)	0.69***	-0.93***	0.62***	0.73***	0.62***	0.83***	1.00					
Consumer business (X_8)	-0.69***	0.99***	-0.59***	-0.69***	-0.56***	-0.78***	-0.96***	1.00				
Working fund (X_9)	0.96***	-0.54***	0.97***	0.99***	1.00***	0.95***	0.62***	-0.56***	1.00			
Fund utilization (X_{10})	0.96***	-0.72***	0.98***	0.99***	0.97***	0.97***	0.76***	-0.74***	0.96***	1.00		
Total demand (X_{11})	0.59***	-0.27**	0.37**	0.54***	0.58***	0.61***	0.33**	-0.21**	0.58***	0.43***	1.00	
Total collection (X_{12})	0.93***	-0.91***	0.81***	0.90***	0.82***	0.95***	0.86***	-0.89***	0.82***	0.91***	0.52***	1.00

It reveals from the above table that correlation coefficient (`r') value –

1. In case of Co-operative Sector **SIRSA** there exists strong and positive correlation and changes in same direction in most of the cases between compositions of members with other factors considered for the study. There also exists weak correlation between consumer business and total demand.
2. In case of Co-operative Sector **KULIANA** there exists strong and positive correlation only between composition of members with investment, fund utilization and weak relationship with loan & advances, Rest of factors shows good or moderate relationship. It is also found that there exists weak relationship between working capital with cost of management ; borrowing with loans & advances, working capital, cost of management ; fund utilization with total demand.
3. In case of Co-operative Sector **DEULI** there exists strong and positive correlation in most of the cases between compositions of members with other factors considered. There also exists weak correlation between composition of members with receipt of deposit and borrowing ; receipt of deposit with borrowing, investment ; borrowing with investment and total collection.
4. In case of Co-operative Sector **CHITRADA** there exists strong and positive correlation between composition of members with receipt of deposit, loans & advances, working capital, working fund and fund utilization. There also exists weak correlation between composition of members with total collection ; receipt of deposit with borrowing, investment ; borrowing with investment and total collection ; receipt of deposit with total demand ; borrowing with investment; working capital with total demand; working fund with total demand.
5. In case of Co-operative Sector **BETNATI** there exists strong and positive correlation in most of the cases between composition of members with other factors considered. It is also found that correlation matrix between the most of factors shows high relationship i.e. strong relationship. This indicates that Betnati Co-operative sector have utmost role for the development of tribal in the study area.
6. In case of Co-operative Sector **BAISINGA** there exists strong and positive correlation in most of the cases between composition of members with other factors considered. It is also found that correlation matrix between the most of factors shows high relationship i.e. strong relationship. This indicates that Baisinga Co-operative sector have attitude towards development of tribal in the study area.
7. In case of Co-operative Sector **BANGIRIPOSI** there exists strong and positive correlation in most of the cases between composition of members with other factors considered. It is also found that correlation matrix between the most of factors shows high relationship i.e. strong relationship. This indicates

that Bangiriposi Co-operative sector have significant role for the development of tribal in the study area.

8. In case of Co-operative Sector **BISOI** there exists strong and positive correlation in most of the cases between composition of members with other factors considered. There also exists weak correlation between composition of members with total collection; receipt of deposit with consumer business, total demand; borrowing with consumer business, total demand, total collection; loans & advances with total demand, total collection; working capital with consumer business, total demand; investment with total demand; consumer business with working fund; working fund with total demand.
9. In case of Co-operative Sector **BADAMITALIA** there exists strong and positive correlation in most of the cases between composition of members with other factors considered. There also exists weak correlation between composition of members with cost of management and total collection; receipt of deposit with working capital, fund utilization, total demand, total collection; loans & advances with cost of management, total collection; working capital with total collection; investment with cost of management, total collection; cost of management with consumer business, fund utilization; consumer business with total collection.
10. In case of Co-operative Sector **JOSHIPUR** there exists strong and positive correlation in most of the cases between composition of members with other factors and rest of factors concerned shows good or moderate relationship. There also exists weak correlation between receipt of deposit with cost of management, consumer business; borrowing with loans & advances, consumer business; loans & advances with working capital, consumer business, working fund; consumer business with total demand, total collection.

