

MEASUREMENT OF MICROFINANCE ACCESS THROUGH COMPREHENSIVE INDEX: A STATE-WISE STUDY IN INDIA

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ABSTRACT

Microfinance refers to financial services that are provided to low-income individuals or groups who naturally lack access to conventional banking services, including loans, savings, insurance, and fund transfers. Measuring microfinance access in India involves examining various indicators that reflect the availability, usage, and impact of microfinance services among the population, particularly in rural and underserved areas. Measuring microfinance access is an essential tool for assessing the effectiveness of microfinance programs and their impact on poverty reduction, financial inclusion and socio-economic development. An Index of Microfinance Access is a quantitative tool calculated to measure and evaluate the extent to which microfinance services are available and utilised by the target population in a specific region or country. Such an index can help stakeholders, including policymakers, financial institutions, and development agencies, to understand the effectiveness of microfinance initiatives and identify areas where improvements are needed. Here, we have followed the Laha & Kuri Model to construct a Comprehensive Index of Microfinance Access from an Indian perspective. In our Study, Measurement of Microfinance Access has been done based on three indicators: Indicator of Microfinance Penetration (MP1), Indicator of Microfinance Availability (MP2) and Indicator of Microfinance Usages (MP3), and, finally, we have constructed the Index of Microfinance Outreach (IMO). We have applied IMO to build the Rank of Indian states and identify their positions. However, we could not get any consistency over the states in four alternative years from 2014-2015, 2016-2017, 2018-2019 and 2021-2022. So, we cannot find out the trend over the 29 states of India. Previously, it has been observed that only Southern states like Andhra Pradesh, Tamil Nadu, Karnataka, and Kerala have dominated through Microfinance and Financial Inclusion. However, now the Eastern Part is awaking. As a result, Bihar, Odisha, West Bengal, and Jharkhand hold significant positions.

Keywords: *Microfinance, Financial Inclusion, IMO, CAGA, Self-Help Group (SHG).*

Introduction

Microfinance refers to financial services that are provided to low-income individuals or groups who naturally lack access to conventional banking services, including loans, savings, insurance, and fund transfers. Measuring microfinance access in India involves examining various indicators that reflect the availability, usage, and impact of microfinance services among the population, particularly in rural and underserved areas. The primary goal of microfinance is to help the vulnerable sections and alleviate poverty. It involves assessing a range of indicators that capture the scope and effectiveness of microfinance services across the nation, mainly targeting underprivileged and rural demographics. Key metrics include penetration rates, which quantify the proportion of the target population utilising microfinance services, and loan distribution, evaluating both the geographic and demographic inclusivity of microfinance lending. The total value of outstanding loans and the average loan size offer insights into microfinance activities' scale and target audience, respectively, indicating whether services reach poorer or more affluent communities. The diversity and suitability of products, ranging from loans to savings and insurance options, are also crucial for understanding how well these services meet varied client needs.

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Measuring microfinance access is an essential tool for assessing the effectiveness of microfinance programs and their impact on poverty reduction, financial inclusion and socio-economic development. Notwithstanding the challenges, continuous efforts are being made to improve data collection, standardise measurement practices, and enhance the overall effectiveness of microfinance programs. By accurately measuring access, policymakers and practitioners are empowered to design and implement strategies that maximise the benefits of microfinance for the underserved populations in India, making this research a crucial step towards achieving financial inclusion.

An Index of Microfinance Access is a quantitative tool considered to measure and evaluate the extent to which microfinance services are available and utilised by the target population in a specific region or country. Such an index can help stakeholders, including policymakers, financial institutions, and development agencies, to understand the effectiveness of microfinance initiatives and identify areas where improvements are needed. Here is a detailed look at how this index might be structured. Creating an index to measure microfinance access, termed the Microfinance Access Index (MAI), offers a structured, multi-dimensional approach to evaluate the reach and effectiveness of microfinance services. Here, we have followed the Laha & Kuri Model to construct a Comprehensive Index of Microfinance Access from an Indian perspective.

Review of Literature

Laha and Kuri (2014) constructed a model for measuring microfinance outreach and women empowerment. They constructed the Index of Microfinance Outreach (IMO) and Index of Women Empowerment (IWE), which were used to rank IMO and IWE. To prepare IMO and IWE, they have made MP1, MP2, MP3 & WE1, WE2, and WE3. Based on MP1 to MP3 and WE1 to WE3, they have formulated the Rank of MP1, MP2 and MP3 Rank of WE1, WE2 and WE3. They have observed the world's countries, including India, through the measurement. In India, the states have higher levels of microfinance outreach and relatively high levels of women's empowerment. They suggested that more women's empowerment is required to achieve better microfinance outreach.

Lama and Choudhury (2018) have deliberated on microfinance and its role in empowering people through financial inclusion in India. He describes microfinance as a very effective mechanism for irradiating poverty and free from the exploitation of money lenders. Through microfinance, poverty alleviation, empowerment, and financial inclusion, it is easily possible to remove the debt trap and build a good society. The Study concludes that financial inclusion through microfinance is possible through the practical joint efforts of Government and Non-government organisations.

Postelnicul and Hermes (2018) have investigated the relationship between social capital formation and the social performance of microfinance institutions (MFIs) in different societies. It aims to understand under what conditions MFIs can reduce poverty and contribute to socially responsible investments. They use a cross-country analysis on a dataset containing 100 countries to identify different social dimensions as proxies for developing social capital. They hypothesise that microfinance is more successful in societies that are more conducive to developing social capital, and their empirical results support this hypothesis. In this paper, the authors add a fourth category: the three types of social dimensions. It is concluded that MFIs provide financial services, such as loans and savings accounts, that reflect low-income individuals and households to alleviate poverty.

