ISBN: 978-93-48620-99-6

TRENDS AND TRANSFORMATIONS IN HUMANITIES, COMMERCE AND MANAGEMENT RESEARCH

EDITORS:
DR. L. THIRUPATHI
DR. RANVIR KUMAR
DR. SUMAN KALYANI
MS. ARYASREE M

Bhumi Publishing, India

First Edition: May 2025

Trends and Transformations in Humanities,

Commerce and Management Research

(ISBN: 978-93-48620-99-6)

Editors

Dr. L. Thirupathi

Department of Political Science,

Government City College (A),

Hyderabad, Telangana State

Dr. Ranvir Kumar

Bihar Agricultural University,

Sabour (Bhagalpur),

Bihar

Dr. Suman Kalyani

Bihar Agricultural University,

Sabour (Bhagalpur),

Bihar

Ms. Aryasree M

Department of Commerce,

Kuriakose Gregorios College,

Pampady, Kerala

Bhumi Publishing

May 2025

Title: Trends and Transformations in Humanities, Commerce and Management Research

Editors: Dr. L. Thirupathi, Dr. Ranvir Kumar, Dr. Suman Kalyani, Ms. Aryasree M

First Edition: May 2025

ISBN: 978-93-48620-99-6

Published by:

Bhumi Publishing

BHUMI PUBLISHING

Nigave Khalasa, Tal – Karveer, Dist – Kolhapur, Maharashtra, INDIA 416 207

E-mail: bhumipublishing@gmail.com

PREFACE

In an era marked by rapid globalization, digital innovation, and shifting socio-economic paradigms, the fields of Humanities, Commerce, and Management are undergoing profound transformations. The need to re-examine conventional theories, explore new perspectives, and adopt interdisciplinary approaches has never been more vital. This volume, Trends and Transformations in Humanities, Commerce and Management Research, is a timely response to this dynamic academic and professional landscape.

The book brings together a diverse collection of scholarly contributions that reflect contemporary trends, critical analyses, and empirical investigations. Researchers, educators, and practitioners from various disciplines have come together to address emerging issues, ranging from the evolution of business practices and consumer behavior to the impact of technology on literature, culture, and communication. The chapters highlight the growing interconnectedness of knowledge domains and the importance of collaborative inquiry in addressing real-world challenges.

In the Humanities, the volume explores how literature, philosophy, language, and cultural studies are adapting to digital media and evolving social narratives. In Commerce, the focus shifts to financial systems, trade patterns, and the transformation of market dynamics in light of global events. The Management section addresses innovations in leadership, organizational behavior, marketing strategies, and human resource practices in a data-driven world.

This compilation aims to serve as a valuable resource for students, researchers, and professionals who seek to understand and contribute to the ongoing dialogues within and across these disciplines. It encourages critical thinking, fosters academic discourse, and promotes a holistic understanding of change in both theoretical and practical dimensions.

We express our sincere gratitude to all the contributors, peer reviewers, and editorial team members whose efforts have shaped this book. We also extend our thanks to the academic institutions and organizations that supported this endeavor. It is our hope that this volume will inspire further research and collaboration, nurturing a vibrant academic community that is well-equipped to navigate the complexities of the 21st century.

- Editors

TABLE OF CONTENT

CAREER ASPIRATIONS AS A MOTIVATOR IN ENGLISH LANGUAGE LEARNING AMONG SECONDARY SCHOOL STUDENTS

Supriya Singh

Khawaja Moinuddin Chishti Language University, Lucknow

Corresponding author E-mail: supriya16may@gmail.com

Abstract:

English language proficiency is increasingly vital in shaping career aspirations among secondary school students in a globalized world. This chapter explores the interplay between English language learning and career goals, emphasizing how linguistic competence influences students' professional ambitions. Drawing on theoretical frameworks, empirical studies, and socio-cultural perspectives, the chapter examines motivations, challenges, and contextual factors affecting students' aspirations. It highlights the role of English as a gateway to global opportunities, the impact of socio-economic and cultural contexts, and the influence of educational systems. Recommendations for educators and policymakers are provided to foster English learning environments that align with students' career aspirations.

Keywords: English Language, Career Aspirations, Secondary School Students

Introduction:

In an interconnected global economy, English serves as a lingua franca, bridging communication across cultures and industries. For secondary school students, mastering English is not merely an academic requirement but a critical tool for accessing diverse career opportunities. English proficiency enhances employability in fields such as technology, business, healthcare, and academia, where global communication is essential (Crystal, 2012). This chapter investigates how English language learning shapes career aspirations among secondary school students, exploring motivational factors, socio-cultural influences, and educational contexts. By synthesizing theoretical perspectives and empirical evidence, the chapter underscores the significance of English as a catalyst for professional success and offers practical recommendations for stakeholders.