XIII. Regression Results

Below table describes the main regression results. It shows the effect of the indicators adopted for the study. An analysis has been made to know the effect and significant contribution of factors towards development of tribal under LAMPS in the study area.

For multiple regression analysis Independent variables taken are

(1) Independent variables are X_1, $X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}$

(2) Dependent Variable – Development (Y)

Table 6 : Effect of factors for development of tribal under Co-operative sector SIRSA

Coefficients

Factors	Unstandardized Coefficients	Standardized Coefficients
	B	Beta
(Constant)	-509.245	
X_3	0.495	0.793
X_7	1.331	0.076
X_{11}	0.159	0.232
X_{12}	4.352	0.052

In most variables the calculated value of the coefficient (Beta) in the regression equation is either perverse or insignificantly different from zero. It shows the factor borrowing (X_3) have more effect on development in the study area. Next followed by the factor `total demand' have effect on development. Factors like cost of management and total collection have positive impact on development. It is observed that the **borrowing** and SAO has some contribution towards development of tribal in case of co-operative sector SIRSA in the study area.

Table 7 : Effect of factors for development of tribal under Co-operative sector KULIANA

Coefficients

Factors	Unstandardized Coefficients	Standardized Coefficients
	B	Beta
(Constant)	-2436.017	
X_3	0.129	0.519
X_8	0.483	0.475
X_{10}	0.230	0.964
X_{12}	9.258	0.186

In most variables the calculated value of the coefficient (Beta) in the regression equation is perverse. It shows the factor fund utilization (X_{10}) have more effect on development in the study area. Next followed by the factor `borrowing' have effect on development of tribal. Factors like consumer business and total collection have positive impact on development. It is observed that the **fund utilization** have significant contribution towards development of tribal under co-operative sector KULIANA in the study area.

c) Effect of factors for development of tribal under Co-operative sector DEULI

In most variables the calculated value of the coefficient (Beta) in the regression equation is either perverse or insignificantly different from zero. It shows the factor total collection (X_{12}) have more effect on

development of tribal. Next followed by the factor receipt of deposit have effect on development of tribal. Factor like borrowing have positive impact on development. In another case factor like investment have negative impact on development in the study area. It is observed that the **total collection** have significant contribution towards development of tribal under co-operative sector DEULI in the study area.

d) Effect of factors for development of tribal under Co-operative sector CHITRADA

In most variables the calculated value of the coefficient (Beta) in the regression equation is perverse. It shows the factor composition of members (X_1) have more effect on development in the study area. Next followed by the factor `total collection' have effect on development of tribal. Factors like cost of management and consumer business have positive impact on development. It is observed that the **composition of members** have significant contribution towards development of tribal under co-operative sector CHITRADA in the study area

e) Effect of factors for development of tribal under Co-operative sector BETNATI

In most variables the calculated value of the coefficient (Beta) in the regression equation is perverse. It shows the factor borrowing (X_3) have more effect on development in the study area. Next followed by the factor `total demand' have effect on development of tribal. Factors like loans & advances and total collection have positive impact on development. It is observed that the **borrowing** have significant contribution towards development of tribal under co-operative sector BETNATI in the study area in comparison to rest of the factors.

f) Effect of factors for development of tribal under Co-operative sector BAISINGA

In most variables the calculated value of the coefficient (Beta) in the regression equation is either perverse or insignificantly different from zero. It shows the factor borrowing (X_3) have more effect on development of tribal. Next followed by the factor total collection have effect on development of tribal. Factor like investment have positive impact on development. In another case factor like cost of management have negative impact on development in the study area. It is observed that the **borrowing** have significant contribution towards development of tribal under co-operative sector BAISINGA in the study area.

g) Effect of factors for development of tribal under Co-operative sector BANGIRIPOSI

