



International Journal OF Engineering Sciences & Management Research

IDENTIFICATION OF FACTORS FOR INCEPTION OF SLUMS: USING GRAVITATIONAL MODEL

Dr. Vandana Agrawal*

*Faculty, Department of Architecture, NIT Raipur, Chhattisgarh, India.

Keywords: *Inhabited, disadvantaged, poverty, low income, inadequate, slum dwellers, hardships, factors.*

ABSTRACT

Today, the problem of slums is increasing throughout the world especially in developing countries like India. Slum communities are usually inhabited by socially disadvantaged people. It is more common in developing countries. It can be defined by poverty, low income, inadequate living conditions and sub-standard facilities. The condition of slum varies from place to place and country to country. Since each slum is being formed in different ways slum dwellers are experiencing different hardships according to different socio-economic environments.

The study is focused on the location of inception of slums, and its factors responsible for slum development. In this study, the factors responsible for the development of slums have been found out, which attract the people for making slum on a piece of land are analysed.

INTRODUCTION

India is one of the fastest developing countries with many metropolitan cities e.g. Mumbai, Pune, Bangalore, Hyderabad, Delhi and Chennai etc. During last two decades, migration from villages and small towns to metropolitan areas has increased tremendously in India (Sheth et al., 2009). The urban immigration is propelled by distress in the countryside and pulled by the attraction of the cities. The rural people settle on illegally occupied land resulting in formation of slums. The slum dwellers offer cheap labours and slowly gets incorporated in the social fabric of the city. There is some sort of “Symbiotic relationship” between the slum dwellers and the urban rich (Bandyopadhyay, 1996) and thus slums are found in areas where jobs for unskilled and semiskilled labours are easily available. In India, various development projects are being carried out in urban areas which also act as magnets for attracting rural people which ultimately propel the inception, growth and development of slums. This leads to the degradation of urban environmental quality. Slums are considered to be the major issue within many urban areas, particularly problems related to transportation, population, health and safety. The aim of this research paper is to identify the reasons and the major factors responsible for the inception of slums in certain areas and to find out a model which could forecast development of slums in urban areas.

ANALYSIS

After declaration of Raipur as a capital of Chhattisgarh state, people migrated rapidly from surrounding rural areas. People generally migrated due to better occupation better education, better health facility, better infrastructure facility and better lifestyle. Often, they find their own land and build a shack before the government has a chance to learn of their existence. Poor mostly immigrants from rural areas, are concentrated in slum areas.

Selection of Study area

The study is done for finding out the reasons of growth of slums. Few slums have been selected and a sample survey is conducted through observations and filling questionnaires. Information is got from concerned authorities and from slum dwellers.

The analyses of the answers as received from primary survey are drawn through tables and charts with the help of SPSS software. Some conclusions are drawn such as; the slum origination year, reason of migrations of people in Raipur, people migrated from which place, from where they settled and why they settled here and what are the facilities they have got here. Gravitational values of each slum have been calculated. The gravitational value shows the strength of attraction of slum people and the numbers of factors which attract the slum people on identified land.

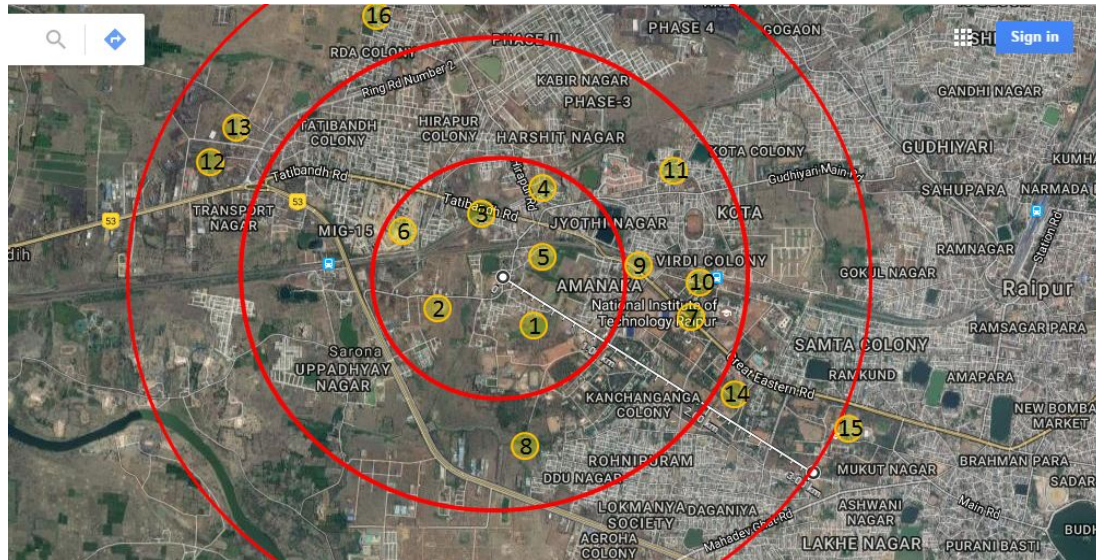


Figure: 1. Numbers of factors up-to 3.0 km. radius of Kukurbeda slum.

Source: <https://www.google.co.in/maps/@21.2567957,81.5980855,1347m/data=!3m1!1e3?hl=en&authuser=0>

The above map shows the places where slum people going for job and also shown the range of 1.0 km., 2.0 km, 3.0 km and so on. Within these range/ radius the numbers of work places where they are working are also mentioned.