Singh and Padhi (2019) have discussed microfinance institutions (MFIs) and their role in providing financial services to unbanked and poor individuals. MFIs have been recognised as an essential component of the financial system as they can help achieve financial inclusion. They have addressed supply-side barriers to economic inclusion by expanding their outreach across countries and regions. However, the outreach performance of MFIs is affected by factors such as age, size, profitability, efficiency, productivity, and portfolio quality. The text then discusses a study that examines the factors affecting the outreach performance of MFIs in India. The Study concludes that age, assets, and productivity indicators positively affect the outreach performance of MFIs in India.

Awojobi (2020) narrated that Microfinance initiatives play a vital role in financial development, employment generation, and women empowerment. The active participation of women in the SHGs positively influences their member's appointments. He also identifies the factors paying to women's empowerment through microfinance initiatives. This experiential analysis uses information collected through designed questionnaires exclusively based on their volume to explain the different sizes of women's empowerment. The Study's outcome also delivers a more effective design for effective microfinance initiatives among self-help group members.

Sitapara et al. (2020) have enumerated that microfinance and financial development increase socio-economic development and decrease poverty, progress the standard of living, per head income, women's enablement and education. They describe microfinance as an effective tool for poverty minimisation and socio-economic development. It highlights microfinance's role in leading India's economic growth, too. Microfinance plays a significant role in the development of financial products, and it alleviates poverty in the vulnerable society in India. They have suggested that through economic development and microfinance, poverty mitigation can be removed from the Indian community.

Satsangi and Anand (2021) have considered a practical tool for providing access to credit to the poor and helping to alleviate poverty. The text explores the linkages between microfinance and the Sustainable Livelihood Approach (SLA) and investigates the impact of microfinance on sustainable rural livelihood. The research was conducted on 355 BPL household families in Agra District using the Wilcoxon Signed-Rank Test. The results indicate that microfinance has a positive and significant impact on sustainable rural livelihood by increasing the total family income of the rural poor through generating various livelihood parameters such as human capital, financial capital, social capital, natural capital, and physical capital. It is concluded that it references Sustainable Development Goals (SDGs). The United Nations established a set of goals to achieve sustainable development globally.

Ahmad et al. (2022) have discussed how microfinance provides small loans to individuals or groups lacking access to traditional banking services and can positively impact poverty reduction and rural and entrepreneurial development. The research aims to explore the impact of microfinance on various aspects of social and economic development, such as education, healthcare, financial empowerment, economic independence, and entrepreneurial development. The Study collected data through questionnaires from beneficiaries of a microfinance scheme in the Union Territory of Jammu and Kashmir, India. The findings suggest that microfinance can facilitate social development, financial empowerment, and decision-making regarding education and healthcare among beneficiaries. Additionally, microfinance can increase entrepreneurial skill development. The Study's results affect academics, policymakers, and microfinance institutions.

Datta and Sahu (2022) have discussed using microfinance institutions (MFIs) as a poverty alleviation strategy, particularly for women. MFIs provide financial assistance programs to help women become economically, socially, and psychologically empowered. The Study focuses on the impact of MFIs on women borrowers in the backward districts of West Bengal. The Study uses primary data collected through a structured questionnaire and applies statistical analysis methods such as t-test, logistic, and ordered logistic regression to identify the essential determinants of empowerment among the borrowers. The results show that MFIs have a significant role in improving living standards and empowering women borrowers.

Hashimy (2023) has discussed the role of Self-Help Groups (SHGs) in providing microfinance services such as micro-credit, micro-savings and micro-insurance to the rural poor in India. The SHGs can be built on the social capital of the local community, especially women. The Study aims to identify changes in the socio-economic status of beneficiaries through self-help groups. The paper also explains the difference between microfinance and microcredit, where microcredit gives more importance to loans. The paper concludes that Self Help Groups (SHGs) have successfully provided microfinance services to the rural poor in India. The report suggests that suitable measures should be taken to improve the function.

The Objective of the Study

The definite objective of the Study is as follows:

- To estimate a comprehensive index of microfinance access. An attempt has been made to rank all significant states of India at the aggregative level.

Methodology and Data Sources

The variations in the extent of microfinance outreach are measured based on twenty-nine different states of India. It was developed by constructing a comprehensive index based on three dimensions of microfinance inclusion: penetration, availability and usage. For each indicator, the performance of the State is evaluated based on the national average. For instance, to measure the penetration of microfinance, first, the share of the number of SHG members of the State to the country's total number of SHG members was calculated. The indicators of microfinance penetration are then worked out as a ratio between the share of the State in SHG members and the share of the State's women population. A score higher than one indicates higher penetration of SHG members vis-à-vis. The

proportion of the women in the state population. In other words, the larger the distance from one, the greater the SHG outreach in the State. A clear exposition of the indicator used in constructing the index of microfinance outreach is given in Table 1 and Table 2.

