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Multidimensional Quality of Life Index (MQLI): An Alternative Approach for Estimating Multidimensional Poverty in Six Metro Cities of India¹

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Abstract

In recent years, the multidimensional approach to poverty has received much attention of researchers, planners and policy makers. Poverty is now accepted as a multi-dimensional phenomenon that will need to be assessed by going beyond income or consumption expenditure alone. Using a monetary measure alone does not capture high incidence of multidimensional poverty in six metro cities of India. This calls for an appropriate choice of monetary and non-monetary, which might also supplement the existing measure of monetary poverty. In view of our objective and the controversy over the use of money-metric poverty or MPI, the present study attempts to develop an alternative measure of poverty called Multidimensional Quality of Life Index combining monetary and non-monetary dimensions for estimating poverty. This paper provides the estimates of urban poverty using the Multidimensional Quality of Life Index (MQLI) for six metro cities in India. It is hoped that the index can be useful for revealing the true deprivation structure, which can help in designing the appropriate anti-poverty strategies at the national level.

Keywords: Poverty; Money-metric; Multidimensional Poverty and Deprivation; MPI- Alkire-Foster method; Quality of Life; RQLI and MQLI.

JEL classification: I31, I32

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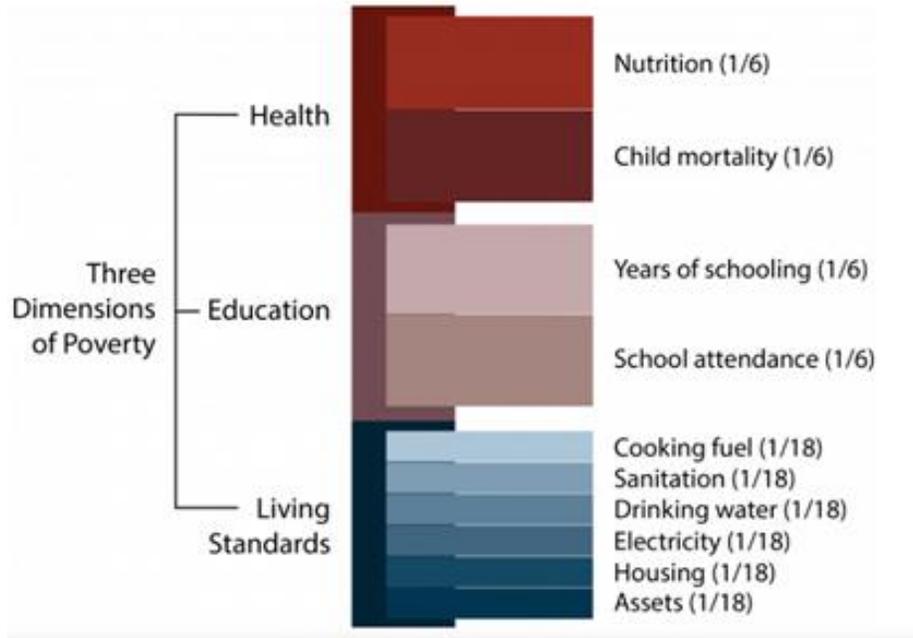
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Introduction

This paper attempts to provide the methodological notes on the construction of Multidimensional Quality of Life Index (MQLI) using a set of ten indicators for six metro cities in India. In recent years, the multidimensional approach to poverty has received much attention of researchers, planners and policy makers. Poverty is accepted as a multi-dimensional phenomenon that will need to be assessed by going beyond income or consumption expenditure alone. Sen's work on poverty (Sen, 1976) and the capability approach (Sen, 1980, 2000, 2009) have contributed significantly to the development of literature on the multidimensional and non-monetary measurement of poverty. Today, the multidimensional poverty measure is the leading measure and is being used to design, monitor and evaluate poverty alleviation programmes at both national and international levels. The methodology adopted to construct the index was commonly referred to as the Alkire-Foster methodology and was authored by Sabina Alkire of the OPHI and James Foster of the Washington University. The MPI was improved in 2018 as a complement of the income poverty line (Alkire & Santos, 2010; Alkire & Jahan, 2018; UNDP & OPHI, 2019).