In most variables the calculated value of the coefficient (Beta) in the regression equation is either perverse or insignificantly different from zero. It shows the factor borrowing (X_3) have more effect on development of tribal. Next followed by the factor cost of management have effect on development of tribal. Factor like investment and total collection have negative impact on development in the study area. It is observed that the **borrowing** have significant contribution towards development of tribal under co-operative sector BAISINGA in the study area.

h) Effect of factors for development of tribal under Co-operative sector BISOI

In most variables the calculated value of the coefficient (Beta) in the regression equation is perverse. It shows the factor investment (X_6) have more effect on development in the study area. Next followed by the factor `consumer business' have effect on development of tribal. Factors like receipt of deposit and total collection have positive impact on development. It is observed that the **investment** have significant contribution towards development of tribal under co-operative sector BISOI in the study area in comparison to rest of the factors considered for the study.

i) Effect of factors for development of tribal under Co-operative sector BADAMTALIA

In most variables the calculated value of the coefficient (Beta) in the regression equation is perverse. It shows the working capital (X_5) have more effect on development in the study area. Next followed by the factor `composition of members' have effect on development of tribal. Factors like receipt of deposit and total collection have positive impact on development. It is observed that the **working capital** have significant contribution towards development of tribal under co-operative sector BADAMTALIA in the study area in comparison to rest of the factors.

Table 8 : Effect of factors for development of tribal under Co-operative sector JOSHIPUR

Coefficients

Factors	Unstandardized Coefficients	Standardized Coefficients
	B	Beta
(Constant)	5100.626	
X_3	0.227	0.915
X_4	0.183	0.324
X_8	-6.884	-0.049
X_{12}	3.366	0.067

In most variables the calculated value of the coefficient (Beta) in the regression equation is either perverse or insignificantly different from zero. It shows the factor borrowing (X_3) have more effect on development of tribal. Next followed by the factor loans & advances have effect on development of tribal. Factor like total collection have positive impact on development of tribal. In another case factor like consumer business

have negative impact on development in the study area. It is observed that the borrowing have significant contribution towards development of tribal under co-operative sector JOSHIPUR in the study area.

XIV. Analysis of Variance

In the analysis, the total variations are split into explained and unexplained variation.

Table 7 : Analysis of Variance (ANOVA) for the factors considered under Cooperative sector SIRSA in the study area

Source of variation	Sum of Square	Degree of Freedom	Mean Square	F-statistic (Calculated)
Between Row	535776701.7667	4	133944175.442	*6.9840*
Between Row & Column	5403027336.4170	55	98236860.6621	*5.1222*
Between Column	4559169606.1830	11	414469954.198	*21.6111*
Residual (error)	843857730.2333	44	19178584.7780	
Total	10061.8833	59	100657695.562	

Tabulated value of F-test at 5% level of significance for (11,4) degree of freedom = 3.3567 and tabulated value of F-test at 1% level of significance for (11,4) degree of freedom = 5.2167 .

In case of the above table between the factors (row) and between the factors (column) are significant. The calculated value is 6.9840 and 21.6111 respectively. This shows calculated `F' value is more than tabulated `F' value both at 5% and 1% level of significance. Between the factors (Row & column) it shows significance only at 5% level. Here the calculated valued is 5.1222.

Table 8 : Analysis of Variance (ANOVA) for the factors considered under Cooperative sector KULIANA in the study area

Source of variation	Sum of Square	Degree of Freedom	Mean Square	F-statistic (Calculated)
Between Row	134199891.7667	4	33549972.9417	*2.4576*
Between Row & Column	9805036064.8330	55	178273382.9970	*13.0590*
Between Column	9204373321.0000	11	836761211.0000	*61.2948*
Residual (error)	600662743.8333	44	13651425.9962	
Total	9939235956.6000	59	168461626.3830	

Tabulated value of F-test at 5% level of significance for (11,4) degree of freedom = 3.3567 and tabulated value of F-test at 1% level of significance for (11,4) degree of freedom = 5.2167.

