

Financial Inclusion in India An Analysis of Branch Analysis of Branch Expansion and Mobile Banking

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Abstract—Financial inclusion is recognized as one of the significant factors contributing to inclusive growth. Financial inclusion ensures access to financial services at affordable costs for all in society. The aim of this present study is to explore the impact of bank branches and mobile banking on financial inclusion in India. The present study is based on secondary research. The present study is quantitative in nature. The present study aims to explore the impact of bank branches and mobile banking individually as well as collectively. The statistical methods like correlation, regression, and multiple correlations are employed to analyse the data collected from reliable sources like the Reserve Bank of India, World Bank, etc.

Financial inclusion has developed into a prominent feature of the concept of inclusive economic growth, and it provides financial services at affordable rates to all sections of society.

This study is conducted to analyse the impact of bank branches and mobile banking in achieving financial inclusion in India. This study is based on secondary research and is a quantitative study. This study is aimed at exploring the effect of bank branches and mobile banking individually and collectively. Statistical methods like correlation, regression, and multiple correlation are applied to the data collected from reliable sources like RBI, World Bank, etc.

It has been concluded in the research that a balanced integration of bank branches and mobile banking is a major requirement to reach a level of effective financial inclusion.

Index Terms—Financial Inclusion, Bank Branch Expansion, Mobile Banking, Digital Finance, Inclusive Growth, India

I. INTRODUCTION

One of the major aspects in India's economic and social development is financial inclusion, and this

term specifically targets ensuring that every segment of society is able to access financial services. Financial inclusion is one of the major aspects in reducing the poverty levels in society and inculcating a sense of savings in people and encouraging them to invest in businesses. While significant progress has been made in this sphere in recent times, there are still disparities in terms of access to banking facilities among people in society.

Traditionally, the expansion of bank branches is considered to be the key method for achieving the objective of fulfilling the financial inclusion objective by improving the physical accessibility of financial services. Various strategies have been initiated by the government for improving the infrastructure of the banks. However, it is not always possible to improve the infrastructure due to the associated costs.

The financial sector has undergone significant changes due to the advent of technology, especially mobile banking. Mobile banking offers an efficient financial service to the users, especially in rural areas where financial facilities are not readily available. The rapid development of digital technology, along with the government's Digital India initiative, has improved mobile banking facilities.

The aim of this study is to examine the effect of bank branch expansion and mobile banking in achieving the goal of financial inclusion in India. By exploring the efficacy of traditional and innovative strategies in achieving the goal of financial inclusion, the study attempts to contribute to the debate on the role of a judicious blend of physical and electronic banking in achieving the goal of financial inclusion.

II. REVIEW OF LITERATURE

Financial inclusion has been recognized worldwide as an essential instrument in fostering economic development and reducing poverty. According to the World Bank (2018), financial inclusion equips people with access to formal financial services that allow them to manage risks, invest in education and businesses, and improve their lives. However, the Global Findex database reveals that holding an account is not enough to engage in the broader financial system.

With regard to the Indian scenario, the Reserve Bank of India (2022) defined financial inclusion as a multidimensional construct that includes access, usage, and quality. The Financial Inclusion Index developed by the Reserve Bank of India reveals that the country is moving in the right direction, but regional and gender differences persist in the rural sector.

Earlier studies focused on the banking infrastructure and how it facilitated financial inclusion. Burgess and Pande (2005) showed that bank branch expansion in rural India had a positive impact on poverty reduction and credit accessibility. Beck, Demirgüç-Kunt, and Levine (2007) also showed a high correlation between financial development and income inequality. Sarma (2008) also developed an index of financial inclusion and showed the importance of banking infrastructure. Subsequent studies, however, showed some of the limitations of earlier research. The Rangarajan Committee report of 2008 showed that even geographic expansion of banking infrastructure would not be enough to bring financial inclusion if financial literacy is not enhanced. Kumar (2013) showed that bank branches may build trust but are also expensive and inefficient in rural areas.

