

Financial Inclusion Index for the Districts of Assam

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Abstract

Financial inclusion is a process of guaranteeing access to formal financial products and services to section of population at an affordable cost. It aims to make accessible of various financial services such as savings, credit and insurance by section of population especially by the weak and backward class. The present paper aims to present the banking profile of ten most populated districts of Assam i.e. Nagaon, Cachar, Barpeta, Kamrup, Dhubri, Tinsukia, Dibrugarh, Sonitpur, Kamrup Metro and Karimganj. The study also focuses on various determinants of financial inclusion and compute financial inclusion index for the sample districts. Financial inclusion here is measured with the help of Financial Inclusion Index (FII) which takes into account three different dimensions of banking services such as availability, penetration and usages. The methodology adopted for the calculation of FII in the present study is similar to one adopted by UNDP for the calculation of HDI.

Keywords: Availability, Access, Index, Inclusion, Penetration, Usages

Introduction

The term financial inclusion arises from the issue of financial exclusion which indicates to the denial of basic financial services. Financial inclusion is thus, a process of guaranteeing access to formal financial products and services to all section of the society basically the weak and vulnerable ones at an affordable cost in a fair and transparent manner. In other words, it aims to make accessible of various financial services such as savings, credit and insurance to all section of the population especially the weak and backward ones. In recent years the terms financial inclusion has emerged as one of the major concern for policymakers due to its crucial role in economic growth and development. In developing economies like India greater access to financial services has been considered as an important factor that helps in reducing poverty and income inequality which further improves employment and educational level of its population and thereby helps the households in making effective decisions for the family such as increase saving rates and making investment decisions. Financial inclusion also helps in stimulating economic activity of an economy by promoting more equitable distribution of its available resources. Moreover, household's access to formal financial services is a source of social and economic empowerment basically of the weak and under-privileged section (Maity & Sahu 2021). Thus, financial inclusion is considered as one of the important measures for attaining the development of an economy and thereafter fulfilling the Sustainable Development Goals set by the United Nations (Kazi & Shemim 2023).

In India, the Government of India along with Reserve Bank of India and other regulatory bodies have adopted numerous measures for bring its population under the umbrella of financial inclusion. On August 2014, Pradhan Mantri Jan Dhan Yojana was launched by Government of India with an aim of offering inclusive financial services to all those households which are deprived from access to financial services. Assam one of the highly populated states of Northeastern region is facing the sever problem of financial exclusion in spite of continuous policies adopted by the center and the state. Lack of primary education, poverty, unemployment, low level of income act as an barrier for universal inclusion of financial services in the state. The present study aims to study the status of financial inclusion in ten highly populated districts of Assam i.e. Nagoan, Cachar, Barpeta, Kamrup, Dhubri, Tinsukia, Dibrugarh, Sonitpur, Kamrup Metro, Karimganj. The study also aims to compute the financial inclusion index for the sample districts and make a comparative analysis. Here, financial inclusion is measured with the help of Financial Inclusion Index (FII) which takes into account three different dimensions of banking services such as availability, penetration and usages.

Review of Literature:

Burgees R. & Pande R. (2005), attempt to study the effect of rural bank branch branches in India since 1977-1990. Results of the study reveal that with the expansion of bank branches in rural areas there was significant fall in rural poverty and increase in non-agricultural output of India.

Camara et. al. (2014), uses demand and supply-side variables to measure the depth of inclusion in their research. They postulated two stages Principal Component Analysis (PCA) by undertaking usage, access and barrier dimensions to study the inclusion level.

Paramasivan C. & Ganeshkumar V. (2013), in their research discussed the overview of financial inclusion in India. The study concludes that literacy alone cannot guarantee high level of financial inclusion in a nation. Branch density plays a significant role on universal financial inclusion. Along with financial awareness appropriate financial investment is out most important in creating complete inclusion.

According to **Das & Choubey (2015)**, in Assam the demand side of financial services is dominant by semi-formal organization where the role of informal lenders have gradually started minimizing in the present decade. On the supply side there exists variation among rural and urban areas even after continuous efforts of formal institutions.