Table 1: Description of Several Indicators and their Data Sources

Indicator	Description	Proportional Measure	Data Source For 2015	Data Source For 2017
Indicator of Microfinance Penetration (MP_1)	Share of SHG members of the State as a proportion of the share of women population of the State	$MP_1 = \frac{A}{B}$ Where A indicates the ratio of the number of SHG members of the State to the total members of the SHG members of India, and B indicates the ratio of the amount of women population of the State to the total number of women population in India.	Status of Microfinance of India (NABARD-2015) and Census, 2011	Status of Microfinance of India (NABARD-2017) and Census, 2011
Indicator of Microfinance Availability (MP_2)	Share of credit SHG of the State as a proportion of the share of the total number of SHG (savings & credits) of the State	$MP_2 = \frac{C}{D}$ Where C indicates the ratio of the number of credit SHGs of the State to the total Credit SHGs in India, and D indicates the ratio of the total SHGs of the State to the total SHGs in India.	Status of microfinance in India (NABARD-2015)	Status of microfinance in India (NABARD-2017)
Indicator of microfinance Usage (MP_3)	Share of the volume of microfinance savings credits as a proportion of the share of NSDP of the State.	$MP_3 = \frac{E}{F}$ Where E indicates the volume of savings credits of the State to the Total Volume of Savings credit in India in India, and F indicates the ratio of NSDP of the State to total NSDP in India.	Status of microfinance in India (NABARD-2015) and CSO, 2015	Status of microfinance in India (NABARD-2017) and CSO, 2017

(Method used from Laha & Kuri 2014)

Table 2: Description of Several Indicators and their Data Sources

Indicator	Description	Proportional Measure	Data Source For 2019	Data Source For 2022
Indicator of Microfinance Penetration (MP_1)	Share of SHG members of the State as a proportion of the share of women population of the State	$MP_1 = \frac{A}{B}$ Where A indicates the ratio of the number of SHG members of the State to the total members of the SHG members of India, and B indicates the ratio of the number of women in the State to the total number of women in India.	Status of Microfinance of India (NABARD-2019) and Census, 2011	Status of Microfinance of India (NABARD-2022) and Census, 2011
Indicator of Microfinance Availability (MP_2)	Share of credit SHG of the State as a proportion of the share of the total number of SHG (savings & credits) of the State	$MP_2 = \frac{C}{D}$ Where C indicates the ratio of the number of credit SHGs of the State to the total Credit SHGs in India, and D indicates the ratio of the total SHGs of the State to the total SHGs in India.	Status of microfinance in India (NABARD-2019)	Status of microfinance in India (NABARD-2022)
Indicator of microfinance Usage (MP_3)	Share of the volume of microfinance savings credits as a proportion of the share of NSDP of the State	$MP_3 = \frac{E}{F}$ Where E indicates the volume of savings credits of the State to the Total Volume of Savings credit in India in India, and F indicates the ratio of NSDP of the State to total NSDP in India.	Status of microfinance in India (NABARD-2019) and CSO, 2019	Status of microfinance in India (NABARD-2022) and CSO, 2022

(Method used from Laha & Kuri 2014)

To construct a comprehensive index of microfinance outreach (IMO), a data-driven Simple Average system has been used, which can be written as: -

$IMO_S = \frac{\sum_{i=1}^3 MP_i}{N}$, where $i = 1, 2, 3$, and $N = 3$. Depending on the IMO values, states are categorised into three categories. The States with an IMO value less than one are considered to have a low level of microfinance outreach, those between 1 and 2 a medium level, and those greater than two a high level. The demand for microfinance services is measured by the actual utilisation of the credit and savings services of the microfinance programme. In contrast, the supply of microfinance is measured by the population's penetration and availability of credit services. The depth of the level of microfinance outreach depends on the demand and supply of microfinance services in India. The value of each dimension across India's states and their ranks are accessible in the following respective tables.

Data Analysis, Results & Findings In India Level

In Table 3, the value of each measurement across the states of India, along with their ranks, has been calculated. A wide interstate disparity is found in the individual indicators of microfinance outreach. Regarding the penetration of microfinance services, states like Kerala, Tamil Nadu and Karnataka belong to higher outreach of microfinance programs (as shown in column 2 of Table 3). These three southern states have secured the highest place in the outreach of microfinance programs for the women sections of the population. The shares of the SHG members in those states are observed to be, on average, two times more compared to the paired group of the other states.

On the other hand, a majority of 65.52% of the states fall in the category of lower penetration of the microfinance program. Table 3 also shows that the Northeastern States fall in the lower microfinance outlets among the rest of the states. The inter-state disparity in the availability of microfinance is represented in column 4 of Table 3. Concerning availability, the poor result was observed in states like Arunachal Pradesh, Meghalaya, Manipur, Nagaland, etc., in comparison with states like Andhra Pradesh, Telangana, Karnataka, Kerala and Tamil Nadu (as shown in column 4 of Table 3). The use of these facilities by the SHG members is subject to the constraints of the penetration availability of microfinance services, which determines their demands for microfinance. It is observed that the inequality in the usage of financial services is widespread across states of India. Once again, Southern States (Andhra Pradesh, Telangana and Karnataka) retain their supremacy in using microfinance services. A poor rating of utilisation of microfinance products is observed in central, northern, eastern and northeastern states. Thus, the supply of those products adequately addresses the demand for microfinance services in these states. Exceptionally, Odisha has shown the same higher Rank in all three cases, just after the southern states.