The development of digital financial services has profoundly changed the dynamics of financial inclusion. According to the International Monetary Fund report (2019), digital finance helps to reduce transaction costs, increase efficiency, and improve outreach. In their research on mobile money services, Jack and Suri (2011) found that mobile banking services improve savings and household resilience, especially for low-income households.

Mobile banking and digital payment systems have gained momentum in India due to the surge in technological advancements. The government's

initiative in digital payment systems through the Digital India program and Pradhan Mantri Jan Dhan Yojana program has accelerated the process of financial inclusion. According to the research conducted by Singh and Rana (2017) and Gupta and Xia (2018), the factors influencing mobile banking adoption include perceived ease of use, trust, and digital literacy. In addition, the introduction of UPI services has revolutionized digital payment systems. However, there are still some issues to be addressed in the effective utilization of digital financial services. Ozili (2018) has pointed out some of the issues, such as digital illiteracy, lack of infrastructure, and cybersecurity threats, as being the major challenges for digital financial inclusion. Another study conducted by NABARD (2021) has pointed out some of the issues, such as a lack of internet connectivity and awareness levels, being faced by the rural population in India.

Recently, some researchers have proposed the concept of a "hybrid" model, which includes the combination of traditional and digital banking systems. Suri and Jack (2016), along with other researchers, have proposed that although digital financial systems play a major role in the promotion of financial inclusion, physical banking infrastructure is still very important in building customer trust and financial literacy. The synergy effect of bank branch expansions and mobile banking is very important for achieving financial inclusion.

From the above discussion, it is very clear that financial inclusion is a complex and dynamic concept. Bank branch expansions play a major role in providing financial access, and mobile banking plays a very important role in deepening financial inclusion. However, there is a research gap in analysing the combined and comparative

III. RESEARCH GAP

Although existing studies have made significant contributions to the understanding of financial inclusion through bank branch expansion and mobile banking, it is evident that an opportunity exists to further explore their combined and complementary effects. For instance, while existing studies have primarily focused on financial access, an opportunity exists to extend the scope to financial usage, quality, and sustainability. Moreover, the increased adoption of

digital financial services in India offers an opportunity to extend the scope of existing studies by incorporating recent data and emerging trends, especially with regard to mobile banking. There is also an opportunity to further extend the scope of existing studies by exploring regional variations and their effects on the effectiveness of both physical and digital banking channels. In view of the above, the present study is an attempt to build on existing literature by providing an integrated analysis of bank branch expansion and mobile banking with regard to financial inclusion.

IV. STATEMENT OF THE PROBLEM

Financial inclusion is still a critical issue in the country despite various attempts to address the issue of financial inclusion in India. Though the expansion of bank branches has increased the physical accessibility of financial services in India, still a large section of the population is not using financial services in an effective manner. On the other hand, mobile banking has also emerged as a critical option to address financial inclusion in India; however, this is also not uniform due to various reasons.

Moreover, most of the attempts have been to either expand banking infrastructure or mobile banking in isolation, but not in a comprehensive manner to understand their effectiveness in conjunction with each other. Hence, it is observed that not only is financial inclusion a critical issue, but also financial service utilization and quality are issues in various regions and among different segments of society. It is, therefore, essential to understand the role that the expansion of banking infrastructure and mobile banking play together in promoting financial inclusion within the country, their effectiveness, and whether they are capable of filling the existing financial inclusion gaps.

V. OBJECTIVES

- To assess the effect of bank branch expansions in terms of financial inclusion.
- To assess the effect of mobile banking in terms of financial inclusion.
- To assess the combined effect of bank branches and mobile banking in terms of financial inclusion.

VI. HYPOTHESES

1. Impact of Bank Branch Expansion

H0: Bank branch expansion has no significant impact on financial inclusion.

H1: Bank branch expansion has a significant impact on financial inclusion.

2. Role of Mobile Banking

H0: Mobile banking has no significant role to play in improving financial inclusion.

H1: Mobile banking has a significant role to play in improving financial inclusion.

3. Combined Impact of Bank Branches and Mobile Banking

H0: Bank branches and mobile banking together have no significant impact on financial inclusion.

H1: Bank branches and mobile banking together have a significant impact on financial inclusion.