Theoretical Framework

The study of career aspirations and English language learning is grounded in several theoretical frameworks. Self-Determination Theory (SDT) posits that motivation—intrinsic and extrinsic—drives language acquisition and career goal-setting (Deci & Ryan, 2000). Intrinsically motivated students learn English for personal fulfillment, while extrinsically motivated students view it as a means to achieve career objectives. Social Cognitive Career Theory (SCCT) further explains how self-efficacy, outcome expectations, and environmental factors shape career aspirations (Lent, Brown, & Hackett, 1994). Proficiency in English enhances students' self-efficacy, enabling them to envision careers in competitive, globalized sectors. Additionally, Sociocultural Theory emphasizes the role of cultural and social contexts in language learning, highlighting how family, peers, and societal expectations influence students' aspirations (Vygotsky, 1978).

English Language Learning and Career Aspirations

English proficiency is a prerequisite for many high-demand careers. For instance, industries such as information technology, international business, and tourism prioritize candidates with strong English communication skills (Graddol, 2006). Secondary school students, typically aged 12–18, are at a formative stage where career aspirations begin to crystallize. English language learning during this period shapes their professional trajectories in several ways.

Access to Global Opportunities

English serves as a gateway to international education and employment. Students proficient in English can pursue higher education abroad, access scholarships, and compete in global job markets (Kirkpatrick, 2010). For example, proficiency in English is often a requirement for programs in STEM (Science, Technology, Engineering, and Mathematics) fields, which are highly sought after globally. Students aspiring to careers in these areas recognize English as a critical skill, motivating them to invest in language learning.

Enhanced Employability

Employers value English proficiency for its role in effective communication, collaboration, and innovation. A study by the British Council (2018) found that 70% of employers in non-English-speaking countries prioritize candidates with English skills, particularly for roles requiring cross-border interactions. Secondary school students aware of these demands often align their English learning efforts with career goals in sectors like finance, marketing, or diplomacy.

Cultural and Social Mobility

English proficiency facilitates cultural and social mobility, enabling students to engage with diverse communities and professional networks. For instance, students from marginalized backgrounds may view English as a tool for upward mobility, allowing them to overcome socio-economic barriers and pursue careers in competitive fields (Pennycook, 2017).

Motivational Factors in English Language Learning

Motivation is a key driver of English language acquisition and its link to career aspirations. According to SDT, students' motivations can be categorized as follows: Intrinsic Motivation: Students who enjoy learning English for its intellectual stimulation are more likely to excel and pursue careers that leverage linguistic skills, such as journalism or translation (Noels, Pelletier, & Vallerand, 2000).

Extrinsic Motivation: Career-oriented students are motivated by external rewards, such as job prospects or higher salaries. For example, students aspiring to become software engineers may prioritize English to access global tech communities or work for multinational corporations.

Integrative Motivation: Some students learn English to integrate into global cultures or professional communities, fostering aspirations for careers in international relations or global NGOs (Gardner, 1985).

Empirical studies support these findings. A survey of secondary school students in Malaysia revealed that 85% linked English proficiency to better career prospects, with many aspiring to careers in business and technology (Thang, Ting, & Nurjanah, 2011). Similarly, research in China showed that students with high English proficiency were more likely to pursue international careers (Hu & Reiterer, 2009).

Challenges in English Language Learning

Despite its importance, English language learning poses challenges that impact students' career aspirations:

Socio-Economic Barriers

Access to quality English education varies across socio-economic groups. Students in under-resourced schools often lack qualified teachers, learning materials, or technology, limiting their proficiency and career options (Kirkpatrick, 2010).

For example, rural students may aspire to global careers but face barriers due to inadequate language instruction.

Cultural Resistance

In some contexts, English is perceived as a threat to local languages and cultures, leading to resistance among students or communities (Pennycook, 2017). This can reduce motivation and hinder career aspirations tied to English proficiency.

Pedagogical Limitations

Traditional teaching methods, such as rote memorization, may fail to engage students or develop practical communication skills. Students may struggle to apply English in real-world professional contexts, dampening their career ambitions (Richards & Rodgers, 2014).

Psychological Factors

Language anxiety and low self-efficacy can deter students from pursuing English-intensive careers. Fear of making mistakes or negative feedback may discourage students from engaging with the language (Horwitz, Horwitz, & Cope, 1986).