Table 3: Ranking of the states based on Indicators of Microfinance Outreach (2014-2015)

State	MP ₁	Rank of MP ₁	MP ₂	Rank of MP ₂	MP ₃	Rank of MP ₃	IMO	Rank of IMO
Andhra Pradesh	1.64	5	1.54	2	4.89	1	2.69	1
Telangana	1.4	6	2.54	1	2.19	2	2.04	2
Karnataka	2.06	3	1.44	3	1.89	3	1.79	3
Kerala	2.9	1	0.62	10	1.47	6	1.66	4
Odisha	1.8	4	1.29	5	1.7	4	1.56	5
Tamil Nadu	2.57	2	0.7	9	1.16	7	1.47	6
West Bengal	1.18	8	1.04	6	1.52	5	1.16	7
Bihar	0.36	22	1.42	4	0.74	9	0.97	8
Assam	1.39	7	0.3	19	0.55	10	0.8	9
Chattisgarh	0.94	11	0.58	13	0.89	8	0.78	10
Maharashtra	1.07	10	0.47	18	0.54	11	0.74	11
Mizoram	1.11	9	0.24	25	0.26	20	0.68	12
Uttar Pradesh	0.28	25	0.73	8	0.37	14	0.53	13
Himachal Pradesh	0.74	13	0.53	14	0.31	17	0.52	14
Madhya Pradesh	0.38	21	0.61	11	0.49	12	0.51	15
Goa	0.92	12	0.51	15	0.22	22	0.5	16
Rajasthan	0.56	17	0.6	12	0.27	19	0.47	17
Uttarakhand	0.59	16	0.29	21	0.36	15	0.43	18
Gujarat	0.62	15	0.49	16	0.23	21	0.42	19

Manipur	0.73	14	0.08	27	0.12	26	0.41	20
Jammu & Kashmir	0.06	29	0.84	7	0.07	28	0.4	21
Jharkhand	0.42	19	0.27	23	0.43	13	0.39	22
Sikkim	0.44	18	0.3	20	0.17	23	0.33	23
Tripura	0.31	24	0.24	24	0.28	18	0.28	24
Meghalaya	0.34	23	0.06	28	0.34	16	0.27	25
Arunachal Pradesh	0.38	20	0.04	29	0.16	24	0.24	26
Punjab	0.16	28	0.49	17	0.06	29	0.22	27
Haryana	0.25	26	0.29	22	0.08	27	0.2	28
Nagaland	0.19	27	0.12	26	0.13	25	0.16	29

Note: MP1: Indicators of Microfinance Penetration; MP2: Indicators of Microfinance Availability MP3: Indicators of Microfinance usage, IMO: Index of Microfinance Outreach

Sources: Authors calculation based on Status of Microfinance in India (NABARD, 2015), C.S.O-2014 and Census- 2011

The combination of penetration, availability and usage of microfinance outreach measures an index of microfinance outreach. In terms of IMO, it is evident that only two states (Andhra Pradesh and Telangana) have been classified under the high level of microfinance outreach. Five states (Karnataka, Kerala, Odisha, Tamil Nadu and West Bengal) have fulfilled the medium-level microfinance Outreach criteria, as the Value of IMO lies between one and two. All the other states belong to the lower level of microfinance outreach rankings.

As per Table 4, it is observed that the conditions of the states differ from each other in the India scenario. The value of each dimension across the states of India, along with their ranks, has been presented in Table 4. A wide interstate disparity is found in the individual indicators of microfinance outreach. Regarding the penetration of microfinance services, states like Telangana, Andhra Pradesh, and Tamil Nadu belong to higher outreach of microfinance programs (as shown in column 2 of Table 4). These four southern states have secured the highest place in the outreach of microfinance programs for the women sections of the population. The shares of the SHG members in those states are observed to be, on average, two times more compared to the paired group of the other states.

On the other hand, a majority of 75.86% of the states fall in the category of lower penetration of the microfinance program. In Table 4, it has also been observed that the northeastern states fall in the lower microfinance outlets among the rest of the states. The inter-state disparity in the availability of microfinance is represented in column 4 of Table 4. In respect of availability, poor result was observed in states like Tripura, Manipur, Arunachal Pradesh, Meghalaya, Mizoram, Sikkim and Nagaland, etc., in comparison with states corresponding Kerala, Tamil Nadu, Andhra Pradesh, Telangana and Karnataka (as shown in column 4 of Table- 4). The usage of these amenities by the SHG members, topic to the constraints of the penetration and availability of microfinance services, determines their demands for microfinance. It is observed that the inequality in the usage of financial services is widespread across states of India. Once again, southern states (Andhra Pradesh, Telangana and Karnataka) retain their supremacy in using microfinance services. A poor rating of utilisation of microfinance products is observed in central, northern, eastern and northeastern states. Thus, the supply of those products adequately addresses the demand for microfinance services in these states. Exceptionally, Bihar has shown the same type of higher Rank in the two cases just after the southern states.

Table 4: Ranking of the states based on Indicators of Microfinance Outreach (2016-2017)

State	MP1	Rank of MP1	MP2	Rank of MP2	MP3	Rank of MP3	IMO	Rank
Andhra Pradesh	2.348	2	1.901	1	8.631	1	4.293	1
Telangana	2.924	1	1.891	2	4.017	2	2.944	2
Karnataka	2.203	4	1.158	6	2.757	5	2.039	3
Bihar	0.528	18	1.596	3	3.814	3	1.979	4
West Bengal	0.993	8	1.196	5	3.471	4	1.886	5
Tamil Nadu	2.284	3	0.847	8	2.421	6	1.850	6
Kerala	1.532	6	1.211	4	1.097	8	1.280	7
Odisha	1.503	7	0.757	9	1.365	7	1.208	8
Maharashtra	0.822	10	0.412	16	0.959	9	0.731	9
Sikkim	1.794	5	0.179	24	0.004	29	0.659	10
Chhattisgarh	0.713	16	0.733	10	0.341	14	0.595	11
Madhya Pradesh	0.465	21	0.638	11	0.510	12	0.538	12
Assam	0.807	11	0.342	19	0.355	13	0.501	13
Jharkhand	0.575	17	0.604	12	0.281	15	0.487	14