In case of the above table between the factors (column) and between the factors (row & column) are significant. The calculated value is 61.2948 and 13.0590 respectively. This shows calculated `F' value is more than tabulated `F' value both at 5% and 1% level of significance. Between the factors (row) it shows insignificant. Here the calculated value is 2.4576.

c) Analysis of Variance (ANOVA) for the factors considered under Cooperative sector DEULI in the study area

Tabulated value of F-test at 5% level of significance for (11,4) degree of freedom = 3.3567 and tabulated value of F-test at 1% level of significance for (11,4) degree of freedom = 5.2167 .

In case of the above table between the factors for all the sources of variation is insignificant. It is found that calculated `F' value is less than tabulated `F' value both at 5% and 1% level of significance.

d) Analysis of Variance (ANOVA) for the factors considered under Cooperative sector BETNATI in the study area

Tabulated value of F test at 5% level of significance for (11,4) degree of freedom = 3.3567 and tabulated value of F-test at 1% level of significance for (11,4) degree of freedom = 5.2167. .

In case of the above table between the factors (column) and between the factors (row & column) are significant. The calculated value is 29.8480 and 6.7696 respectively. This shows calculated `F' value is more than tabulated `F' value both at 5% and 1% level of significance. Between the factors (row) it shows insignificant. Here the calculated valued is 1.5111.

e) Analysis of Variance (ANOVA) for the factors considered under Cooperative sector BETNATI in the study area

Tabulated value of F-test at 5% level of significance for (11,4) degree of freedom = 3.3567 and tabulated value of F-test at 1% level of significance for (11,4) degree of freedom = 5.2167

In case of the above table between the factors for all the sources of variation are highly significant. It is found that calculated `F' value is more than tabulated `F' value both at 5% and 1% level of significance.

f) Analysis of Variance (ANOVA) for the factors considered under Cooperative sector BAISINGA in the study area

Tabulated value of F-test at 5% level of significance for (11,4) degree of freedom = 3.3567 and tabulated value of F-test at 1% level of significance for (11,4) degree of freedom = 5.2167

In case of the above table between the factors for all the sources of variation are highly significant. It is found that calculated `F' value is more than tabulated `F' value both at 5% and 1% level of significance.

g) Analysis of Variance (ANOVA) for the factors considered under Cooperative sector BANGIRIPOSI in the study area

Tabulated value of F-test at 5% level of significance for (11,4) degree of freedom = 3.3567 and tabulated value of F-test at 1% level of significance for (11,4) degree of freedom = 5.2167

In case of the above table between the factors for all the sources of variation are highly significant. It is found that calculated `F' value is more than tabulated `F' value both at 5% and 1% level of significance.

h) Analysis of Variance (ANOVA) for the factors considered under Cooperative sector BISOI in the study area

Tabulated value of F-test at 5% level of significance for (11,4) degree of freedom = 3.3567 and tabulated value of F-test at 1% level of significance for (11,4) degree of freedom = 5.2167.

In case of the above table between the factors for all the sources of variation are significant. It is found that calculated `F' value is more than tabulated `F' value both at 5% and 1% level of significance.

i) Analysis of Variance (ANOVA) for the factors considered under Cooperative sector BADMTALIA in the study area

Tabulated value of F-test at 5% level of significance for (11,4) degree of freedom = 3.3567 and tabulated value of F-test at 1% level of significance for (11,4) degree of freedom = 5.2167.

In case of the above table between the factors for all the sources of variation are significant. It is found that calculated `F' value is more than tabulated `F' value both at 5% and 1% level of significance.

Table 9 : Analysis of Variance (ANOVA) for the factors considered under Cooperative sector JOSHIPUR in the study area

Source of variation	Sum of Square	Degree of Freedom	Mean Square	F-statistic (Calculated)
Between Row	367006834.0667	4	91751708.5167	*3.6721*
Between Row & Column	5947394860.6670	55	108134452.0120	*4.3278*
Between Column	4848010667.5330	11	440728242.5030	*17.6390*
Residual (error)	1099384193.1330	44	24986004.3894	
Total	6314401694.7330	59	107023757.538	

Tabulated value of F-test at 5% level of significance for (11,4) degree of freedom = 3.3567 and tabulated value of F-test at 1% level of significance for (11,4) degree of freedom = 5.2167.