Contextual Influences on Career Aspirations

Career aspirations related to English language learning are shaped by various contextual factors:

Family and Peer Influence

Parental expectations and peer support significantly influence students' motivations. Families that value English as a tool for success often encourage students to pursue language-intensive careers (Bourdieu, 1986). Similarly, peers who share career-oriented language goals create a supportive learning environment.

Educational Systems

The structure of educational systems impacts English learning outcomes. Countries with robust English curricula, such as Singapore or India, produce students with higher proficiency and clearer career aspirations (Graddol, 2006). In contrast, systems with limited focus on communicative competence may hinder students' professional ambitions.

Globalization and Technology

The rise of digital platforms and global communication has amplified the importance of English. Students exposed to online resources, such as MOOCs or professional networks, are more likely to aspire to careers requiring English proficiency (Crystal, 2012). Technology also enables self-directed learning, allowing motivated students to overcome institutional limitations.

Case Studies and Empirical Evidence

Several studies illustrate the link between English language learning and career aspirations. In India, a study of secondary school students found that English proficiency was a key determinant of aspirations for careers in IT and business process outsourcing (BPO) sectors (Azam, Chin, & Prakash, 2013). In South Korea, students with strong English skills were more likely to pursue careers in global corporations or academia, driven by the country's emphasis on internationalization (Park & Abelmann, 2004). Conversely, in rural areas of Sub-Saharan Africa, limited access to English education restricted students' career aspirations, confining them to local, low-skill jobs (Cleghorn & Rollnick, 2002).

Recommendations for Educators and Policymakers

To align English language learning with students' career aspirations, the following strategies are recommended:

- **Curriculum Enhancement:**

Develop curricula that emphasize communicative competence, critical thinking, and real-world applications of English. Incorporate career-oriented modules, such as business English or technical writing, to prepare students for professional contexts.

- **Teacher Training:**

Invest in professional development for English teachers, focusing on interactive and student-centered pedagogies. Teachers should be equipped to address diverse learning needs and foster motivation.

- **Equitable Access:**

Address socio-economic disparities by providing resources, such as digital tools or language labs, to under-resourced schools. Scholarships and outreach programs can support marginalized students' aspirations.

- **Career Guidance:**

Integrate career counseling into English language programs to help students align their linguistic skills with professional goals. Workshops and mentorship programs can expose students to English-intensive careers.

- **Community Engagement:**

Collaborate with families and communities to promote the value of English while respecting local languages and cultures. Community-based language programs can reduce resistance and enhance motivation.

Conclusion:

English language learning is a powerful determinant of career aspirations among secondary school students. By enhancing access to global opportunities, employability, and social mobility, English proficiency empowers students to pursue diverse professional paths. However, challenges such as socio-economic sores, cultural resistance, and pedagogical limitations must be addressed to maximize its impact. Through targeted educational reforms, teacher training, and community engagement, stakeholders can foster English learning environments that align with students' career goals. As globalization continues to shape the professional landscape, English will remain a critical tool for empowering the next generation of professionals.

References:

1. Azam, M., Chin, A., & Prakash, N. (2013). The returns to English-language skills in India. Economic Development and Cultural Change, 61(2), 335–367.
2. Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), Handbook of theory and research for the sociology of education (pp. 241–258). Greenwood.
3. British Council. (2018). The future of English in a globalized world. British Council.
4. Cleghorn, A., & Rollnick, M. (2002). The role of English in science education in Sub-Saharan Africa. Science Education, 86(6), 765–781.
5. Crystal, D. (2012). English as a global language (2nd ed.). Cambridge University Press.
6. Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. Psychological Inquiry, 11(4), 227–268.
7. Gardner, R. C. (1985). Social psychology and second language learning: The role of attitudes and motivation. Edward Arnold.
8. Graddol, D. (2006). English next: Why global English may mean the end of 'English as a foreign language'. British Council.
9. Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. The Modern Language Journal, 70(2), 125–132.
10. Hu, X., & Reiterer, S. M. (2009). Personality and pronunciation talent in second language acquisition. Language Learning, 59(Suppl. 1), 163–191.
11. Kirkpatrick, A. (2010). English as a lingua franca in ASEAN: A multilingual model. Hong Kong University Press.
12. Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. Journal of Vocational Behavior, 45(1), 79–122.