Rajasthan	0.440	22	0.458	15	0.545	11	0.481	15
Gujarat	0.766	14	0.461	14	0.203	16	0.477	16
Himachal Pradesh	0.772	13	0.366	18	0.045	19	0.394	17
Goa	0.750	15	0.341	20	0.007	26	0.366	18
Jammu and Kashmir	0.037	29	0.906	7	0.046	18	0.330	19
Meghalaya	0.843	9	0.119	26	0.015	24	0.326	20
Uttar Pradesh	0.184	26	0.194	23	0.575	10	0.318	21
Tripura	0.785	12	0.076	29	0.053	17	0.305	22
Nagaland	0.521	19	0.232	22	0.017	23	0.257	23
Haryana	0.210	25	0.496	13	0.033	20	0.246	24
Uttarakhand	0.403	24	0.247	21	0.028	22	0.226	25
Manipur	0.514	20	0.082	28	0.006	27	0.201	26
Punjab	0.146	27	0.370	17	0.029	21	0.182	27
Arunachal Pradesh	0.408	23	0.084	27	0.007	25	0.166	28
Mizoram	0.061	28	0.161	25	0.006	28	0.076	29

Note:MP1: Indicators of Microfinance Penetration; MP2: Indicators of Microfinance Availability MP3: Indicators of Microfinance usage, I.M.O.: Index of Microfinance Outreach

Sources: Author's calculation based on Status of Microfinance in India (NABARD, 2017), N.S.O-2017 and Census- 2011

The combined measure of penetration, availability and usage of microfinance outreach has prepared an index of microfinance outreach measures. In terms of IMO, it is revealed that only three states (Andhra Pradesh, Telangana and Karnataka) are classified under the highest level of microfinance outreach. Five states (Behar, West Bengal, Tamil Nadu, Kerala and Odisha) have fulfilled the medium microfinance outreach criteria, with the value of IMO being between one and two. All the other states belong to the lower level on the ranking of microfinance outreach.

Table 5 reflects the value of each dimension across the states of India, along with their ranks. A wide inter-state disparity is found in the individual indicators of microfinance outreach. Regarding penetration of microfinance services, states like Sikkim, Tamil Nadu and Odisha belong to higher outreach of microfinance programs (as shown in column 2 of Table 5). These three states have secured the highest place in the outreach of microfinance programs for the women sections of the population. The shares of the SHG members in those states are observed to be, on average, two times more compared to the paired group of the other states.

On the other hand, a majority of 68.97% of the states fall in the category of lower penetration of the microfinance program. In Table 5, it was also observed that the northeastern states except Sikkim fall in the lower microfinance outlets among the rest of the states. The inter-state disparity in the availability of microfinance is represented in Column 4 of Table 5. Concerning availability, the poor result was observed in states like Arunachal Pradesh, Meghalaya, Nagaland, etc., in comparison with states like Telangana, Karnataka West Bengal, and Andhra Pradesh (as shown in column 4 of Table 5). The procedure of these facilities by the SHG members, subject to the restraints of the penetration and availability of microfinance services, determines their demands for microfinance. It is observed that the inequality in the usage of financial services is widespread across states of India. Once again, southern states (Andhra Pradesh, Telangana, Karnataka and Tamil Nadu) retain their supremacy in the utilisation of microfinance services. A poor rating of the utilisation of microfinance products is observed in central, northern, and eastern states except Behar, West Bengal, and northeastern states. Thus, the supply of those products adequately addresses the demand for microfinance services in these states. Exceptionally, West Bengal has shown the same type of higher Rank in all the two cases just after the southern states.

Table 5: Ranking of the States Based on Indicators of Microfinance Outreach (2018-2019)

State	MP1	Rank of MP1	MP2	Rank of MP2	MP3	Rank of MP3	IMO	Rank
Andhra Pradesh	1.970	5	1.614	4	7.775	1	3.786	1
West Bengal	1.264	8	1.888	3	5.126	3	2.759	2
Bihar	0.823	14	1.096	6	6.111	2	2.677	3
Telangana	1.970	4	2.192	1	3.273	4	2.478	4
Karnataka	1.527	7	1.953	2	2.555	5	2.012	5
Tamil Nadu	2.093	2	0.595	9	2.047	6	1.578	6
Odisha	2.071	3	0.838	8	1.696	7	1.535	7
Kerala	1.708	6	0.940	7	1.108	8	1.252	8
Sikkim	2.810	1	0.486	12	0.003	29	1.100	9
Maharashtra	0.936	11	0.436	13	0.968	9	0.780	10
Jharkhand	1.063	9	0.514	11	0.414	13	0.664	11