In case of the above table only between the factors (column) is significant. The calculated value is 17.6390. This shows calculated `F' value is more than tabulated `F' value both at 5% and 1% level of significance. Here it is also found that between the factors (row) and between the factors (row & column) shows insignificant and the calculated value is 3.6721 and 4.3278 respectively. This shows calculated `F' value is less than tabulated `F' value both at 5% and 1% level of significance.

XV. Asset/Liability Ratio Analysis

The Asset/Liability Ratio can be a useful quick tool in evaluating credit. Debt Ratio is a financial ratio that indicates the percentage of a co-operative sector's assets that are provided via debt. It is the ratio of total debt (the sum of current liabilities and long-term liabilities) and total assets (the sum of current assets, fixed assets, and other assets such as 'goodwill').

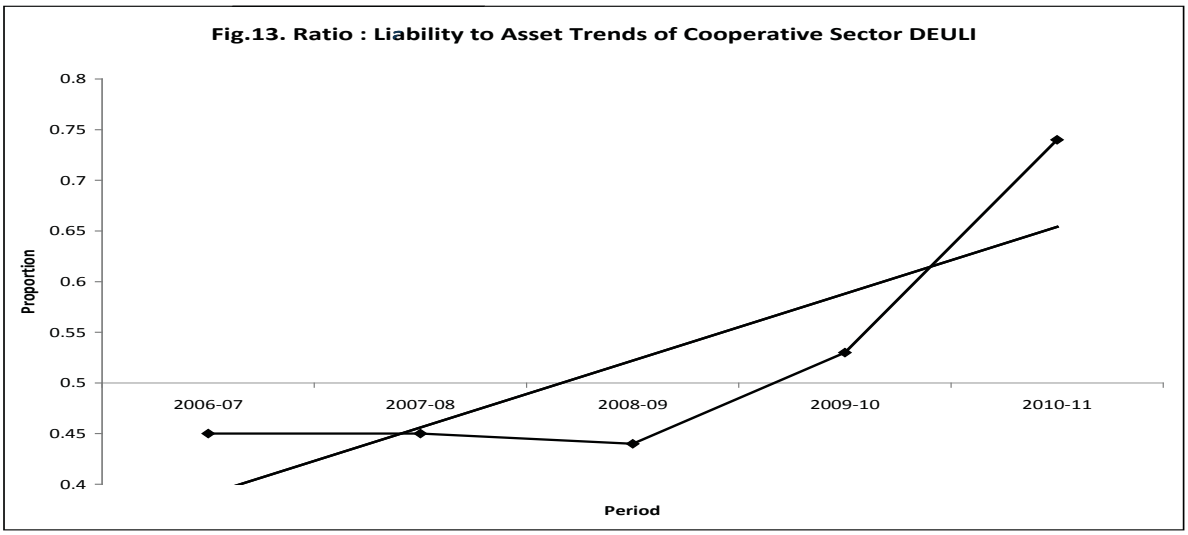
$$\text{Debt ratio} = \frac{\text{Total Liability}}{\text{Total Assets}}$$