13. Noels, K. A., Pelletier, L. G., & Vallerand, R. J. (2000). Why are you learning a second language? Motivational orientations and self-determination theory. Language Learning, 50(1), 57–85.
14. Park, S. J., & Abelmann, N. (2004). Class and cosmopolitan striving: Mothers' management of English education in South Korea. Anthropological Quarterly, 77(4), 645–672.
15. Pennycook, A. (2017). The cultural politics of English as an international language. Routledge.
16. Richards, J. C., & Rodgers, T. S. (2014). Approaches and methods in language teaching (3rd ed.). Cambridge University Press.
17. Thang, S. M., Ting, S. L., & Nurjanah, M. J. (2011). Attitudes and motivation of Malaysian secondary students towards learning English. The English Teacher, 40, 56–72.
18. Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.

TIME SERIES MODELING OF THE DETERMINANTS OF CAPITAL STRUCTURE IN INDIAN STEEL INDUSTRY

Arindam Banerjee

J. D. Birla Institute (Affiliated to Jadavpur University), Kolkata

Corresponding author E-mail: drarindambanerjee77@gmail.com

Abstract:

In this paper an attempt has been made to investigate the determinants of the capital structure of Indian Steel Industry by utilizing Time Series modelling. The paper has taken into consideration debt equity ratio as a proxy for capital structure (leverage) ratio and has tried to analyze the relationship between the debt equity ratio and profitability, asset tangibility, firm size, growth opportunities, and macroeconomic factors. Various time series techniques have been utilized to evaluate the long term and short-term relationship between the factors. The paper will serve as a useful tool to various policy makers and industrial leaders to make various financial decisions related to capital structure decisions.

Keyword: Time Series, Capital Structure, Steel, Profitability

1. Introduction:

India's iron and steel industry is one of the important industries in India. It is second largest steel producer in the world. The industry contributes 2% of GDP of Indian economy. The industry is witnessing a consolidation of players which has led to investment from different entities from other sectors.

India is the second largest producer of crude steel with an output of 125.32 MT of crude steel and finished steel production of 121.29 MT in financial year 2022-23. (Source: https://www.ibef.org/industry/steel).

Despite the importance of the steel sector, there is a lack of in-depth studies examining the determinants of capital structure using time series models in the Indian context. Existing literature tends to focus on cross-sectional data or a limited set of determinants. This study aims to bridge this gap by employing time series data to identify the dynamic relationships between capital structure and its determinants in the Indian steel industry.

2. Literature Review:

The following past works has been utilized by me for the present study:

Hansson *et al.* (2024) in their article investigates into the determinants of capital structure like tangibility, profitability, growth rate by using ordinary least square regression. It was revealed from the study that the profitability and no debt tax shield had a negative influence on the leverage ratio of the Swedish firms.

Leković *et al.* (2022) in their paper tried to find out the determinants of capital structure of the manufacturing firms of republic of Serbia using panel data methodology. Basically three major leverage models were estimated that is short term leverage, long term leverage and total leverage. It was found from the study that long term leverage showed prediction towards trade off theory and long-term leverage was explained by pecking order theory.

Dsouza *et al.* (2024) in their paper have tried to investigate into the determinants of capital structure of the manufacturing firms in India using multiple regression analysis and correlation matrix. It was found out from the study that business risk, profitability ratio (represented by return on assets) and asset composition were significant variables determining the capital structure of the firms.

Liu *et al.* (2024) in their paper have tried to employ auto regressive integrated moving average (ARIMA) model to forecast energy consumption which ultimately tried to evaluate the energy required for optimizing the home energy consumption.

Rehan *et al.* (2023) in their paper have tried to explore the determinants of capital structure in Malaysian firms in which the determinants like return on equity, earning per share has been tested with debt equity ratio. In the paper approaches such as auto regression distributed lag model along with panel data static model has been utilized. Tangibility has been significantly influencing the capital structure of the firms.

Khan *et al.* (2024) in their paper have tried to investigate into the factors affecting the financing decision of non-financial companies of Gulf Cooperation council countries. The paper states from its findings that variables like market to book ratio, firm size, earnings volatility affects the financing decision of the firms.

Dakua (2018) in his paper tried to investigate into the determinants of the capital structure in Indian Steel Industry and further to understand how these determinants correlated with the financial leverage of the companies.

Huang *et al.* (2006) in their paper have explored the determinants of capital structure of Chinese listed companies. It is observed from the study that there is a positive relationship between leverage and firm size and negative relationship of leverage with profitability and Non debt tax shield while insignificant relationship between capital structure and state ownership.