The gravity model for “Home to Workplace distance relationship” for slum people is as follows:

- Where = ‘Gravity model’ prediction for Home (origin i) and Workplace (destination j) distance relationship.
- = Population of working persons of slum = **(origin i)**
- = Numbers of Workplaces where slum people (origin i) attracted= **(destination j)**
- = **Distance** from slum (origin i) to workplace (destination j)

Table 1, shows the origin-destination chart for Kukurbeda slum dwellers who work within 1.0km. range.

Table 1.: Origin, Destination Chart for 1.0 Km Range

	Origin (P_i)	Destination(P_j)
1.	19	D D Nagar (Residential)
2.	9	Pt. RSU (Institutional)
3.	9	Amanaka (Commercial+Transport)
4.	4	Kota, Kukurbeda (Residential)
5.	3	Science College(Institutional)
6.	16	Dumartalab school(Institutional)
	$\sum P_i = 60$	$\sum P_j = 6$

Source: Surveyed by author, based on primary survey

Table 2. show the origin-destination chart for Kukurbeda slum dwellers who work within 1.0 to2.0 km. range.

Table 2: Origin, Destination Chart for 1.0 to 2.0 Km. Range



	Origin (P _i)	Destination(P _j)
7.	10	Geeta Nagar(Residential)
8.	4	D D Nagar (Residential)
9.	3	NIT (Institutional)
10.	2	Chobey Colony(Residential)
11.	4	Kota (Residential)
	$\sum P_i = 23$	$\sum P_j = 5$

Source: Surveyed by author, based on primary survey

Table 3 show the origin-destination chart for Kukurbeda slum dwellers who work within 2.0 to 3.0 km. range.

Table 3.: Origin, Destination Chart for 2.0 to 3.0 Km. Range

	Origin (P _i)	Destination(P _j)
12.	10	Tatibandh(Commercial)
13.	1	Mohba Bazar(Commercial)
14.	1	Ayurvedic College(Institutional)
	$\sum P_i = 12$	$\sum P_j = 3$

Source: Surveyed by author, based on primary survey

Table 4 show the origin-destination chart for Kukurbeda slum dwellers who work within 3.0 to 4.0 km. range.

Table 4: Origin, Destination Chart for 3.0 to 4.0 Km. Range

	Origin (P _i)	Destination(P _j)
15.	5	Ashram(Commercial)
16.	2	Hirapur(Commercial)
	$\sum P_i = 7$	$\sum P_j = 2$

Source: Surveyed by author, based on primary survey

Table-5 shows the value of $\sum P_i$, $\sum P_j$ with respect to their distances and then calculated gravity value through above mentioned formulae.

Table 5, Gravity value (M_{ij}) of Kukurbeda slum

S.No.	Origin (P _i)	Destination(P _j)	= Distance from P _i to P _j (KM.)	Gravity Value (M _{ij})
1.	60	6	1.0	360
2.	23	5	2.0	28.75
3.	12	3	3.0	4.0
4.	7	2	4.0	0.88

Source: Surveyed by author, based on primary survey

The Gravity value for various kilometer ranges has been calculated. It is observed that most of the people go to job within one kilometer radius and the number of people decreases as the distance increases. This can be mathematically represented as:



International Journal OF Engineering Sciences & Management Research

Hence conclusion is: $M_{ij1} > M_{ij2} > M_{ij3} > M_{ij4}$

This process of analysis and inferences has been drawn from each of the slum. Gravitational values of each slum have been calculated. The gravitational value shows the strength of attraction of slum people and the numbers of factors which attract the slum people on identified land.

CONCLUSION

This study has attempted to develop the methodology for analysing the factors that attract the people of slum in Raipur city and it is also concluded that in every slum 80 to 85% of people migrated due to better occupation and other reasons of migration are better education, better health facility, better infrastructure facility and better lifestyle. In this study, the factors responsible for the development of slums and strength of attraction of that factors which attract the people of slums in nearby vacant land are found out.

It is also an important document for the Planners; they can propose the appropriate locations for affordable housing for urban poor, in Raipur city and other similar cities. In addition, the outcome of this study may serve as a source of additional information for governmental organization to design and develop the city.

REFERENCES

1. *Census of India. (2011).* http://www.censusindia.gov.in/2011-common/census_2011.html
2. *United Nations Human Settlements Programme (UN-HABITAT) report, (April 2007). Slum Dwellers to double by 2030*
3. *Affordable Housing Partnership Jnnurm Guidelines, Government of India*
4. *Bandyopadhyay, A (2000), Text Book of Town Planning, 1st Edition, Books & Allied (P) Ltd, Kolkata, India.*
5. *Habitat (2003). The Challenge of Slums: Global Report on Human Settlements 2003. Earthscan Publications Ltd, London.*
6. *UN-Habitat (2007). Slums: Past, Present and Future, the Critical Role of Policy. UN-HABITAT report, Nairobi, 30-31*
7. *Sheth, A.Z., Velaga, N.R. and Price, A.D.F. (2009). Rehabilitation and Resettlement Slums, Sustainable development. 2nd International Conference on Whole Life Urban Sustainability and its Assessment, 22-24th April, 2009, Loughborough, UK.*
8. *Bandyopadhyay, A. (1996). Unintended Metropolitan Growth in India: A Methodology for its Environment Management. Journal of Pt. Ravi Shankar Shukla University, Raipur. 9 B. (Science), 11-23.*
9. *Bandyopadhyay, A., and Agrawal, V. (2013). Slums in India: From past to present. International Refereed Journal of Engineering and Science, 2(4), 55-59.*