The global Multidimensional Poverty Index (MPI) is an international measure of multidimensional poverty covering over 100 developing countries. It complements monetary measure poverty by capturing the acute deprivations using a set of ten indicators in three dimensions – health, education and living standards (Figure 1 below) – and summarises the individual or household's poverty profile with a weighted deprivation score. If more than three of the ten indicators are below the relevant poverty cut-offs, they are identified as multidimensional poor (Alkire et al., 2013). The Alkire-Foster methodology does not itself specify the dimensions, indicators, weights, or cutoffs to be used. It is a general framework and also a flexible method for measuring multidimensional poverty; allowing users to set the dimensions, the number of dimensions, the indicators, the weights and the cut-off, the availability of data and the context, as well as the theoretical considerations of the researchers (OPHI; Berenger, 2016; Bag & Seth, 2018).

Figure 1: Global MPI – Dimensions and Indicators of Global Multidimensional Poverty Index (MPI)



Source: <https://ophi.org.uk/multidimensional-poverty-index/>. Accessed on 03/12/2022.

Review of Literature

Divergence between monetary poverty and non-monetary poverty has been documented in various studies. Across nine European countries, Whelan et al. (2004) found mismatches between income poverty and material deprivation. In most cases, not all individuals who are income poor are multidimensionally poor and not all multidimensionally poor individuals are income poor. Both monetary and non-monetary measures of poverty are needed to better inform the policies intended to address the needs and deprivations faced by poor populations (Oxford Poverty & Human Development Initiative (OPHI), Policy, 2023). It should be evident that persons identified as income poor are not necessarily multidimensionally poor. Families who live in safe environment and access to have basic and services can be more income /consumption poor than families who live in terrible conditions whose income/ consumption falls above the poverty threshold. A person above the ‘economic’ poverty line can also suffer from disadvantages simultaneously—for example, they may have poor health or malnutrition, a lack of clean water or electricity, poor quality of work, or limited access to education. It is evident from Table 1 below that persons identified as income poor are not necessarily multidimensionally poor. Close to 75 percent of the total households are either poor or non-poor in both definitions of poverty while 25 percent are either poor or non-poor in one poverty definition but not in the other (Carlos, 2017).

Table 1: Percentage of Poor and Non-poor in both Definitions of Poverty

		Income		
		Non-poor	Poor	Total
MPI	Non-poor	66.3	18.1	84.4
	Poor	6.6	9.0	15.6
	Total	72.9	27.1	100.0

Source: Carlos, 2017, p.20

The most recent survey data that were publicly available for India’s MPI estimation refer to 2019/2021. Based on these estimates, 16.4 percent of the population in India (228,907 thousand people in 2020) is multidimensionally poor while the estimated multidimensional poverty at 22.5% for the same year (Table 1). Table A compares multidimensional poverty with monetary poverty measured by the percentage of the population living below poverty line refer to 2019/2021. This implies that individuals living below the monetary poverty line may have access to non-income resources (Oxford Poverty & Human Development Initiative (OPHI), Policy. 2023).

It is frequently asked whether to include income or consumption poverty measures in a national MPI, instead of reporting them separately. Even if income is included, care must be taken in the design of the measure. For example, in the case of Mexico, it appears that economic and non-economic aspects of poverty are equally weighted. But in fact, the identification procedure is designed to exclude all persons who are not income poor from having the possibility of being identified as poor. To date, Mexico is the only country to do so. In the end, the decision of whether to report income or consumption poverty separately or inside a multidimensional poverty measure is a particularly important decision. There are pros and cons on both sides. The Global MPI does not include consumption poverty because that variable is not included in the surveys employed, so it is not a feasible option for consideration (OPHI,2016).

According to Bourguignon and Chakravarty (2003), poverty is a manifestation of low welfare, which depends on two variables, namely monetary and non-monetary. The Rural Quality of Life Index (RQLI) developed by Dhanasekaran (1991.a) is a pioneering attempt on multidimensional poverty measure at the rural household level in India in 1991. This index has already received public attention and considered monetary and non-monetary variables in determining the poverty levels (Dhanasekaran, 1989; 1991.a; 1991.b; 1994). The unique contributions of the index are inclusion of a set of monetary and nonmonetary indicators and analyzed the poverty status by quantifying the Quality of Life at the household level in rural India (Table 2).

