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DERIVATION OF MASS INCOME GENERATION MODEL THROUGH SOCIAL IMPROVEMENT INDICATORS CASE STUDY- BHUBANESWAR/CUTTACK

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Abstract
In Indian societies an urban area is considered to be of a huge potential to provide jobs to all types of people. The contribution of urban sector to the national gross domestic product (GDP) was estimated to only 29 percent during 1950 – 51, but presently this is estimated to 50 – 55 percent. The Indian Government has been trying to address appropriate solutions in housing for the poor and accordingly allocating budgets in different heads but as the problem in housing for the poor is enormous, region and time based, the right format is always policy dependant research based.Through the discussions, analysis and conclusion of the matter a broad identification of the areas where direct action would give good impact on slum improvement has now been achieved. It is through these areas of action also mentioned here as indicators that will lead to development of a model for Institutional Intervention in slums.

INTRODUCTION
Most of the land area of Odisha is utilized for rich agriculture, jungle and different types of mining activities. A very less percentage of state is urbanized and it is the reason why urban areas face tremendous pressure to accommodate migrated population. In search of employment and to get already developed amenities, skilled and unskilled persons come and settle at urban area close to Industrial, institutional zones, business hub.This study provides an authentic evidence of a general improvement in various slum/Urban poor indicators such as house building, service infrastructure related to sanitary system, sewage disposal, accessibility and road network system, development of educational facility etc.

Improvement Assessment Indicator (IAI)
Beneficiary Institution Participation Model (BIPM) has been developed by assessing the beneficiary's capacity to contribute for development, social obligation, mind-set to participate and proportionate intervention of institutions in overall development.Improvement Assessment Indication (IAI) are broad parameter based on which the most acceptable institutional and beneficiary participation ratio is arrived at which will help in developing **Beneficiary Institution Participation Model (BIPM)**. The major Improvement Assessment Indicators (IAI) considered to derive BIPM is:

1) Housing building (HB)
2) Accessibility and Road Network Development (AR)
3) Service infrastructure (SI)
4) Women Empowerment (WE)
5) Beneficiaries Social Responsibility (BR)
6) Employability and Mobility (EM)
7) Development of Education Facility (ED)
8) Social infrastructure and healthcare (SH)
9) Society development and overall maintenance (SD)
10) Social Security (SS)

The ideal Ri:Rb
As BIPM is developed based on institutional intervention and beneficiaries' capacity to spend, social obligation and mind tracking rating, the segregation of responsibilities of both institutional and beneficiary will lead to more shared accountability towards slum upliftment and overall development of slum dweller.

$$BIPM = \frac{AC(I)}{AC(B)} + \frac{SHC(I)}{SHC(B)} + \frac{SD(I)}{SD(B)} + \frac{SS(I)}{SS(B)}$$

$$= \frac{AC}{B} + \frac{SHC}{B} + \frac{EM}{B} + \frac{EM}{B} + \frac{BR}{B} + \frac{OM}{B} + \frac{DEF}{B} + \frac{SD}{B} + \frac{SS}{B} -$$

This shows that the average of indicators and beneficiaries is taken to develop BIPM model.

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Beneficiary Institution Participation Model (BIPM) will help government to achieve self-sustainability by gradually increasing sense of social responsibility among slum dwellers towards their own development. Slum social responsibility would be the ultimate achievement of the BIPM ratio wherein after handholding of slum dwellers though different programmes for a predefined period, the government will try to achieve institutional beneficiary ratio of 4:6 in terms of economic contribution. The BIPM model will also help in proper utilization of fund under the different Improvement Assessment Indication (IAI). Proper utilization and allocation of funds for improvement of these development indicators are very important in budgeting and implementation of government run programmes. A standardized model for fund allocation for slum improvement and redevelopment was considered assuming 1000 slum household equating to development of 5000 slum dwellers. The potential budget for each Improvement Assessment Indicator (IAI) was also calculated. The same ratio which is mentioned in IBPM model is found to be satisfactory.This "participatory power "comes from the following which is we call Intensive Care Indicators. They are:

- **Accessibility (AC)**
- **House Building (HB)**
- **Training and Placement (TP)**

Formula derived regarding income of the beneficiary (Male)

Model	Variables Entered	Variables Removed	Method
1	TP, AC, HB[b]	.	Enter

a. Dependent Variable: MALEINCOME

b. All requested variables entered.

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Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.852[a]	.727	.717	1351.820	.516

a. Predictors: (Constant), TP, AC, HB

b. Dependent Variable: MALEINCOME

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	417848372.751	3	139282790.917	76.218	.000[b]
	Residual	157157877.249	86	1827417.177		
	Total	575006250.000	89			

a. Dependent Variable: MALEINCOME

b. Predictors: (Constant), TP, AC, HB

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1613.031	901.490		1.789	.077
	AC	28.611	15.074	.130	1.898	.061
	HB	78.338	17.265	.359	4.537	.000
	TP	79.199	12.491	.487	6.340	.000

a. Dependent Variable: MALEINCOME

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Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	8561.69	17574.36	12141.67	2166.778	90
Residual	-1323.904	6218.919	.000	1328.841	90
Std. Predicted Value	-1.652	2.507	.000	1.000	90
Std. Residual	-.979	4.600	.000	.983	90