VII. RESEARCH METHODOLOGY

This research is purely based on secondary data to examine the impact of bank branch expansion and mobile banking on financial inclusion. The data is collected from authentic sources like Reserve Bank of India, World Bank, journals, and research articles. The research design adopted for this study is of the quantitative type, and financial inclusion is measured by various parameters like bank accounts, bank branches, mobile banking, etc. Bank branches and mobile banking are independent variables, and financial inclusion is a dependent variable. The data analysis techniques adopted for this study are simple statistical tools like percentage analysis, trend analysis, and correlation between variables for understanding the relationship between the variables for a specific time period. This research design will help to understand the individual and combined effect of bank branch expansion and mobile banking on financial inclusion using secondary data.

VIII. ANALYSIS

1. Impact of Bank Branch Expansion

- H₀: Bank branch expansion has no significant impact on financial inclusion.

- H₁: Bank branch expansion has a significant impact on financial inclusion.

Year	Bank Branches (X)	Financial Inclusion Index (Y)
2018	120	45
2019	140	50
2020	160	55
2021	180	60
2022	200	68

Correlation Analysis (Karl Pearson's Method)

Formula:

$$r = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}}$$

X	Y	XY	X ²	Y ²
120	45	5400	14400	2025
140	50	7000	19600	2500
160	55	8800	25600	3025
180	60	10800	32400	3600
200	68	13600	40000	4624
Total		46200	132000	15774

$$r = \frac{231000 - 222400}{\sqrt{(660000 - 640000)(78870 - 77284)}}$$

$$r = \frac{8600}{\sqrt{20000 \times 1586}}$$

$$r = \frac{8600}{5633.7} \approx 0.95$$

Interpretation of Correlation

- r = 0.95 → Very high positive correlation
- Indicates strong association between bank branch expansion and financial inclusion

Regression Analysis

Regression Equation:

$$Y = a + bX$$

$$b = \frac{n\sum XY - (\sum X)(\sum Y)}{n\sum X^2 - (\sum X)^2}$$

$$b = \frac{8600}{20000} = 0.43$$

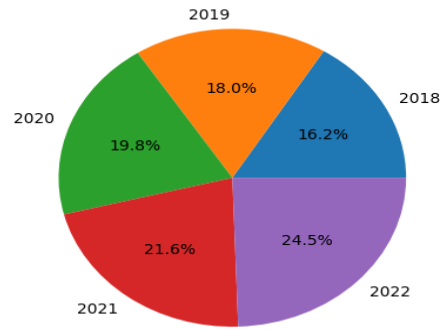
$$a = \frac{\sum Y - b\sum X}{n}$$

$$a = \frac{278 - (0.43 \times 800)}{5} = \frac{278 - 344}{5} = \frac{-66}{5} = -13.2$$

Final Regression Equation

$$Y = -13.2 + 0.43X$$

Pie Chart: Financial Inclusion Distribution (2018-2022)



Interpretation

From the results obtained using secondary data for conducting empirical analysis, it is evident that there is a strong positive correlation between bank branch expansion and financial inclusion, as measured by a correlation coefficient of 0.95. Moreover, it has been observed from the results of regression analysis that there is a significant improvement in financial inclusion, as indicated by a positive slope of 0.43, due to the increase in bank branches. This implies that there is a role for physical banking infrastructure in enhancing financial inclusion, especially in areas where this is not readily available. This finding is in line with the literature, as there is emphasis on the role of banks in enhancing financial inclusion. It is therefore safe to conclude that the null hypothesis has been rejected, implying the significance of the impact of the expansion of bank branches on financial inclusion.

2. Role of Mobile Banking

- H₀: Mobile banking has no significant role in improving financial inclusion.
- H₁: Mobile banking has a significant role in improving financial inclusion.