Iqbal B. A & Sami S. (2017), applying multiple regression analysis in their research observes positive relationship between GDP of India and financial inclusion. Study highlights financial indicators such as number of bank branches, credit-deposit ratio have strong positive impact on the GDP of India but growth of ATMs shows negative impact on the GDP of the country.

Konwar & Barua (2018), in their research highlights Tinsukia district as one of the high performer district of the Assam as per the availability of financial products services while Lakhimpur district comes under the section of medium inclusion

Kumar A. (2019), made an attempted to study the role of commercial banks on financial inclusion in India. Study observes that commercial banks has been playing a significant role towards inclusive growth in India by opening new bank branches in rural areas, introducing attractive investment schemes and increasing the number of ATMs. To increase the level of financial inclusion they have been providing continuous updated financial services and camping across the country.

Ray P. (2021), uses correlation and regression analysis to study the importance of banks in providing financial inclusion in India. Study concludes that nationwide banks have been playing an important role in providing financial inclusion in India. The number of ATMs has a significant and negative impact, loans and advances have positive and significant impact and number of bank branches has negative impact on Gross Domestic Savings of the country.

Findings of the study conducted by **Kumar S. & Jeyaprabha B. (2022)**, reveals that the intensity of financial inclusion has improved over the years in the districts of Tamil Nadu but majority of districts still falls under the category of medium inclusion. The study overviews that financial inclusion programmes are potential and capable to transform the face of the district and uplift each and every individual.

Maity S. (2023), in his research attempted to explore the contribution of SHG bank linkage programme in financial and social inclusion of marginalized rural people of central Assam. The study reveals that SHG-BLP reduces social exclusion of the people considerably and improves financial inclusions.

From the available literatures on Financial Inclusion it has been observed that although there are many studies across the globe on financial inclusion but only limited studies were available on studying the actual depth of financial inclusion of Assam. Therefore in the present study an attempt has been made to calculate the Financial Inclusion Index for the top populated districts of the state.

Methodology

The present study computes Financial Inclusion Index for ten highly populated districts of Assam using three dimensions: availability, penetration and usage of financial services, following the similar methodology followed by UNDP for the calculation of HDI. Here, in the present study FII is calculated in three different stages i.e. indicator, dimension and financial inclusion index. Indicator index is calculated with the help of the following formula for i^{th} dimension.

$$d_i = W_i \frac{A_i - m_i}{M_i - m_i} \quad \text{----- (i)}$$

Where, W_i indicates the weight attached to dimension i ($0 \leq W_i \leq 1$)

A_i indicates actual value of the dimension i

M_i indicates upper value of dimension i , and

m_i indicates lower limit of the value of dimension i .

Here, the equation (i) indicates, if the value of d_i is higher than the district achievements in the dimension i is also higher. If n dimensions are considered for j districts then it will be:

$$D_j = (d_1, d_2, d_3, d_4, \dots, d_n) \text{ for } n\text{-dimensional Cartesian space}$$

For n -dimensional space the point $0 = (0, 0, 0, \dots, 0)$ represents lowest achievements for all the dimensions, and the point $1 = (1, 1, 1, \dots, 1)$ indicates highest achievement. And the normalized inverse Euclidean distance of point D_i from the ideal point $1 = (1, 1, 1, \dots, 1)$ is used FII. Thus, FII is:

$$FII = 1 - \frac{\sqrt{(1-d_1)^2 + (1-d_2)^2 + \dots + (1-d_n)^2}}{\sqrt{n}} \quad \text{..... (ii)}$$

Here, to make the FII value lie between 0 and 1 normalization has been done. Higher FII value represents higher inclusion and vice versa (Sarma, 2008). In the present study FII value has been calculated by using three dimensions: penetration, availability and usage dimensions.

• Availability (A_i):

Availability in the present study indicates extent of banking services available among the users. To study these dimension two indicators namely number of available bank branches and available ATMs per 1

lakh population has been used.