Table 2: Categories and Indicators of the Rural Quality of Life Index (RQLI)

Category	Indicators
I. Social	1). Caste levels 2). Education
II. Income	3). Occupational category 4). Female earners 5). Household income 6). Per capita Income
III. Nutrition	7). Calories intake 8). Protein intake 9). Annual food expenditure as percentage of annual income
IV. Clothing:	10). Value of clothing per person 11). Quantity of clothing per Person 12). Annual expenditure on clothing per person (Rs.)
V. Housing	13). Type of housing 14). Living area per Person (Sq.Meter) 15). Rooms per person.

Source: Dhanasekaran, K.(1991.a, p.35)

Venugopal and Nina (2021) measure multidimensional poverty in India using four dimensions—health, education, income, and standard of living—for each household in both rural and urban areas using NSSO data from the NSSO 71st (2014–15) and 75th rounds (2017–18). The lack of data on assets, electricity, and housing is adjusted by inclusion of an income dimension (using monthly per-capita consumption expenditure (MPCE) as a proxy) in the analysis. The importance of income can be explained by the fact that it contributes 35–50 per cent weight to the MPI among the given indicators.

The World Bank’s measure takes inspiration and guidance from other prominent global multidimensional measures; particularly the Multidimensional Poverty Index (MPI) developed by UNDP and Oxford University but differs from them in one important aspect: it includes monetary poverty less than \$2.15 per day, the New International Poverty Line at 2017 PPP, as one of the dimensions. Under this broader definition of poverty, many more people come into view as poor. The MPM is composed of six indicators: consumption or income, educational attainment, educational enrollment, drinking water, sanitation, and electricity. These are mapped into three dimensions of well-being: monetary, education, and basic infrastructure services. The three MPM dimensions are weighted equally, and within each dimension each indicator is also weighted equally. Individuals are considered multidimensionally deprived if they fall short of the threshold in at least one dimension or in a combination of indicators equivalent in weight to a full dimension (Table 3). In other words, households will be considered poor if they are deprived in indicators whose weight adds up to 1/3 or more. Because the monetary dimension is measured using only one indicator, anyone who is income poor is automatically also poor under the multidimensional poverty measure (World Bank, 2018)

Table 3. Multidimensional Poverty Measure Indicators and Weights

Dimension	Parameter	Weight
Monetary	Daily consumption or income is less than \$ 2.15 per person.	1/3
Education	At least one school-age child up to the age of grade 8 is not enrolled in school.	1/6
	No adult in the household (age of grade 9 or above) has completed primary education.	1/6
Access to basic infrastructure	The household lacks access to limited-standard drinking water.	1/9
	The household lacks access to limited-standard sanitation.	1/9
	The household has no access to electricity.	1/9

Source: World Bank, 2018.

Urban poverty is complex and conventional money-metric poverty fails to measure the multiple deprivations of the urban population. Though the estimates of multidimensional poverty do capture multiple deprivations, they do not capture the extent of multidimensional poverty in urban India (Sanjay & Guru, 2021). Recently, in the Indian context, while the inclusion of multidimensional poverty in national planning and policy is a positive development, it fails to capture the true level of multiple deprivations in better-off states and urban areas. The MPI can at best supplement to consumption poverty but cannot be an ideal substitute. The consumption poverty provides information on economic deprivation and its trends are commensurate with other indicators of deprivation to a larger extent. This calls for an appropriate choice of indicators and the context, which might also supplement the existing measure of consumption poverty (Sanjay et al., 2022).

The forgoing evidences clearly call for integrating monetary variables such as consumption, income and employment with MPI explaining the true poverty/wellbeing differentials among the people. Otherwise, using the MPI without monetary variables may be misleading. In this context, this paper extends the RQLI and proposes a new index of Multidimensional Quality of Life Index (MQLI) incorporating the Alkire-Foster methodology. The RQLI is a more scientific method, because monetary and non-monetary variables are taken into consideration and shares the appealing properties of the of Alkire- Foster methodology in determining the poverty levels. The unique contributions of this index are the methodological improvement over RQLI and adding monetary dimension to MPI.

Objective and Methodology

The main objective of this paper is to construct the MQLI using the available indicators of poverty in six metro cities of India. The data used in this paper was collected as a part of IHDS-II (2011-12) conducted by the University of Maryland and the National Council of Applied Economic Research (NCAER), New Delhi, with a representative sampling design adopted for six largest populated cities in India, namely, Mumbai, Delhi, Bangalore, Hyderabad, Chennai, and Kolkata. These metro cities are identified according to the census 2001, the definition of “urban agglomerations”. These six cities also represent the major four geographical regions of India

(Mumbai from the West, Delhi from the North, Kolkata from the East and Chennai, Bangalore and Hyderabad from the South). The sample size and its share in 2011-are given in Table 4 (Saroj et al. 2020).