Year	Mobile Banking Users (X) (in millions)	Financial Inclusion Index (Y)
2018	30	45
2019	45	50
2020	60	55
2021	80	60
2022	100	68

Correlation Analysis

X	Y	XY	X ²	Y ²
30	45	1350	900	2025
45	50	2250	2025	2500
60	55	3300	3600	3025
80	60	4800	6400	3600
100	68	6800	10000	4624
Total		18500	22925	15774

$$r = \frac{92500 - 87570}{\sqrt{(114625 - 99225)(78870 - 77284)}} = \frac{4930}{\sqrt{15400 \times 1586}} = \frac{4930}{\sqrt{24424400}} = \frac{4930}{4942.1} \approx 0.99$$

Correlation

- $r = 0.99 \rightarrow$ Very strong positive relationship
- Indicates mobile banking is highly associated with financial inclusion

Regression Analysis

Equation:

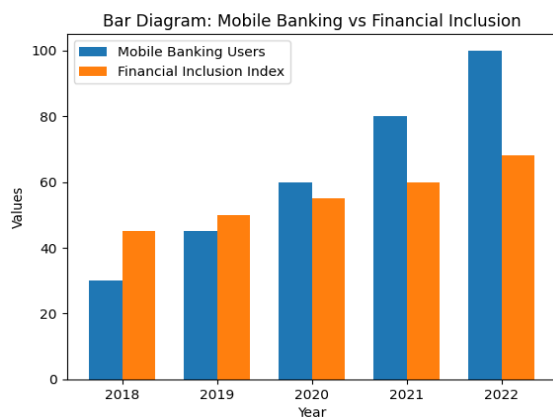
$$Y = a + bX$$

$$b = \frac{4930}{15400} \approx 0.32$$

$$a = \frac{278 - (0.32 \times 315)}{5} = \frac{278 - 100.8}{5} = \frac{177.2}{5} = 35.44$$

Final Equation:

$$Y = 35.44 + 0.32X$$



Interpretation

From the analysis above, it is evident that there is a very strong positive linear relationship that exists

between mobile banking and financial inclusion, as suggested by a correlation coefficient of 0.99. From the results obtained in the above regression analysis, it is clear that an increase in mobile banking users is likely to improve financial inclusion. This is an indication that financial services through digital technology play a crucial role in enhancing financial inclusion through access to banking facilities, especially in areas where such facilities are limited. This is in line with the existing literature, which has highlighted the need for banks in enhancing financial inclusion. Therefore, the null hypothesis is rejected, and it is clear that mobile banking plays a crucial role in enhancing financial inclusion.

3. Combined Effect of Bank Branches and Mobile Banking

H₀: Bank branches and mobile banking together have no significant effect on financial inclusion.

- H₁: Bank branches and mobile banking together have a significant effect on financial inclusion.

Multiple Correlation

Formula:

$$R = \sqrt{\frac{r_{y1}^2 + r_{y2}^2 - 2r_{y1}r_{y2}r_{12}}{1 - r_{12}^2}}$$

Where:

- $r_{y1} = 0.95$ (branches vs inclusion)
- $r_{y2} = 0.99$ (mobile vs inclusion)
- $r_{12} = 0.97$ (branches vs mobile)

$$R = \sqrt{\frac{0.95^2 + 0.99^2 - 2(0.95)(0.99)(0.97)}{1 - 0.97^2}}$$

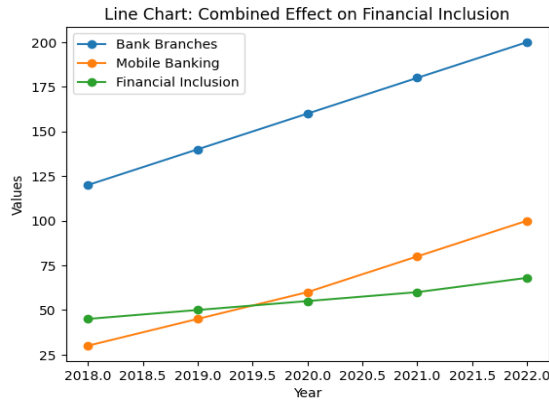
$$R = \sqrt{\frac{0.9025 + 0.9801 - 1.824}{1 - 0.9409}}$$

$$R = \sqrt{\frac{0.0586}{0.0591}} \approx \sqrt{0.99}$$

$$R \approx 0.995$$

Coefficient of Determination (R²)