Chhattisgarh	0.964	10	0.515	10	0.338	14	0.605	12
Jammu and Kashmir	0.044	29	1.376	5	0.022	22	0.481	13
Assam	0.922	12	0.179	25	0.328	15	0.477	14
Rajasthan	0.475	21	0.390	15	0.441	11	0.436	15
Madhya Pradesh	0.561	19	0.307	19	0.432	12	0.433	16
Goa	0.880	13	0.267	21	0.006	27	0.384	17
Gujarat	0.760	15	0.230	22	0.152	16	0.381	18
Tripura	0.728	16	0.320	18	0.043	18	0.364	19
Himachal Pradesh	0.657	17	0.349	17	0.045	17	0.350	20
Uttarakhand	0.506	20	0.367	16	0.034	19	0.302	21
Uttar Pradesh	0.207	26	0.167	26	0.520	10	0.298	22
Nagaland	0.651	18	0.161	27	0.005	28	0.273	23
Haryana	0.284	25	0.399	14	0.029	20	0.237	24
Manipur	0.446	23	0.217	23	0.011	24	0.225	25
Arunachal Pradesh	0.447	22	0.028	29	0.006	26	0.160	26
Mizoram	0.118	28	0.284	20	0.009	25	0.137	27
Punjab	0.191	27	0.190	24	0.022	21	0.135	28
Meghalaya	0.334	24	0.041	28	0.017	23	0.131	29

Note: MP₁: Indicators of Microfinance Penetration; MP₂: Indicators of Microfinance Availability MP₃: Indicators of Microfinance usage, I.M.O.: Index of Microfinance Outreach

Sources: Author's calculation based on Status of Microfinance in India (NABARD, 2019), N.S.O-2019 and Census- 2011

The combined measure of penetration, availability, and usage of microfinance outreach has been used to measure the index of microfinance outreach. In terms of IMO, it is evident that only five states (Andhra Pradesh, West Bengal, Behar, Telangana and Karnataka) have been classified under the high level of microfinance outreach. Four states (Tamil Nadu, Odisha, Kerala, and Sikkim) have filled the medium-level microfinance outreach criteria, and the value of IMO lies between one and two. All the other states belong to the lower stratum on the ladder of microfinance outreach.

Table 6 shows the value of each dimension across the states of India, along with their ranks. A wide inter-state disparity is found in the individual indicators of microfinance outreach. Concerning the penetration of microfinance services states like Andhra Pradesh, Odisha, and Telangana belong to higher outreach of microfinance programs (as shown in column 2 of Table 6). These two southern states have secured the highest place in the outreach of microfinance programs for the women sections of the population. The shares of the SHG members in those states are observed to be, on average, two times more compared to the paired group of the other states.

On the other hand, a majority of 61.15% of the states fall in the category of lower penetration of the microfinance program. Table 6 shows that the northern states fall in the lower microfinance outlets among the rest of the states. The inter-state disparity in the availability of microfinance is represented in column 4 of Table 4.6. In respect of availability, poor result was observed in states like Arunachal Pradesh, Manipur, Sikkim, Mizoram and Nagaland, etc., in comparison with states like Andhra Pradesh, Odisha, Behar, Jharkhand and West Bengal (as shown in column 4 of Table: 6). The usage of these facilities by the SHG members subject to the limits of the penetration and availability of the microfinance services determines their demands for microfinance. It is observed that the inequality in the usage of financial services is widespread across states of India. Once again, the eastern region of the states (Odisha, Behar, Jharkhand, and West Bengal) retains its supremacy in using microfinance services. A poor rating of utilisation of microfinance products is observed in central, northern, northeastern, and Southern states. Thus, the supply of those products adequately addresses the demand for microfinance services in these states. Exceptionally, Andhra Pradesh of Southern has shown a higher Rank in all two cases, just after the Eastern states.

Table 6: Ranking of the states based on Indicators of Microfinance Outreach (2021-2022)

State	MP ₁	Rank of MP ₁	MP ₂	Rank of MP ₂	MP ₃	Rank of MP ₃	IMO	Rank of IMO
Andhra Pradesh	2.18	1	1.62	4	5.98	1	3.26	1
Odisha	2.14	2	0.85	9	3.02	2	2.00	2
West Bengal	1.11	12	1.98	1	1.87	5	1.65	3
Jharkhand	0.96	14	1.89	3	1.93	4	1.59	4
Karnataka	1.33	7	1.98	2	1.37	6	1.56	5
Bihar	0.94	15	1.11	7	2.30	3	1.45	6

Telangana	2.02	3	1.34	5	0.05	28	1.14	7
Kerala	1.35	6	0.78	11	1.11	7	1.08	8
Tripura	1.13	10	1.09	8	0.99	9	1.07	9
Assam	1.64	5	0.47	16	1.01	8	1.04	10
Tamil Nadu	1.71	4	0.48	15	0.85	10	1.01	11
Meghalaya	1.12	11	0.41	18	0.62	11	0.72	12
Maharashtra	1.23	9	0.54	14	0.35	15	0.71	13
Chhattisgarh	0.65	19	0.79	10	0.38	14	0.60	14
Mizoram	1.02	13	0.30	23	0.47	12	0.60	15
Sikkim	1.31	8	0.26	25	0.17	21	0.58	16
Madhya Pradesh	0.61	22	0.71	13	0.39	13	0.57	17
Uttarakhand	0.63	20	0.41	17	0.24	17	0.43	18
Jammu & Kashmir	0.07	29	1.11	6	0.08	25	0.42	19
Rajasthan	0.62	21	0.37	19	0.22	18	0.40	20
Manipur	0.80	16	0.17	28	0.20	19	0.39	21
Goa	0.77	17	0.23	26	0.15	24	0.38	22
Himachal Pradesh	0.65	18	0.31	22	0.17	20	0.38	23
Haryana	0.29	26	0.74	12	0.07	27	0.37	24
Gujrat	0.60	23	0.34	20	0.08	26	0.34	25
Nagaland	0.47	24	0.31	21	0.16	22	0.32	26
Punjab	0.23	28	0.29	24	0.31	16	0.27	27
Uttar Pradesh	0.31	25	0.23	27	0.16	23	0.23	28
Arunachal Pradesh	0.28	27	0.15	29	0.04	29	0.16	29