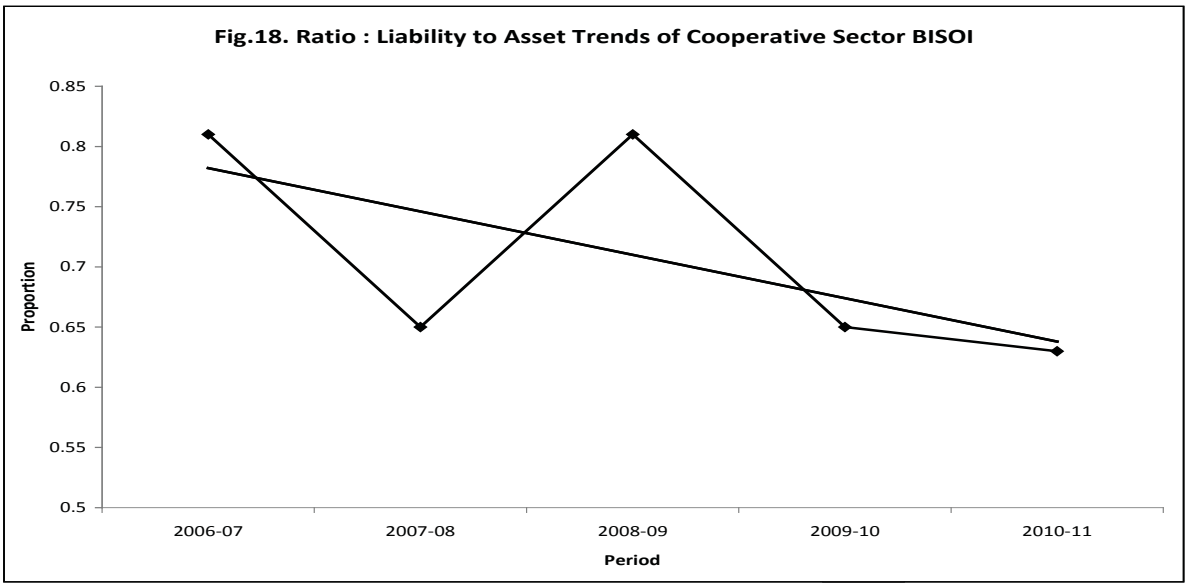
The higher the ratio, the greater risk will be associated with the firm's operation. Total liabilities divided by total assets. The debt/asset ratio shows the proportion of the co-operative sector assets which are financed through debt. If the ratio is less than 0.5, most of the sector's assets are financed through equity. If the ratio is greater than 0.5, most of the sector's assets are financed through debt. Co-operative sector with high debt/asset ratios are said to be "highly leveraged," not highly liquid as stated above. A sector with a high debt ratio (highly leveraged) could be in danger if creditors start to demand repayment of debt.

XVI. Asset/Liability Ratio of Selected Lamps in the Study Area

SL.	LAMPS	Period	Ratio-liability to asset
1	SIRSA	2006-07	0.63
2		2007-08	0.83
3		2008-09	0.74
4		2009-10	0.69
5		2010-11	0.67
6	KULIANA	2006-07	0.68
7		2007-08	0.76
8		2008-09	0.75
9		2009-10	0.65
10		2010-11	0.68
11	DEULI	2006-07	0.45
12		2007-08	0.45
13		2008-09	0.44
14		2009-10	0.53
15		2010-11	0.74
16	CHITRADA	2006-07	0.41
17		2007-08	0.46
18		2008-09	0.61
19		2009-10	0.69
20		2010-11	0.69
21	BETNOTI	2006-07	0.65
22		2007-08	0.73
23		2008-09	0.75
24		2009-10	0.77
25		2010-11	0.65
26	BAISINGA	2006-07	0.50
27		2007-08	0.47
28		2008-09	0.46
29		2009-10	0.45
30		2010-11	0.51
31	BANGRIPOSI	2006-07	0.61
32		2007-08	0.77
33		2008-09	0.79
34		2009-10	0.74
35		2010-11	0.72
36	BISOI	2006-07	0.81
37		2007-08	0.65
38		2008-09	0.81
39		2009-10	0.65
40		2010-11	0.63
41	BADAMTALIA	2006-07	0.76
42		2007-08	0.67
43		2008-09	0.98
44		2009-10	0.95
45		2010-11	0.82
46	JOSIPUR	2006-07	0.66
47		2007-08	0.80
48		2008-09	0.87
49		2009-10	0.86
50		2010-11	0.62

The above liability to asset ratio (proportion) represented through trend analysis below.





XVII. Summary and Conclusion

The purpose of this study is to identify the role of TRIBAL DEVELOPMENT UNDER COOPERATIVE SECTOR and the performance evaluation of LAMPS in Mayurbhanj District (India). The research problem have been persuaded to accomplish the objectives analytically.