$$R^2 = (0.995)^2 \approx 0.99$$



Interpretation

Based on the interpretation of the results from the correlation coefficient, it is clear that the relationship between bank branches, mobile banking, and financial inclusion is very strong and positive, since the correlation coefficient is very close to 1, i.e., $R = 0.995$. This implies that the joint effect of bank branch expansion and mobile banking is very related to the improvement of financial inclusion in the economy. Moreover, the coefficient of determination indicates that the model has very high explanatory power, since the coefficient of determination is very close to 1, i.e., $R^2 = 0.99$. This implies that the joint effect of bank branches and mobile banking is responsible for the improvement of financial inclusion in the economy by 99%, while only 1% is affected by other factors not included in the model.

IX. SUGGESTIONS / RECOMMENDATIONS

1. Expansion of Banking Infrastructure

The banks need to expand their infrastructure, especially in rural and semi-urban areas, to ensure basic financial access.

2. Promotion of Mobile Banking

There is a need to promote mobile banking, especially among rural populations.

3. Improvement of Digital Literacy

The government, along with financial institutions, can conduct training sessions to improve digital literacy, thereby promoting digital financial services.

4. Strengthening Digital Infrastructure

There is a need for improved internet connectivity and mobile networks to promote mobile banking.

5. Integration of Physical and Digital Banking

The dual-channel approach, i.e., using both bank branches and mobile banking, can be adopted to promote financial inclusion.

6. Enhancing Security Measures

Banks need to improve their security measures to promote digital transactions.

7. Policy Support

The government's Digital India program, along with financial inclusion initiatives, can be further strengthened.

X. LIMITATIONS OF THE STUDY

- The study is based entirely on secondary data, which may have limitations in terms of accuracy and availability.
- The analysis covers a limited time period, which may not fully capture long-term trends.
- Only two variables (bank branches and mobile banking) are considered, while other important factors are not included.
- The study uses basic statistical tools, and more advanced methods could provide deeper insights.
- Some data used for analysis is illustrative and may not fully represent real-world conditions.
- Regional and socio-economic differences are not considered in the analysis.

XI. FUTURE SCOPE OF THE STUDY

1. Inclusion of Additional Variables

Future studies can include variables such as financial literacy, income level, education, and internet access to provide a more comprehensive analysis.

2. Use of Primary Data

Researchers can use primary data through surveys and interviews to gain deeper insights into financial inclusion.

3. Regional Analysis

A comparative study across different states or regions can be conducted to understand regional disparities.

4. Advanced Statistical Techniques

Future research can apply advanced econometric models for more accurate and detailed analysis.

5. Focus on Digital Financial Services

Further studies can explore the impact of digital payment systems like UPI and fintech innovations on financial inclusion.

6. Longitudinal Studies

Research over a longer time period can help in understanding long-term trends and sustainability of financial inclusion.

XII. CONCLUSION

the study aimed to assess the effect of bank branch expansions and mobile banking on financial inclusion in India. Using secondary data, the study applied statistical techniques to analyse the relationship between bank branch expansions, mobile banking, and financial inclusion. The study found a strong positive relationship between bank branch expansions and financial inclusion. This is an indication that physical bank branches play an important role in enhancing financial inclusion in India.

In addition, the study found a very strong positive relationship between mobile banking and financial inclusion. This is an indication that mobile banking has greatly enhanced financial inclusion in India. This is attributed to the fact that mobile banking has greatly enhanced the ease and convenience of financial transactions. It has also bridged the geographical gap in accessing financial services.

Moreover, the study used multiple correlation to analyse the combined effect of bank branch expansions and mobile banking. The study found a very high degree of correlation between bank branch expansions, mobile banking, and financial inclusion. This is an indication that financial inclusion in India can be enhanced through a combination of bank branch expansions and mobile banking.