Table 4: Sample size and its percentage for Six Metro cities in India (2011-12).

Metro Cities	Sample (n)	Percent
1. Delhi	1266	32.36
2. Kolkata	1079	27.58
3. Mumbai	524	13.39
4. Hyderabad	433	11.07
5. Bangalore	351	08.97
6. Chennai	259	06.62
Total	3912	100

Source: Goli et al., 2019 & Saroj et al., 2020

Since the binary data on deprivation are not directly available for the empirical estimation of (MQLI), we use the processed data (by Goli et al., 2019), which can be easily downloaded from the link given in Goli et al., 2019.³ Again the processed data recoded in to binary variables using GRETl and presented in the form of tables and figures. Multidimensional urban poverty is measured in three key domains: Social, Monetary Health & Living Standard at the household level.

Unit of analysis: One can choose the unit of analysis as individual or household based on the types of study. Since some indicators are unavailable at the individual level, the household is considered as the unit of analysis for the measure of MPI. Household members are therefore considered to be deprived according to the achievements of all household members simultaneously. A household is considered to be deprived if any of their household members is deprived in a particular indicator. Also if a household is deprived, then all its members are deprived. Therefore, all members in a household are assigned the same deprivation scores.

This paper applies the same methodology of the original Alkire and Foster (2011) method, but it differs in choosing and defining a few indicators (Oxford Poverty & Human Development Initiative (OPHI), Policy, 2022). First, the variables considered for the indicators were transformed into dummy variables, which dichotomized as 0 for non-deprived and 1 for the deprived households. Note that we use different weighting pattern for the indicators and hence the results are not comparable with the results of similar index. As noted by the World Bank (2018), summarizing the information on the different deprivations into a single index proves useful in making comparisons across populations and across time. However, any aggregation of indicators into a single index invariably involves a decision on how each of the indicators is to be weighted. The description on various indicators and weights used in our estimation of multidimensional Quality of Life Index (MQLI) for six metro cities in India are given in Table 5.

Table 5: Dimensions indicators and weights used in the construction of MQLI

Dimension	Indicator	Deprived (1)	Non-deprived(0)	Weight
Social	Social category	SC (1)	General (0)	1/10
		ST (1)	Hindu OBC (0)	
	Occupation of the head of the household	Primary (1)	Secondary (0)	1/10
		No occupation (1)	Tertiary (0)	
Education	Education level of the head of the household	Illiterate (1)	Primary (0) Secondary (0) Higher (0)	1/5
Monetary	Economic status (Below Poverty Line)	Poor (1)	Non-poor (0)	1/5
Health	Sanitation Toilet facility available	Open defecation (1)	Traditional latrine, VIP latrine, flush toilet (0)	1/10
	Source of drinking water	Open well, river, pond, truck, others (1)	Piped water, tube well, hand pump, covered well, rain and bottled water (0)	1/10
Living Standard	Type of house	Kutcha (1)	Pacca (0)	1/20
	Type of fuel used in cooking	Firewood, cow dung, crop residue, coal, or charcoal (1)	LPG and kerosene (0)	1/20
	Kitchen (Cooking place)	Separate from living area (1)	Within living area (0)	1/20
	Overcrowding	More than 3 persons per room (1)	3 or less persons per room (0)	1/20

To identify the poor, the MQLI counts the overlapping or simultaneous deprivations that a population or household experiences in different indicators of poverty by applying AF method of classification. The deprivation score of a multidimensionally poor person is the sum of the weights associated with each indicator in which the person is deprived. A deprivation score of 1/3 (one-

third of the weighted indicators) is used to distinguish between the multidimensionally poor and nonpoor. If the deprivation score is $1/3$ or greater, the household (and everyone in it) is classified as multidimensionally poor. Individuals / Households with a deprivation score greater than or equal to $1/5$ but less than $1/3$ are classified as vulnerable to multidimensional poverty. Finally, individuals with a deprivation score greater than or equal to $1/2$ live in severe multidimensional poverty. The MQLI ranges from 0 to 1, and higher values imply higher multidimensional poverty (<https://hdr.undp.org/sites/default/files/Country-Profiles/MPI/IND.pdf>. Accessed on 6.1.2023). More specifically,