- **Banking penetration (P_i):**

To calculate the banking penetration dimension of two indicators i.e. deposit account and credit account per 1 lakh population has been used

- **Usage (U_i):**

Usage here represents proper utilization of banking services by the users. To calculate usage dimension three indicators has been used i.e. per capita credit, per capita deposit, and C-D ratio.

Thus, the financial inclusion value in the present study has been calculated by using the following formula:

$$FII = 1 - \frac{\sqrt{(1 - p_i)^2 + (1 - a_i)^2 + (1 - u_i)^2}}{\sqrt{3}}$$

For the present study, availability, penetration and usage dimension are denoted by p_i , a_i and u_i . Depending upon the FII value the level of Financial Inclusion for the sample districts are categorized into five categories (CRISIL Inclusix report):

Sl. No	Categories	Values
1.	Very High Level Financial Inclusion	$0.8 \leq FII \leq 1$
2.	High Level Financial Inclusion	$0.6 \leq FII \leq 0.8$
3.	Medium Level Financial Inclusion	$0.4 \leq FII \leq 0.6$
4.	Low Level Financial Inclusion	$0.2 \leq FII \leq 0.4$
5.	Very Low Level Financial Inclusion	$0 \leq FII \leq 0.2$

Results and Discussion

Assam one of the highly populated states of Northeastern states is playing an important role over the years in providing formal financial services to each and every section of the society. Table 1 shows the status of financial inclusion in the top ten highly populated districts of the state in terms of number of available bank branches, ATMs, total deposits and credit, per capita deposits and credit and credit deposit ratio.

Table1: Banking Profile of Highly Populated Districts of Assam (as on 2022)

District	Population	Bank branch	ATMs	Deposit accounts	Credit accounts	PCD	PCC	C-D ratio
Nagaon	1892550	154	184	6799	4338	35250	21273	68
Cachar	1736617	161	217	101771	4244	58421	24665	46
Barpeta	1693622	122	171	5175	3199	32010	18516	67
Kamrup	1517542	168	151	6157	4194	49192	33297	74
Dhubri	1394144	87	97	3345	1794	27426	13174	55
Tinsukia	1327929	150	229	8273	4009	62899	30869	54
Dibrugarh	1326335	181	272	13286	5399	100420	39845	47
Sonitpur	1311619	132	219	6477	3642	49449	26427	62
Kamrup Metro	1253938	415	883	71902	32223	594599	234105	46

Karimganj	1228686	88	86	4455	1450	36655	11941	33
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Source: State Level Bankers Committee

From the table it is clear that among the ten sample districts Nagaon ranks at the top position in terms of population and Karimganj ranks lowest. Kamrup Metro consists of highest ATMs (415) as compared to all other districts and Karimganj consist of only 88 ATMs. On the other hand Cachar district consist of maximum deposits accounts of 101771 while Kamrup Metro consist of highest credit account of 32223. In terms of per capita deposits and per capita credit Kamrup Metro ranks at the top position followed by Dibrugarh and Tinsukia. On the other hand in terms of credit-deposit ratio Kamrup ranks at the highest position with 77% followed by Nagaon 68% and Barpeta 67%. Karimganj ranks lowest in terms of C-D ratio with only 33%.

Financial Inclusion Index

Availability Dimension

Availability index for the sample districts of Assam are calculated by taking two dimensions: no of bank branch per 100000 populations and no of available ATMs per 100000 populations. Table reflects availability index and in its rank values of the districts studies.

Table 2: District wise Index for Availability Dimension

Districts	No. BB per 100000pop			No. ATMs per 100000pop			Availability Index	
	BB/Pop	Index	Rank	ATM/Pop	Index	Rank	A _i	Rank
Nagaon	8.13	0.197	7	9.72	0.116	8	0.156	6
Cachar	9.27	0.234	6	12.49	0.157	5	0.195	5
Barpeta	7.20	0.167	8	10.09	0.122	6	0.144	7
Kamrup	11.07	0.292	4	9.9	0.119	7	0.205	4
Dhubri	6.24	0.136	10	6.95	0.076	10	0.106	10
Tinsukia	11.29	0.299	3	17.24	0.226	3	0.262	3
Dibrugarh	13.64	0.974	2	20.50	0.273	2	0.623	2
Sonitpur	10.06	0.259	5	16.69	0.218	4	0.121	8
Kamrup M	33.09	1	1	70.41	1	1	1	1
Karimganj	7.16	0.166	9	6.99	0.077	9	0.121	8