Note: MP1: Indicators of Microfinance Penetration; MP2: Indicators of Microfinance Availability MP3: Indicators of Microfinance usage, IMO: Index of Microfinance Outreach

Sources: Authors calculation based on Status of Microfinance in India (NABARD, 2022), C.S.O-2014 and Census- 2011

The combined measure of penetration, availability, and usage of microfinance outreach has been used to measure the index of microfinance outreach. In terms of IMO, it is evident that only two states (Andhra Pradesh and Odisha) have been classified under the highest level of microfinance outreach. Nine states (West Bengal, Jharkhand, Karnataka, Behar, Telangana, Kerala, Tripura Assam and Tamil Nadu) have fulfilled the criteria of medium level of microfinance outreach as the Value of IMO lying in between one and two. All the other states belong to the lower stratum on the ladder of microfinance outreach.

Through Chart 1, IMO has been reflected from the combined results of 2014- 2015 to 2021 to 2022. Chart 2 has been prepared to take the results of Ranks from 2014-2015 to 2021-2022.

Here, some ups and downs, i.e. volatility of the positions of Ranks, have been reflected except in Andhra Pradesh in the following ways, clearly shown in charts:

Chart 1

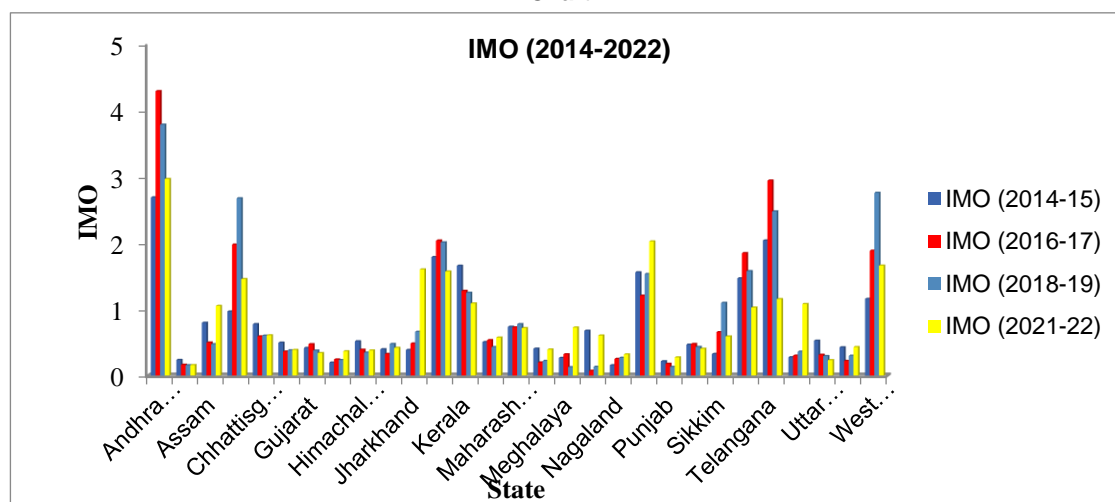
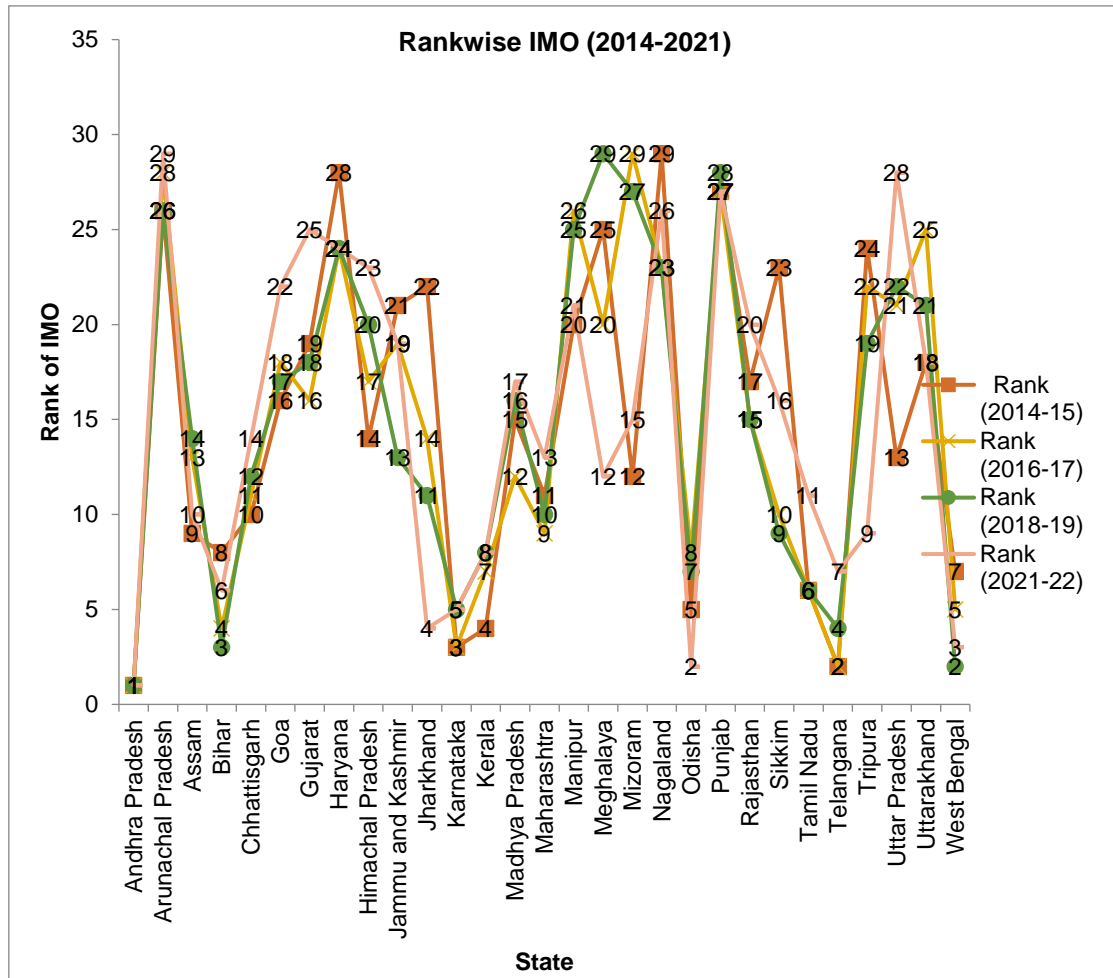