a. Dependent Variable: MALEINCOME

In conclusion "R" is the value of multiple correlation coefficients between the predictors and the dependent variable which is 0.852. R square tells us the goodness of fit of the model. It explains the amount of variability in the dependent variable. i.e. male income is accounted for by all the independent variables taken together. The Durbin Watson statistics inform us about the presence of auto correlation. It tells us whether assumption of independent error is tenable. For these data the value is 0.516. So the assumption has certainly been met. Accordingly, to the P- value which is less than 0.05, it shows that the model is a good fit for the data. The significance is 0.000, so we can reject the null hypothesis that "the model has no prediction value". Based on the unstandardized coefficient, the equation for the regression line is:

Y MALE INCOME = 1613.031 + 28.611 (AC) + 78.33 (HB) +79.19 (TP)

But since significance level for AC i.e. 0.06 which is more than 0.05, so the null hypothesis that this variable is not associated with the dependent variable may be accepted.

Formula developed for income of the beneficiary (Female)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	TP, AC, HB[b]	.	Enter

a. Dependent Variable: FEINCOME

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.858[a]	.736	.726	1180.402	1.005

a. Predictors: (Constant), TP, AC, HB

b. Dependent Variable: FEINCOME

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ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	333525561.021	3	111175187.007	79.790	.000[b]
	Residual	119827911.201	86	1393347.805		
	Total	453353472.222	89			

a. Dependent Variable: FEINCOME

b. Predictors: (Constant), TP, AC, HB

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1690.111	787.176		2.147	.035
	AC	20.524	13.162	.105	1.559	.123
	HB	71.076	15.076	.367	4.715	.000
	TP	72.594	10.907	.503	6.656	.000

a. Dependent Variable: FEINCOME

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Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7752.32	15741.57	10919.44	1935.840	90
Residual	-1496.944	5335.784	.000	1160.337	90
Std. Predicted Value	-1.636	2.491	.000	1.000	90
Std. Residual	-1.268	4.520	.000	.983	90

a. Dependent Variable: FEINCOME

The Durbin Watson statistics inform us about the presence of auto correlation. It tells us whether assumption of independent error is tenable. For these data the value is1.005. So the assumption has certainly been met. Accordingly, to the P- value which is less than 0.05, it shows that the model is a good fit for the data. The significance is 0.000, so we can reject the null hypothesis that "the model has no prediction value". Based on the unstandardized coefficient, the equation for the regression line is:

Y FEMALE INCOME= 1690.111 + 20.52 (AC) + 71.06 (HB) +72.59 (TP)

Significance level for HB and TP are 0.000 which is less than 0.05. So the null hypothesis may be rejected and that they are not associated with the dependent variable i.e. Male Income. But since significance level for AC i.e.In conclusion "R" is the value of multiple correlation coefficients between the predictors and the dependent variable which is 0.858 R square tells us the goodness of fit of the model. It explains the amount of variability in the dependent variable. i.e. 73% of Female income is accounted for by all the independent variables taken together.

0.12 which is more than 0.05, so the null hypothesis that this variable is not associated with the dependent variable may be accepted.

VALIDATION OF THE MODEL USING TEST CASE SLUMS.

In case of institutional intervention in housing for Urban poor, the beneficiary's expectation from institution is very high in all possible developmental sectors as discussed (in previous chapters) like accessibility, house building, Training & placement, health care facility, educational support etc. and the quantitative models developed are –

Model – I IM (MB) = $\frac{\text{AC (I) + HB (I) +TP (I) x1000}}{15}$

Where:
IM = Income Monthly
MB = Male Beneficiary
AC(I) = Accessibility support intervened by Institution
HB(I) = House building support intervened by Institution
TP (I) = Training Placement support intervened by Institution

Model - II IM (FB) = $\frac{\text{AC(I) + HB(I) +TP(I) x1000}}{20}$

Where
IM = Income Monthly
MB = Male Beneficiary
AC(I) = Accessibility support intervened by Institution
HB(I) = House building support intervened by Institution
TP (I) = Training Placement
support intervened by Institution Depending on the results of Income monthly of Male beneficiaries and female beneficiaries, model of shared Expenditure for literacy of their children is developed as

Model – III
EL (B) = 0.017 IM(MB) + 0.004 IM (FB)
EL(B) = Expenditure towards literacy contributed by beneficiary
IM (MB) =Income monthly of male member

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IM (FB) =Income monthly of fe-male member

Model – IV

EL (T) = EL(B) + EL (I)

Where,

EL (T) = Total expenditure towards literacy

EL (B) = Expenditure towards literacy shared by beneficiary

EL (I) = Expenditure towards literacy shared by Institution

Model – V

HC (B) = 0.004 IM(MB) + 0.001IM(FB)

Where,

HC (B) = Health careexpenditure shared beneficiary

IM (MB) =Income monthly of male beneficiary

(FB) =Income monthly of fe-male beneficiary

Application of model at Badalpur and Sarakantra, Bhubaneswar

The concept of derivation of quantitative model from a board field of primary study depends on factors like beneficiaries age, education of adults, cultural background, types of trades and business previously where they were involved, locality advantage/ disadvantage etc.