1. A household is considered Deprived but not Vulnerable to MQLI_Poor if the deprivation score is positive but less than $1/5$.
2. A household is considered Vulnerable to Multidimensional Poor (but not MQLI_Poor) if the deprivation score is $1/5$ or more but less than $1/3$.
3. A household is considered Multidimensional Poor - MQLI_Poor if the total of weighted deprivations (deprivation score) is equal to $1/3$ or more.
4. A household is considered Severely multidimensional MQLI_Poor if the deprivation score is $1/2$ or more.
5. If a household is deprived, then all its members are deprived.
6. Dimensions included in the MQLI are Social, Monetary, and health& living standards; all are equally weighted by $1/3$ each.

Adopting the AF methodology, the MQLI is calculated by multiplying the incidence of poverty (H) and the average intensity of poverty (A). More specifically:

- Incidence of poverty (H): the proportion of the population/household who are poor according to the MPI (those who are deprived in at least one third of the weighted indicators).
- Average intensity of poverty (A): the average share of deprivations people/household experience at the same time.
- MQLI value (H*A): The MQLI value, which ranges from zero to one, is calculated by multiplying the incidence of poverty by the average intensity of poverty.

The MQLI can also be readily adjusted to incorporate alternative indicators, cutoffs and weights that might be appropriate in regional national or sub national contexts.

Limitations: There are many reasons for regarding one or another indicator as more important in some way or other, but what is requiring is a good reason for assigning any particular indicator a weighting greater or less than that of some or all other indicators. Similarly, the selection of any poverty cutoff (including those used in income poverty measurement) always entails a normative

decision requiring good justifications and robustness analysis against other possible choices (Oxford Poverty and Human Development (OPHI), 2023). Due to non-availability data in the present context, the indicators, weights and cut off used here are the not the exhaustive and only illustrative in purpose. It is hoped that further precision of weights, indicators and cutoff could obtain in future before testing its validity at the national and international levels.

Results and Discussion

This section investigates the relationship and discrepancy between Income poverty and Multidimensional Poverty among the households in six metro cities of India. Two approaches (income-based approach and deprivation-based approach) were used to estimate the incidence of poverty among the households.

Money-metric approach is expressed in most cases with the poverty line and it is measured on the basis of income or consumption expenditure. The poverty is related not only with having a necessary level of consumption or income but also with having good living condition, possessing assets and living in a good environment. These are important factors that together with the monetary poverty give a real situation of the persons or the households. In this context this paper developed the Multidimensional Quality of Life Index (MQLI) incorporating monetary and nonmonetary variables. Identification of poor households is a prerequisite for proper targeting of beneficiaries and availing the benefits from the pro poor welfare programmes. If a country's MQLI poor is higher than monetary poor, reflecting the additional role of nonmonetary variables and their importance to general well-being.

The results show that a large disparity between the monetary and multidimensional measures of poverty (MQLI). The disparity varies across metro cities of the population depending on households' characteristics. Table 6 provides an overview of the composition of poverty in six metro cities according to the official poverty line and the MQLI. It is observed from Table 6 that poverty based on official poverty line (BPL_POOR) in six metro cities is invariably different and lower than the outcome of the MQLI_POOR. Based on the result, we suggest target-oriented approach towards the improvement in the non-income indicators in select six metro cities of India.

Table 6: Summary of Money Metric Poverty and MQLI Estimates

MET RO	BPL_Poor	HC R(H)	INT (A)	M PI	DE PRI	VU LNE	MQLI_POOR	SEV ERE
Delhi	7.43	57.35	53.50	30.68	30.81	11.85	57.35	35.31
Kolkata	10.38	52.18	54.45	28.41	34.38	13.44	52.18	36.15
Mumbai	0.57	49.81	47.08	23.45	36.45	13.74	49.81	20.61
Hyderabad	5.54	75.52	58.93	44.50	12.01	12.47	75.52	57.97
Bangalore	4.84	55.84	48.14	26.88	27.64	16.52	55.84	22.22
Chennai	10.04	35.52	55.80	19.82	43.24	21.24	35.52	22.01
All	7.06	55.34	53.41	29.56	31.01	13.65	55.34	34.02

Source: Author's own estimation using GRETL Code/ Programme.