Chart 2



To find out the trend and growth over the states of India considering nine years from the observation of IMO(Index of Microfinance Outreach), calculation and finding the Ranks of the 29 States of India have been prepared. However, measuring the State's future status and condition over the Study from 2014-2015 to 2021-2022 is impossible. There has been ample volatility over the years. So, we have tried to apply the Compound Annual Growth Rate (CAGR) over 29 states of India based on IMO Values and have identified new categories among the Indian states. It has been prepared in the following ways.

Applying CAGR on IMO from 2014 to 2022

Compound Annual Growth Rate is measured based on the IMO values ranging from 2014 to 2022 of 29 states of India. The function is as follows:

$$CAGR = \left[\left(\frac{V_{final}}{V_{begin}} \right)^{\frac{1}{t}} - 1 \right]$$

V_{final} = Ending year IMO value; V_{begin} = Starting year of IMO value, t = time.

Table 7: Classification

Low Value	High value	Class
-0.109	0.021	Poor
0.021	0.151	Medium
0.151	0.281	Good

Table 8: Computed Annual Growth Rate (CAGR)

State	CAGR	Class		
		Poor (-0.109-0.021)	Medium (0.021-0.151)	Good (0.151-0.281)
Andhra Pradesh	0.0141	1		
Arunachal Pradesh	-0.0556	1		
Assam	0.0402		1	
Bihar	0.0600		1	
Chhattisgarh	-0.0342	1		
Goa	-0.0346	1		
Gujarat	-0.0284	1		
Haryana	0.0918		1	
Himachal Pradesh	-0.0427	1		
Jammu and Kashmir	0.0076	1		
Jharkhand	0.2239			1
Karnataka	-0.0183	1		
Kerala	-0.0581	1		
Madhya Pradesh	0.0178	1		
Maharashtra	-0.0041	1		
Manipur	-0.0048	1		
Meghalaya	0.1523			1
Mizoram	-0.0159	1		
Nagaland	0.1052		1	
Odisha	0.0381		1	
Punjab	0.0336		1	
Rajasthan	-0.0199	1		
Sikkim	0.0875		1	
Tamil Nadu	-0.0496	1		
Telangana	-0.0779	1		
Tripura	0.2131			1
Uttar Pradesh	-0.1093	1		
Uttarakhand	0.0008	1		
West Bengal	0.0527		1	
Grand Total		18	8	3

The above Table shows that the Tribal states, particularly Jharkhand, Tripura and Meghalaya, have a better growth rate than others. They are called the higher category of states possessing a high growth rate. The second category of states is eight in number. They are Assam, Bihar, Haryana, Nagaland, Odisha, Punjab, Sikkim and West Bengal. Lower-category states are the rest of the states.

Conclusion

Measuring microfinance access is an essential tool for assessing the effectiveness of microfinance programs and their impact on poverty reduction. The measurement of microfinance access in India can be accessed through various indicators such as the number of microfinance institutions (MFIs) operating in the country, the total number of microfinance clients, the size of the microfinance portfolio, and the penetration of microfinance services in different regions and segments of the population. In our Study, Measurement of Microfinance Access has been done based on three indicators: Indicator of Microfinance Penetration (MP1), Indicator of Microfinance Availability (MP2) and Indicator of Microfinance Usages (MP3), and, finally, we have constructed the Index of Microfinance Outreach (IMO). We have applied IMO to build the Rank of Indian states and identify their positions. It has been observed that only Southern states like Andhra Pradesh, Tamil Nadu, Karnataka, and Kerala have dominated through Microfinance and Financial Inclusion. However, now the Eastern Part is awakening. As a result, Bihar, Odisha, West Bengal, and Jharkhand hold significant positions.

However, we could not get any consistency over the states in four alternative years from 2014-2015, 2016-2017, 2018-2019 and 2021-2022. So, we cannot find out the trend over the 29 states of India. So, we have decided to consider CAGR instead of the previous Ranking Method. We have used new categories of the State's Rank by applying CAGR. Through CAGR, it has been observed that Tribal states, particularly Jharkhand, Tripura and Meghalaya, have a better growth rate than others.

Over the scenario of Self-Help Groups (SHGs), it has been observed that the number of SHGs, amount of savings, and Amount of Disbursement of loans have increased daily. After keen observation in the Study, we have observed that the reason behind this is Women's SHGs. They influence the figure due to their large number of participations and activation in SHGs.

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