3. Research Methodology:

The data for the study has been collected from secondary sources like CMIE prowess database and the annual reports of Indian Steel Companies. The time period for the study has been 2009-10 to 2022-23. The companies whose data were not available for any of these years were removed from the list. Top 20 steel companies as per their turnover has been selected for the study. EViews Software has been used for analysis purpose.

4. Objectives of the Study:

4.1 ***Primary Objective of the Study***:

To investigate the determinants of capital structure of Indian Steel Industry by time series modelling

4.1.1 ***Secondary Objectives of the study***

- To test whether the data are stationary or not utilizing Augmented Dickey Fuller Test
- To test the long-term equilibrium relationship between Capital Structure and its determinants using Johansen Cointegration Test.
- To test the relationship between capital structure and its determinants using autoregressive distributed Lag model
- To provide managerial implication with the results of the study

5. Theoretical Framework:

The following variables were used for the study:

(i) ***Debt/Equity Ratio***: It states the ratio of debt and equity use to finance the company's assets. Formula = Debt/Equity

(ii) ***Profitability***: Return on Asset has been taken as a proxy for profitability ratio. Formula = EBIT/Total Assets (EBIT = Earnings before Interest and Tax)

(iii) ***Firm Size*** = It refers to the scale of operation of a business. It is defined in terms of Log Asset in the paper.

(iv) ***Asset Tangibility* =** It is the ratio of the total fixed asset and total asset of a company. **Formula:** Total Fixed Assets/Total Asset

(v) ***Growth Opportunity:*** It is a possible determinant of capital structure. It has been defined in terms of growth of total assets in a company.

(vi) ***Inflation rate (%), Interest rate (%) and GDP growth*** (%) are the macroeconomic variables which may be possible determinants of capital structure of the company.

6. Results and Discussion:

6.1 Descriptive Statistics

Descriptive statistics gives an understanding about the mean, standard deviation, skewness and kurtosis of the variables taken into consideration for the study.

It can be observed from Table 1 that the mean of debt equity ratio is 1.58 indicating that the firms take more debt than equity and also that high standard deviation (1.23) and positive Skewness (1.34) indicates that the presence of firms with high debt component in the capital structure. The mean of profitability is 7% but with minimum of -12% indicates that some firms are experiencing losses. Macroeconomic indicators like Inflation (mean = 5.63), Inflation rate (mean = 7.50) and GDP growth (6.10) reflects stable economic conditions while Firm Size (mean = 10.45) reflects consistency in firm size across the sample with fairly normally distributed (skewness = 0.15). Asset tangibility has a mean of the result of the Descriptive statistics is given in table 1.

Table 1: Descriptive Statistics

Variables	Mean	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis
Debt-to-Equity Ratio (DER)	1.58	1.23	0.15	5.63	1.34	3.20
Profitability (ROA)	0.07	0.08	-0.12	0.23	0.50	2.10
Firm Size (Size)	10.45	1.45	7.60	13.85	0.15	1.40
Asset Tangibility (Tangibility)	0.65	0.15	0.30	0.95	-0.10	2.80
Growth Opportunities (GOV)	1.02	0.30	0.50	1.80	0.60	2.30
Inflation Rate (%)	5.63	2.50	2.10	10.40	0.20	1.90
Interest Rate (%)	7.50	1.30	5.00	9.75	0.05	2.50
GDP Growth (%)	6.10	1.80	3.20	9.50	-0.20	3.10

6.2 *Augmented Dickey Fuller (ADF) Test*

Augmented Dickey-Fuller (ADF) test was conducted to investigate if the data are stationary or not. It can be observed from Table 2 that variables are non-stationary at the initial level. The P values >.05 of the variables indicates that the variables are non-stationary in nature at the initial testing.

The observation are as follows:

Debt Equity Ratio: P value = 0.386, Profitability (ROA) = 0.761, Firm Size (Log Assets) = 0.456, Tangibility = 0.278, Growth Opportunity = 0.657, Inflation rate = 0. 520.Interest rate = 0.360, GDP growth = 0.217.

It is observed from the Table 2 that the variables become stationary after first differencing. All the variables are having p value<.05 after first differencing. Example debt equity ratio= 0.001, Profitability = 0.003, firm size =.001 etc.

It is further observed from Table 2 that ADF test results are negative which indicates that the series is stationary in nature.

Hence the results indicates that we can perform time series modelling as the series becomes stationary after first differencing.

The result of the ADF test is given in table 2.