- BPL_POOR = Monetary Poor/Below Official Poverty Line
- HCR(H) = Head Count Ratio/ Incidence of Poverty
- INT(A) = Average intensity of poverty (A)
- MQLI = Multidimensional Quality of Life Index value
- DEPRI = Deprived but not Vulnerable to Poor
- VULNE = Vulnerable to Multidimensional Poor (but not MPI_Poor)
- MQLI_POOR = Multidimensional Poor
- SEVERE = Severe Poor

Conclusion

To conclude, poverty is complex phenomenon and conventional money-metric poverty fails to measure the multiple deprivations of the population. Poverty relates not only to either monetary or non-monetary dimensions, separately. It is possible to be multidimensional poor without being monetary poor, and that using a monetary measure alone overlooks significant change in multidimensional poverty. This paper also finds that using a monetary measure alone does not capture high incidence of multidimensional poverty in six metro cities of India. This calls for an appropriate choice of monetary and non-monetary, which might also supplement the existing measure of monetary poverty as pointed out earlier. In view of our objective and the controversy over the use of money-metric poverty or MPI, the present study attempts to develop an alternative measure of poverty called Multidimensional Quality of Life Index combining monetary and non-monetary dimensions for estimating poverty. It is hoped that the index can be useful for revealing the true deprivation structure, which can help in designing the appropriate anti-poverty strategies at the national level.

REFERENCES

1. Alkire, S., Santos, M. E (2010): *Multidimensional Poverty Index*, Oxford: The Oxford Poverty and Human Development Initiative.
2. Alkire, S., and J. Foster. (2011): *Counting and Multidimensional Poverty Measurement*, *Journal of Public Economics* 95: pp 476–487.
3. Alkire, S., Roche, J.M. & Seth, S. (2013): *Multidimensional Poverty Index 2013*. Oxford Poverty and Human Development Initiative, pp 1-8.
4. Alkire, S., Foster, J. E., Seth, S., Santos, M. E., Roche, J. M., and Ballon, P. (2015.a): *Multidimensional Poverty Measurement and Analysis: Chapter 5 – The Alkire-Foster Counting Methodology*. OPHI working paper no. 86.
5. Alkire, S., Foster, J. E., Seth, S., Santos, M. E., Roche, J. M., and Ballon, P. (2015 b): *Multidimensional Poverty Measurement and Analysis*, Oxford: Oxford University Press, chapter.5.
6. Alkire Sabina, Jahan Selim (2018), *The New Global MPI 2018: Aligning with the Sustainable Development Goals*, OPHI Working Papers 121, Queen Elizabeth House, University of Oxford.
7. Bag, S., Seth, S. (2018): *Does It Matter How We Assess Standard of Living? Evidence from Indian Slums Comparing Monetary and Multidimensional Approaches*. *Social Indicators Research*, 140, pp 715–754 (2018). <https://doi.org/10.1007/s11205-017-1786-y>. Accessed on 15.02.2023.
8. Beatriz Yadira; Salazar, Roberto Carlos Angulo; Pinzon, Renata Pardo (2013): *Multidimensional poverty in Colombia, 1997 - 2010*, ISER Working Paper Series, No. 2013-03, University of Essex, Institute for Social and Economic Research (ISER), Colchester.
9. Berenger, V. (2016): "Measuring Multidimensional Poverty in Three South East Asian Countries using Ordinal Variables". ADBI Working Paper Series. 618.
10. Bourguignon, F., and Chakravarty, S. R. (2003): *The Measurement of Multidimensional Poverty*, *Journal of Economic Inequality*, 1, 25-49.
11. Carlos C, (2017): *Explaining Multidimensional Poverty: A Household Level Analysis*, August 15, 2017. Available at SSRN: <https://ssrn.com/abstract=2922997> or <http://dx.doi.org/10.2139/ssrn.2922997>
12. Dhanasekaran, K. (1989): *The Rural Quality of Life Index: A New Measure of Poverty*, *Financing Agriculture*, Vol. XXI, No.2, April-June, pp.12-16.