For the analysis and interpretation of the study, data have been selected from primary and secondary sources. The primary data has been collected from the selected block area by conducting a sample questionnaire survey. Mayurbhanj is a tribal dominated district having 26 blocks. Based on the above sampling design, the data have been collected . The secondary data has been collected from various published sources of the Central and State Government such as the Census of India volumes, statistical abstract, selected socio-economic statistics, per capita Net State Domestic Product of States, different websites, Economic Survey, Central Government Publications, District Statistical Hand books has been used in this study. Though LAMPS offer plentiful opportunities to empower tribal, the tribal faces many challenges. Statistical tools like Mean, standard deviation, co-efficient of variation, correlation co-efficient, multiple regression, ratio has been adopted to examine the cause, effect and trend for the development of tribal under co-operative sector. To accomplish the objectives of the study i.e. performance, professionalism, role, spirit and strength of the LAMPS in the uplift of the tribal in Mayurbhanj district different techniques have been analysed and interpreted .

It is observed from the above tables that in most of the Large size multipurpose cooperative societies (LAMPS) there are less variation in case of Composition of members. But there diverge among the LAMPS so far as more variation is concerned.

It is observed that the **fund utilization** have significant contribution towards development of tribal under co-operative sector KULIANA . The **total collection and composition of members** have significant contribution towards development of tribal under co-operative sector DEULI and CHTRADA respectively in the study area.

It is also found that the **borrowing** have significant contribution towards development of tribal under co-operative sector BETNATI and BAISINGA in the study area in comparison to rest of the factors and have significant contribution towards development of tribals . A review of the flow of funds to these micro-projects suggests that, although there is a standing instruction that 75 percent of the grant is to be spent on income generation programmes, in practice, since the state government is suffering a financial crunch and is unable to provide the necessary expenditure, there is often a slippage of funds from the programme head to the establishment head. Inconsistencies in the flow of funds are observed in respect of the period of release and quantity of funds allotted. This affects the physical achievements of the project and their impact on the development of vulnerable communities. As a result, the timely supply of various inputs, of institutional credit, and of training in improved dry-land farming and dissemination of knowledge on crop diversification are yet to have much impact on these communities

Like all financial ratios, a co-operative sector debt ratio should be compared with their industry average or other competing firms. Total liabilities divided by total assets. The debt/asset ratio shows the proportion of the co-operative sector assets which are financed through debt. The relationship between the category of borrower like marginal, small, large with all most all the micro factors showing good and strong degree of relationship, which means borrower increases the micro factors considered in the study area and vice

versa. It can be concluded from the above table that the relationship between the borrowers with the micro factors, changes in same and positive direction, it shows micro factors considered for the study have positive roles for development of tribal in Mayurbhanj district. The district of Mayurbhanj is extremely important from anthropological point of view. It is inhabited by all the Scheduled tribe found in the eastern region of India. the Adivasis of Mayurbhanj though not educated and advanced in their day to day lives, still have a great culture of their own. They are simple, credulous and gullible people who even in the scientific age also believe in magic, witch craft, spirit and ghost. For generations they have been exploited by their non-tribal counter parts. Thus their life style is less in tune with the vein of Society. The problem of moneylending in Scheduled Areas in which tribals live has not been solved through regulation, as desired by the state. Money lending has inflated the interest rate and encouraged bonded labour in tribal areas. The functioning of credit institutions in Orissa does not have organic linkages with tribal marketing networks and such formal institutions have not been attuned to the needs of the tribal economy. The state government has not been able to make effective use of penal provisions in the legislation to counter evasion by moneylenders. Unless tribal people are provided with long-term support to increase their purchasing capacity and to enhance their income level, it is fruitless to expect to see their socio-economic development. Even though LAMPs have played a vital role in the advancement of credit cum marketing of products, it is indispensable to bring the tribals under cooperative fold for relieving them from the clutches of the private money lenders-cum-traders. Because of the tribals fail to receive a fair and remunerative return for their products and if the exploitative elements continue to deny them the fruits of their labour, mere increase in the financial resources in five year plans for tribal welfare and execution of tribal development programmes may not benefit them to the extent contemplated.

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