Source: Author's own computation

Table 2 highlights, that in terms of availability of financial services among the highly populated districts of Assam, Kamrup Metro ranks at the top position with an index value of 1, followed by Dibrugarh 0.623. Among all the highly populated districts Dhubri ranks lowest position with an index value of 0.106. Kamrup Metro ranks at the first position in both the sub indicators of the availability index i.e. no. of bank branch per 100000 populations and no. of available ATMs per 100000 populations. However, Dhubri and Karimganj rank lowest in both the sub-indicators of availability index.

Penetration Dimension

To calculate penetration index in the present study no of deposit and credit accounts per 100000 popul-

ations is being taken into account. Table shows the penetration index for the highly populated districts of Assam.

Table 3: Index for Penetration Dimension

Districts	No. of Deposit Account per 100000 populations				No. of Credit Account per 100000 populations				Penetration Index (P _i)	
	DA	DA/Pop	Index	Rank	CA	CA/Pop	CI	Rank	P _i	Rank
Nagaon	6799	359	0.049	8	4338	229	0.077	7	0.063	7
Cachar	101771	586	0.089	4	4244	244	0.083	6	0.086	5
Barpeta	5175	306	0.040	9	3199	189	0.061	8	0.050	8
Kamrup	6157	406	0.057	6	4194	276	0.095	5	0.332	2
Dhubri	3345	240	0.028	10	1794	129	0.037	9	0.032	9
Tinsukia	8273	623	0.096	3	4009	302	0.106	3	0.101	4
Dibrugarh	13286	1001	0.162	2	5399	407	0.147	2	0.154	3
Sonitpur	6477	494	0.073	5	3642	278	0.096	4	0.084	6
Kamrup M	71902	5734	0.999	1	32223	2570	1	1	0.999	1
Karimganj	4455	363	0.050	7	1450	118	0.033	10	0.041	10

Source: Authors own computation

As like the availability index, Kamrup Metro also ranks at the highest position in terms of penetration index with an index value of 1, indicating that the households of the district has highest number of deposits and credit account as compared to the other populated districts of the state. Karimganj ranks at the lowest position in terms of penetration index with an index value of 0.041. In terms of deposit account per 1lakh population Dhubri district ranks lowest with 0.028 index value and Karimganj ranks at the bottom position with an index value of 0.033 in terms of credit account per 1 lakh population.

Usage Dimension

To calculate usage dimension in the present study per capita deposit (PCD), per capita credit (PCC) and C-D ratio of the sample districts has been used. Usage index values of the districts and its ranks are shown in the table:

Table 4: District wise Usage Dimension Index

Districts	PCD (Rs.)			PCC (Rs.)			C-D Ratio			Usage Index (U _i)	
	PCD	Index	Rank	PCC	Index	Rank	C-D Ratio	Index	Rank	U _i	Rank
Nagaon	35250	0.049	8	21273	0.082	7	68	0.538	2	0.223	3
Cachar	58421	0.089	3	24665	0.097	6	46	0.2	8	0.128	9
Barpeta	32010	0.044	9	18516	0.070	8	67	0.523	3	0.212	4
Kamrup	49192	0.073	5	33297	0.134	3	74	0.630	1	0.279	2

Dhubri	27426	0.036	10	13174	0.047	9	55	0.338	5	0.140	8
Tinsukia	62899	0.096	4	30869	0.123	4	54	0.323	6	0.180	6
Dibrugarh	100420	0.160	2	39845	0.162	2	47	0.215	7	0.179	7
Sonitpur	49449	0.073	5	26427	0.104	5	62	0.446	4	0.207	5
Kamrup M	594599	1	1	234105	1	1	46	0.2	8	0.733	1
Karimganj	36655	0.052	7	11941	0.042	10	33	0	10	0.031	10