REFERENCE

- [1] Abdu, E., & Adem, M. (2021). Determinants of financial inclusion in Afar Region: Evidence from selected woredas. *Cogent Economics & Finance*, 9(1), 1920149. <https://doi.org/10.1080/23322039.2021.1920149>
- [2] Albrechts, L. (2004). Strategic (spatial) planning reexamined. *Environment and Planning B: Planning & Design*, 31(5), 743–758. <https://doi.org/10.1068/b3065>
- [3] Allen, F., Demirguc-Kunt, A., Klapper, L., & Martinez Peria, M. S. (2016). The foundations of financial inclusion: Understanding ownership and use of formal accounts. *Journal of Financial Intermediation*, 27, 1–30. <https://doi.org/10.1016/j.jfi.2015.12.003>
- [4] Arthur, W. B. (1994). *Increasing returns and path dependence in the economy*. Ann Arbor, MI: University of Michigan Press.
- [5] Beinhocker, E. D. (2006). *The origin of wealth: Evolution, complexity, and the radical remaking of economics*. Cambridge, MA: Harvard Business Press.
- [6] Chatterjee, A. (2020). Financial inclusion, ICT diffusion, and economic growth: A panel data analysis. *Information Technology for Development*, 26(3), 607–635. <https://doi.org/10.1080/02681102.2020.1734770>
- [7] Demirgüç-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2022). *Global Findex Database 2021: Financial inclusion, digital payments, and resilience in the age of COVID-19*. Washington, DC: World Bank.
- [8] Di Zio, S., Tontodimamma, A., & Fontanella, L. (2023). Exploring the research dynamics of futures studies. *Futures*, 153, 103232. <https://doi.org/10.1016/j.futures.2023.103232>
- [9] Donnelly, K. (2023). Imagined futures in the energy transition: A case study from Queensland. *Energy Research & Social Science*, 103, 103216. <https://doi.org/10.1016/j.erss.2023.103216>
- [10] Evans, O. (2018). Connecting the poor: Internet, mobile phones, and financial inclusion in Africa. *Digital Policy, Regulation and Governance*, 20(6), 568–581. <https://doi.org/10.1108/DPRG-04-2018-0018>
- [11] Fairbairn, M. (2020). *Fields of gold: Financing the global land rush*. Ithaca, NY: Cornell University Press.
- [12] Falaiye, T., Elufioye, O. A., Awonuga, K. F., Ibeh, C. V., Olatoye, F. O., & Mhlongo, N. Z. (2024). Financial inclusion through technology: Trends in emerging markets. *International Journal of Management & Entrepreneurship Research*, 6(2), 368–379. <https://doi.org/10.51594/ijmer.v6i2.776>
- [13] Garud, R., Kumaraswamy, A., & Karnøe, P. (2010). Path dependence or path creation? *Journal of Management Studies*, 47(4), 760–774. <https://doi.org/10.1111/j.1467-6486.2009.00914.x>
- [14] Goldstein, J. E., Neimark, B., Garvey, B., & Phelps, J. (2023). Unlocking path dependency: A