Huge findings of primary study although gives rise to develop a concrete spectrum of beneficiary's expectations vis-à-vis level of interventions from institutions but with the change of place and other influencing factors, the findings of data changes in a domain within 5% after application of model in different settlement areas. Knowledge utilization in case of traditional machine work goes in linear and simple format but in case of settlement pattern and housing the poor in urban area involves complex process of attitudinal variation, political interest and organizational components. In our particular study, we have selected the site for application of model at Badalpur &Sarakantra, Bhubaneswar.

Considering the factors mentioned below – Availability of land to give accessibility House building was easy as many of the beneficiaries were engaged earlier in non-skilled labour job.

Ready mix concrete plants were developing fast in the locality to attract labour class for job There were existing informal haat (daily market for in organized sector) Govt had earlier allotted land for hospital to private entrepreneur and also govt health centre was there.

Badalpur & Sarakantra beneficiaries were mostly (98.5%) muslim by caste. Selection of inhabitants (beneficiaries) were from old town lingaraj mandir sahi Bhubaneswar with literacy rate 5% and high crime rate (Average 435 cases (FIR) lodged per month for population of 1200)

Less of women empowerment was there

Low family income (Rs. 5500/per month)

Finally, we have taken participatory data from beneficiary and institutional intervention in expenditure towards literacy, expenditure towards health care and crime rate at Badalpur and Sarakantra.

Example 1

BADALPUR PHASE –I						
Sl.No	Item	AC(I)	HB(I)	TP(I)	IM(MB)	IM(FB)
1	House -1	85	80	95	17000-17500	13000
2	House - 2	80	84	90	16500-17000	12500-13000
3	House -3	68	70	92	15000-15500	11500
4	House -4	75	90	95	17000-17500	13000
5	House -5	80	85	93	17000-17500	12500-13000
6	House -6	70	73	90	15500-16000	11500-12000
7	House -7	80	82	90	16500-17000	12500-13000
8	House -8	73	93	95	17000-17500	13000-13500
9	House -9	95	78	91	17500-18000	13000-13500
10	House -10	88	60	90	15500-16000	11500-12000

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Say average IM(MB) = 16700
Say average IM(FB) = 12750
EL (B) = 0.017 IM(MB) + 0.004 IM (FB)
= 0.017 X 16700 + 0.004 X 12750 = 284+51
= Rs. 335/- per month
EL(I) = 7 EL(B) = 7 X 335 = Rs. 2345/- per month
EL (T) = EL(B) + EL (I) = Rs.335 + Rs.2345 = Rs.2680/- per month
This figure is healthy enough to support expenditure towards literacy
HC (B) = 0.004 IM(MB) + 0.001 IM(FB)
= 0.004 X 16700 + 0.001 X 12750
= 66.8+12.75 = Rs.79.55/-
HC(I) = 2 HC(B) = 2 X Rs.79.55/-
= Rs.159.10/- per month HC (T)
= Rs. 79.55 + 159.10/-
= Rs.238.65/- per month
This figure is healthy enough to support expenditure towards Health care mission.
Example 2-

TABLE-58

SARAKANTRA PHASE – I

Sl.No	Item	AC(I)	HB(I)	TP(I)	IM(MB)	IM(FB)
1	House -1	80	65	50	13000	9500-10000
2	House - 2	90	50	40	12000	9000-10000
3	House -3	60	80	90	15000-15500	11500
4	House -4	81	66	50	13000-13500	9500-10000
5	House -5	75	70	66	14000-14500	10500-11000
6	House -6	70	60	65	13000	9500-10000
7	House -7	66	40	95	13000-13500	10000-10500
8	House -8	76	65	90	15000-15500	11500-12000
9	House -9	65	50	91	13500-14000	11000-11500
10	House -10	70	50	68	12500-13000	9500-10500

Say average IM(MB) = 13575
Say average IM(FB) = 10425
EL (B) = 0.017 IM(MB) + 0.004 IM (FB)
= 0.017 X 13575 + 0.004 X 10425
= 230.75+41.70
= Rs.242.45/-
EL(I) = 7 EL(B)
= 7 X 242.45
= 1907.15/- per month
EL (T)= EL(B) + EL (I)
=242.45 + 1907.15
= 2149.60/- per month
This figure is healthy enough to support expenditure towards literacy

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HC (B) = 0.004 IM(MB) + 0.001 IM(FB)
= 0.004 X 13575 + 0.001 X 10425
= 54.30+10.42
= 64.72/-
HC(I) = 2 HC(B) = 2 X 64.72
= 129.44
HC(T) =64.72+129.44 = Rs.194.16/- per month
This figure is healthy enough to support expenditure towards literacy health mission.

CONCLUSION-

Hence this model is found appropriate for Bhubaneswar and Cuttack region, which can be used by researching scholars by taking the coefficients according to the survey data of different regions on the above derived formulae. These models can be successfully used to check, if the expenditure of male/fe-male is supportive to all**Improvement Assessment Indicators(IAI).**

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