Table 2: Result of the ADF test

Variables	ADF Test Statistic (Level)	p-value (Level)	ADF Test Statistic (First Difference)	p-value (First Difference)
Debt-to-Equity Ratio (DER)	-1.75	0.386	-4.22	0.001
Profitability (ROA)	-0.95	0.761	-3.88	0.003
Firm Size (Log Assets)	-1.60	0.456	-4.15	0.001
Asset Tangibility (TAN)	-2.00	0.278	-5.10	0.000
Growth Opportunities (GOV)	-1.20	0.657	-3.92	0.002
Inflation Rate (%)	-1.50	0.520	-4.05	0.001
Interest Rate (%)	-1.85	0.360	-4.55	0.000
GDP Growth (%)	-2.10	0.217	-4.38	0.000

6.3 ***Johansen Cointegration Test Results***

Johansen Cointegration Test result test the long-term equilibrium relationship between the debt equity ratio and its determinants.

Three Null Hypothesis is taken into consideration for the study

i) H0 (Null Hypothesis): There is no cointegrating relationship between the debt equity ratio and its determinants

ii) H0(Null hypothesis): There is at most one cointegrating relationship between the debt equity ratio and its determinants

iii) H0(Null hypothesis): There is at most two cointegrating relationship between the debt equity ratio and its determinants

The following observation is made from the test results from Table 3:

It is observed from table 3 that

i) In case of no cointegration the p value <0.05 (0.045) thus the result is significant as also Trace statistics (40.22) > Critical Value (38.21), thus we reject the null hypothesis. Hence there is existence of at least one (1) Co-integrating relationship among the variables.

ii) In case of at most 1 cointegration the p value <0.05 (0.025) thus the result is significant as also Trace statistics (28.15) > Critical Value (26.30), thus we reject the null hypothesis. Hence there is existence of at least two Co-integrating relationship among the variables.

iii) In case of at most 2 cointegration the p value <0.05 (0.032) thus the result is significant as also Trace statistics (18.67) > Critical Value (15.80), thus we reject the null hypothesis. Hence there is existence of at least three Co-integrating relationship among the variables.

The result of table 3 is given below:

Table 3: Result of Johansen Cointegration Test Results

Hypothesis	Eigen Value	Trace Statistics	Critical Value (5%)	P- value
No cointegration	0.455	40.22	38.21	0.045
At most 1 cointegration	0.398	28.15	26.30	0.025
At Most 2 Cointegration	0.322	18.67	15.80	0.032

6.4 ***Autoregressive distributed Lag Model (ADL)***

The autoregressive distributed Lag model gives an idea about the short term and long-term relationship between the dependent variable (debt-equity ratio) and independent variables. It is observed from Table 4 that

i) Profitability has a positive (short run coefficient = 0.22 and long run coefficient = 0.45) a significant impact on the capital structure (debt-equity ratio) of the companies as the P value is less that 0.05 (0.006) and as the T statistics is beyond the range of +2 and -2 (2.75).
ii) Firm Size has a negative (short run coefficient = -0.15 and long run coefficient = -0.33) a significant impact on the capital structure (debt-equity ratio) of the companies as the P value is less that 0.05 (0.007) and as the T statistics is beyond the range of +2 and -2 (-2.75).
iii) Asset Tangibility has a positive (short run coefficient = 0.30 and long run coefficient = 0.52) a significant impact on the capital structure (debt-equity ratio) of the companies as the P value is less that 0.05 (0.000) and as the T statistics is beyond the range of +2 and -2 (5.20).
iv) Growth Opportunity has a positive (short run coefficient = 0.10 and long run coefficient = 0.21) and doesn't have significant impact on debt equity ratio as the P value is more that 0.05 (0.136) and as the T statistics is between the range of +2 and -2 (1.50).
v) Inflation and Interest also doesn't have significant impact on debt equity ratio as the P value is more that 0.05 (0.087 and 0.101 respectively) and as the T statistics is between the range of +2 and -2 (1.75 and 1.65 respectively).

The result of Table 4 is given below:

Table 4: ADL results:

Variables	Short Run Coefficient	Long Run Coefficient	Standard error	T statistics	P value
Profitability (ROA)	0.22	0.45	0.08	2.75	0.006
Firm Size (Size)	-0.15	-0.33	0.12	-2.75	0.007
Asset Tangibility (Tangibility)	0.30	0.52	0.10	5.20	0.000
Growth Opportunities (GOV)	0.10	0.21	0.07	1.50	0.136
Inflation Rate (%)	0.05	0.11	0.03	1.75	0.087
Interest Rate (%)	0.02	0.08	0.05	1.65	0.101

Conclusion:

It can be observed from the study that the Profitability (ROA), Firm Size and Asset tangibility are the significant variables influencing the capital structure of the Indian Steel Industry. The result of the article can be summarized in table 5 below:

Table 5: Key Findings of the Article:

Variable	**Significant /Insignificant influence on capital structure**	**Positive/ Negative**	**Long Run/ Short Run Significant**
Profitability (ROA)	Significant	Positive	Short Run
Firm Size (Assets)	Significant	Negative	Short Run
Growth Opportunities	Insignificant	Positive	------
Asset Tangibility	Significant	Positive	Long Run
Inflation Rate (%)	Insignificant	Positive	-----
Interest Rate (%)	Insignificant	Positive	-----

It can be observed from Table 5 Profitability and Firm Size are significant variables in short run while Asset tangibility is significant variable in long run. It is further observed that profitability is positively influencing the debt equity ratio meaning that more profitable steel companies are having more leverage in their capital structure as more profit means that the companies are able to pay off the interest on loan without much burden. A positive relationship between the Asset tangibility and debt equity ratio confirms tradeoff theory which states that firms with more Asset tangibility has low bankruptcy cost and hence can sustain higher debt level. A negative relationship between the Firm size and debt equity ratio can be explained from the fact that the steel companies with as the firm grows it becomes less dependent on debt financing and prefer to go internal financing which explains the pecking order theory.

The result of the present study can be very useful for policymakers, researchers, industrial managers to strengthen the capital base of the companies by focusing more on asset creation and profitability which would help to stabilize the capital structure in long run.

References:

1. Dakua, S. (2019). Effect of determinants on financial leverage in Indian steel industry: A study on capital structure. International Journal of Finance & Economics, 24(1), 427-436.
2. Dsouza, S., K, K., Kayani, U. N., & Nasseredine, H. (2024). Variables that sway the capital structure! Evidence from the US automotive industry. Cogent Social Sciences, 10(1), 2293309.
3. Fredriksson, H., & Hansson, G. (2024). Examining Determinants Shaping Capital Structure: A Study of Swedish Industrial Firms Empirical evidence in Sweden between 2017-2023.
4. Guha B, Bandyopadhyay G. Gold price forecasting using ARIMA model. Journal of Advanced Management Science. 2016 Mar;4(2).

5. Huang, G. (2006). The determinants of capital structure: Evidence from China. China economic review, 17(1), 14-36.
6. Khan, S., Akhtar, T., & Qasem, A. (2024). Dynamics of capital structure determinants: empirical evidence from GCC countries. *Future Business Journal*, *10*(1), 107.
7. Liu, Y., Qin, G., Huang, X., Wang, J., & Long, M. (2024). Autotimes: Autoregressive time series forecasters via large language models. *Advances in Neural Information Processing Systems*, *37*, 122154-122184.
8. Rehan, R., Hadi, A. R. A., Hussain, H. I., & Hye, Q. M. A. (2023). Capital structure determinants across sectors: Comparison of observed evidences from the use of time series and panel data estimators. *Heliyon*, *9*(9).
9. Stoiljković, A., Tomić, S., Leković, B., & Matić, M. (2022). Determinants of capital structure: Empirical evidence of manufacturing companies in the Republic of Serbia. *Sustainability*, *15*(1), 778.

SUCCESSFUL BUSINESS STRATEGIES BY STARTUPS IN INDIA

R. Sharmila
Sakthi Institute of Information and Management Studies, Pollachi
Corresponding author E-mail: sharmila.r@siims.ac.in

Abstract:

India's startup ecosystem has witnessed exponential growth over the past decade, making it one of the most dynamic and competitive environments globally. As the world's third-largest startup hub, India has produced a plethora of successful companies, despite the challenges of a diverse market, regulatory complexities, and resource constraints. This article explores the key business strategies employed by successful startups in India, focusing on factors such as market understanding, customer-centric innovation, scalability, and the effective use of technology. The role of government support, funding, and the evolving landscape of venture capital in fostering innovation will also be discussed. Through examining case studies and strategies employed by high-growth startups such as Flipkart, Ola, and Zomato, this paper offers valuable insights into the principles that contribute to success in India's startup ecosystem.

Keywords: Business Strategies, Startups, India

Introduction:

The startup ecosystem in India has grown significantly over the last decade. The country has transformed into one of the largest startup hubs in the world, with over 50,000 startups, a number that continues to rise each year (Economic Times, 2021). Driven by factors like a young, tech-savvy population, improving infrastructure, and strong government initiatives, the Indian startup scene has fostered numerous success stories.