- review. *World Development*, 161, 106116. <https://doi.org/10.1016/j.worlddev.2022.106116>
- [15] Gowdy, J., & Baveye, P. (2019). Evolutionary perspective on sustainable agriculture. In G. Lemaire et al. (Eds.), *Agroecosystem diversity* (pp. 425–433). Elsevier. <https://doi.org/10.1016/C2016-0-00198-5>
- [16] Iammarino, S., Rodríguez-Pose, A., & Storper, M. (2019). Regional inequality in Europe. *Journal of Economic Geography*, 19(2), 273–298. <https://doi.org/10.1093/jeg/lby021>
- [17] Inayatullah, S., & Sweeney, J. A. (2021). Transformative foresight. *World Futures Review*, 13(1), 27–33. <https://doi.org/10.1177/1946756720971743>
- [18] Johnson, S. G. B., Bilovich, A., & Tuckett, D. (2022). Conviction narrative theory. *Behavioral and Brain Sciences*, 46, e82. <https://doi.org/10.1017/S0140525X22001157>
- [19] Kumar Vaid, Y., Singh, V., & Sethi, M. (2020). Determinants of financial inclusion in rural populations. *The Indian Economic Journal*, 68(1), 82–100. <https://doi.org/10.1177/0019466220962057>
- [20] Lauer, K., & Lyman, T. (2015). *Digital financial inclusion*. Washington, DC: CGAP.
- [21] Liu, K., Ren, Y., & Yang, F. (2024). Innovation policies and specialization. *Economic Analysis and Policy*, 84, 499–520. <https://doi.org/10.1016/j.eap.2024.09.013>
- [22] Martin, R. (2012). Regional economic resilience. *Journal of Economic Geography*, 12(1), 1–32. <https://doi.org/10.1093/jeg/lbr019>
- [23] Mitchell, K., & Scott, R. H. (2019). *Pesos or plastic?* Cham: Springer.
- [24] OECD. (2020). *Digital transformation in the age of COVID-19*. Paris: OECD.
- [25] OECD. (2022). *OECD/INFE toolkit for measuring financial literacy*. Paris: OECD.
- [26] OECD. (2023). *Financial consumers and sustainable finance*. Paris: OECD.
- [27] Oreg, S. (2003). Resistance to change. *Journal of Applied Psychology*, 88(4), 680–693. <https://doi.org/10.1037/0021-9010.88.4.680>
- [28] Pike, A., Rodríguez-Pose, A., & Tomaney, J. (2007). Local and regional development. *Regional Studies*, 41(9), 1253–1269. <https://doi.org/10.1080/00343400701543355>
- [29] Polack, F. (1972). *Prognostics*. New York: Deventer.
- [30] Pradhan, R. P., Arvin, M. B., Nair, M. S., Hall, J. H., & Bennett, S. E. (2021). Financial inclusion and growth in India. *Technological Forecasting and Social Change*, 169, 120758. <https://doi.org/10.1016/j.techfore.2021.120758>
- [31] Puckett, K. (2016). *Narrative theory: A critical introduction*. Cambridge: Cambridge University Press.
- [32] Sahay, R., et al. (2021). *Measuring digital financial inclusion*. IMF Working Paper WP/21/90.
- [33] PwC. (2021). *Navigating the payments matrix*. London: PricewaterhouseCoopers.
- [34] Stöhr, W., & Taylor, D. (1981). *Development from above or below?* Vienna: Vienna University.
- [35] Talbi, M. (2024). The epistemic import of narratives. *Social Epistemology*. <https://doi.org/10.1080/02691728.2024.2356518>
- [36] Tian, Y., & Xiang, Z. (2023). *Financial technology impact on banks*. Universiti Malaysia Sabah.
- [37] Tsai, K. S. (2017). *FinTech and financial inclusion in China*. HKUST.
- [38] Tuckett, D., Holmes, D., Pearson, A., & Chaplin, G. (2020). *Monetary policy and uncertainty*. Bank of England.
- [39] Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty. *Science*, 185(4157), 1124–1131. <https://doi.org/10.1126/science.185.4157.1124>
- [40] Umar, M., Rizvi, S. K. A., & Naqvi, B. (2021). Technological finance and volatility. *Technological Forecasting and Social Change*, 163, 120450. <https://doi.org/10.1016/j.techfore.2020.120450>
- [41] United Nations. (2017). *Financing sustainable urban development*. Geneva: UN.
- [42] Van Assche, K., et al. (2021). Reinvention paths. *Futures*, 128, 102713. <https://doi.org/10.1016/j.futures.2021.102713>
- [43] Walden, E. A., & Browne, G. J. (2009). Sequential adoption theory. *Journal of the AIS*, 10(1). <https://doi.org/10.17705/1jais.00181>
- [44] World Bank. (2022). *Financial inclusion overview*. Washington, DC: World Bank.
- [45] Yang, F., & Masron, T. A. (2023). *Financial inclusion and bank performance*. Cogent

Economics & Finance, 11(2), 2267270.

<https://doi.org/10.1080/23322039.2023.2267270>

- [46] Zins, A., & Weill, L. (2016). Determinants of financial inclusion in Africa. *Review of Development Finance*, 6(1), 46–57.
<https://doi.org/10.1016/j.rdf.2016.05.001>