13. Dhanasekaran, K. (1991.a): Socio- Economic Measures of Quality of Rural Life: An Alternative Approach for Measuring Rural Poverty, Indian Journal of Agricultural Economics, Vol.46, No.1, January- March,1991, pp.34-46.
14. Dhanasekaran, K. (1991.b): The Search for a New Poverty Yardstick the Rural Quality of Life Index, The Asian Economic Review, Vol. XXXIII, No.11, April, 1991, pp. 123-134.
15. Dhanasekaran, K. (1994): The Measurement of Rural Poverty: Use of the Weighted Rural Quality of Life Index, Man and Development, Vol. XVI, No.4, December 1994, pp.16-31.
16. Goli, Srinivas, Saroj, Shashi Kala, Choudhary, Bikramaditya, Rana& Md Juel (2019): “Data for: Availability, Accessibility, and Inequalities of Water, Sanitation, and Hygiene (WASH) Services in Indian Metro Cities”,MendeleyData,V1,doi:10.17632/fjgkp5mcnj.1.For data, link: <https://data.mendeley.com/datasets/fjgkp5mcnj/1>.Accessed on 25.02.2023.Also,link: <https://www.sciencedirect.com/science/article/abs/pii/S2210670719301763?via%3Dihub>. Accessed on 25.02.2023.
17. Oxford Poverty and Human Development Initiative (OPHI), https://ophi.org.uk/wp-content/uploads/CB_IND_2022_vs2_Dec_2022.pdf.
18. Oxford Poverty & Human Development Initiative (2016): Multidimensional Poverty and its Measurement, Guide on Poverty Measurement, Working paper 12, Seminar on Poverty Measurement, 12-13 July 2016, Geneva, Switzerland
19. Oxford Poverty and Human Development (OPHI), A Response to Nicole Rippin , <https://www.ophi.org.uk/wp-content/uploads/A-Response-to-Nicole-Rippin.pdf> . Accessed on 24.02.2023.
20. Oxford Poverty and Human Development (OPHI),<https://ophi.org.uk/policy/national-policy/colombia-mpi/>
21. Sanjay K. Mohanty, Guru Vasishtha (2021): Contextualizing Multidimensional Poverty in Urban India, Poverty & Public Policy,Volume 13, Issue 3 pp 234-253. <https://doi.org/10.1002/pop4.314>Accessed on 26.02.2023.
22. Saroj, S.K. , S. Goli, M.J. Rana, B.K.Choudhary (2020): Availability, Accessibility, and Inequalities of Water, Sanitation, and Hygiene (WASH) Services in Indian Metro Cities, Sustainable Cities and Society, Volume 54, March 2020, 101878, <https://doi.org/10.1016/j.scs.2019.101878>.

23. Sen, Amartya (1976): Poverty: An Ordinal Approach to Measurement, *Econometrica*, 44 (2): pp 219–231.
24. Sen, A. (1985): *Commodities and Capabilities*, The Netherlands: Elsevier.
25. Sen, A. (1980): *Tanner lectures on human values*, (Vol. 1): Cambridge: Cambridge University Press, 1980,
26. Sen A. (1980): *Equality of What?*. In: McMurrin S *Tanner Lectures on Human Values*, Volume 1. Cambridge: Cambridge University Press; 1980.
27. Sen, A. (1984): *Resources, values and development*. Oxford: Basil Blackwell, 1984.
28. Sen, A. (1985): *Commodities and capabilities*. Amsterdam: North-Holland, 1985.
29. Sen, A. (1999): *Development as freedom*. New York: Alfred Knopf, 1999.
30. UNDP.ORG,<https://hdr.undp.org/sites/default/files/Country-Profiles/MPI/IND.pdf>. Accessed on 6.1.2023.
31. UNDP & Oxford Poverty and Human Development (2019): *Global Multidimensional Poverty Index 2019, Illuminating inequalities.*, N.P: UNDP & OPHI).
32. Venugopal Mothkooor and Nina Badgaiyan (2021): *Estimates of Multidimensional Poverty for India using NSSO-71 and -75*, WIDER Working Paper 2021/1, UNU-WIDER, pp.2&12. <https://doi.org/10.35188/UNU-WIDER/2021/935-8>.
33. Whelan, C. T., Layte, R., & Maître, B. (2004): *Understanding the mismatch between income poverty and deprivation: A dynamic comparative analysis*. *European Sociological Review*, 20, pp 287–302.
34. World Bank (2018): *Multidimensional Poverty Measure (circa 2018)*, World Bank, Washington, D C. 2022. <https://www.worldbank.org/en/topic/poverty/brief/multidimensional-poverty-measure>. Accessed on 11.02.2023.
35. <https://hdr.undp.org/sites/default/files/Country-Profiles/MPI/IND.pdf>. Accessed on 6.1.2023.