Source: Author's own computation

From the table 4 it is observed that in terms of usage index also Kamrup Metro ranks at the top position with an index value of 0.733, followed by Kamrup (0.279) and Nagaon (0.223). In case of per capita deposit and credit Kamrup Metro ranks at the top position with an index value of 1 while, Dhubri ranks at the bottom in terms of per capita deposit (0.036) and Karimganj in terms of per capita credit (0.042). Thus, from the above analysis on the three dimensions of financial inclusion i.e. availability, penetration and usage it has been observed that Kamrup Metro ranks at the top position in all the three indexes while Dhubri and Karimganj ranks at the lowest position.

Financial Inclusion Index

Financial Inclusion Index for all the highly populated districts of Assam are calculated using three different dimensions: availability, penetration and usage, these are presented in the table below:

Table 5: Financial Inclusion Index for Highly Populated Districts of Assam

Districts	Availability Index		Penetration Index		Usage Index		FII	
	A _i	Rank	P _i	Rank	U _i	Rank	FII Value	Rank
Nagaon	0.156	6	0.063	7	0.223	3	0.120	8
Cachar	0.195	5	0.086	5	0.128	9	0.253	3
Barpeta	0.144	7	0.050	8	0.212	4	0.208	5
Kamrup	0.205	4	0.332	2	0.279	2	0.271	2
Dhubri	0.106	10	0.032	9	0.140	8	0.092	9
Tinsukia	0.262	3	0.101	4	0.180	6	0.179	6
Dibrugarh	0.623	2	0.154	3	0.179	7	0.253	3
Sonitpur	0.121	8	0.084	6	0.207	5	0.137	7
Kamrup M	1	1	0.999	1	0.733	1	0.976	1
Karimganj	0.121	8	0.041	10	0.031	10	0.064	10

Source: Author's Own Computation

Table 6: Distributions of Districts according to the value of Financial Inclusion Index (FII)

Index Value	Category	FII of Districts
$0.8 \leq FII \leq 1$	Very High Level Financial Inclusion	Kamrup Metro

$0.6 \leq FII \leq 0.8$	High Level Financial Inclusion	-
$0.4 \leq FII \leq 0.6$	Medium Level Financial Inclusion	-
$0.2 \leq FII \leq 0.4$	Low Level Financial Inclusion	Kamrup, Dibrugarh, Cachar, Barpeta
$0 \leq FII \leq 0.2$	Very Low Level Financial Inclusion	Nagaon, Dhubri Tinsukia, Sonitpur, Karimganj

Table 6 reveals that among the highly populated districts of Assam Kamrup Metro comes under the category of very high level financial inclusion with FII value of 0.976. Kamrup, Dibrugarh, Cachar & Barpeta falls under the category of low level financial inclusion with FII values of 0.271, 0.253, 0.253 and 0.208. Further, it is clear from the table that all other remaining districts Nagaon (0.120), Dhubri (0.092), Tinsukia (0.179), Sonitpur (0.137) and Karimganj (0.064) falls under the very low level of financial inclusion. However, it is observed that the low performing districts Dhubri and Karimganj in FII is also performing low in all the three dimensions i.e. availability, penetration and usage.

Conclusion

Financial Inclusion index has been widely accepted measure of financial inclusion. It helps in comparison of financial inclusion status among countries, state and district level. Financial Inclusion Index also helps in identifying various reasons responsible for low inclusion of a nation. In Assam, Government of India along with Reserve Bank of India has adopted various measures over the years for the universal inclusion of financial services but in spite of it there has been prevalence of wide spread disparities among the districts in terms of availability, penetration and usage of financial services. From the present study it has been observed that among the highly populated districts of Assam, Dhubri lacks behind in terms of all the indicators of financial inclusion while Kamrup Metro ranks at the top position. Districts with higher population comes under the category of lower financial inclusion indicating that the appropriate measures are yet to be taken for including the population of the district under the umbrella of financial inclusion.

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