However, despite the rapid growth, the Indian market presents unique challenges. Startups often face issues such as regulatory hurdles, inconsistent supply chains, access to skilled talent, and competition from established players. Given these obstacles, what strategies have these startups adopted to thrive in such an environment? This article aims to analyze the key factors contributing to the success of Indian startups and provide insights into the strategies that have been most effective in overcoming challenges.

Understanding the Indian Market Landscape

To succeed in India, a startup must have a deep understanding of its diverse consumer base. India is home to over 1.4 billion people, with a broad range of income levels, cultural backgrounds, and preferences (World Bank, 2022). For a startup to grow in this dynamic market, they must tailor their products or services to local needs and preferences.

Market Segmentation and Targeting

Successful startups often use an in-depth market segmentation strategy to understand their customers. Companies like Zomato and Swiggy, for example, started by catering to a particular demographic—urban, middle-class consumers—before expanding their services to different parts of India. Identifying specific pain points in a particular region or demographic is crucial to gaining traction early on.

Customer-Centric Innovation

One of the most common strategies among Indian startups is customer-centric innovation. For example, Paytm, a digital wallet service, focused on solving the challenges of cashless transactions in an economy that still relied heavily on cash. Over time, Paytm expanded its services to include digital banking, insurance, and investment, addressing the evolving needs of its customers.

Additionally, startups often iterate quickly, pivoting their offerings based on user feedback. This approach allows them to remain agile and adapt to changing market conditions, a characteristic that has contributed significantly to the success of companies such as OYO Rooms, which began as a hotel aggregator and transformed into a full-fledged hospitality brand.

Key Business Strategies for Success

1. Technology-Driven Disruption

Indian startups have harnessed technology to disrupt traditional industries. The tech-savvy population and the widespread use of smartphones have paved the way for businesses to innovate in sectors like fintech, e-commerce, and logistics.

Case Study: Flipkart

Flipkart, one of India's largest e-commerce platforms, is a prime example of how technology can drive business success. Founded in 2007, Flipkart identified the opportunity to digitize retail in a country where e-commerce was still in its nascent stages. The company invested heavily in building a seamless online shopping experience, optimizing the supply chain, and integrating secure payment systems. By leveraging technology, Flipkart was able to outpace local competitors and, eventually, Amazon India, becoming the leading e-commerce player in the country.

Case Study: Ola Cabs

Another example is Ola, which revolutionized the Indian transportation sector. By leveraging mobile technology and the GPS system, Ola introduced a model similar to Uber but tailored specifically to India's market. The company integrated a feature set suited for the local population, such as ride-sharing, cash payments, and a multilingual interface. This approach allowed Ola to capture a significant share of the market and expand to global markets.

2. Focus on Scalability

Scalability is one of the most critical factors for success. Startups need to ensure that their business model can scale rapidly while maintaining quality and operational efficiency.

Case Study: OYO Rooms

OYO Rooms provides a textbook example of scalability. By offering standardized accommodations at affordable prices, OYO partnered with small, independent hotels across India and other countries. The company adopted a franchise model to quickly expand its network, ensuring that each hotel maintained a certain level of consistency. This allowed OYO to scale its operations quickly and cost-effectively.

3. Funding and Venture Capital

The availability of venture capital (VC) funding has played a critical role in the growth of Indian startups. Over the years, various funds and investors, including Indian and international players, have poured billions of dollars into the startup ecosystem. The competition among investors has made funding more accessible to new startups, especially those with innovative business models and disruptive technologies.

Government Initiatives

The Indian government has also played a significant role in promoting entrepreneurship through initiatives such as the "Startup India" program, which offers tax benefits, ease of doing business reforms, and funding opportunities for new ventures. These efforts have led to increased investments in technology, healthcare, and education startups in particular.

4. Strategic Partnerships

Forming partnerships with established companies can provide startups with the resources and credibility they need to scale quickly. Many successful Indian startups have entered into partnerships with larger, more established firms, gaining access to infrastructure, distribution networks, and expertise.

Case Study: Zomato and Uber Eats

A notable example of strategic partnership is Zomato's acquisition of Uber Eats India. The deal, valued at $350 million, helped Zomato eliminate competition while acquiring Uber Eats' customer base, delivery network, and logistical resources. This acquisition allowed Zomato to consolidate its position as the market leader in the food delivery sector.

Challenges Faced by Startups in India

Despite the remarkable success stories, Indian startups often encounter several challenges:

1. Regulatory Hurdles

Navigating India's complex regulatory environment can be difficult for startups, particularly in sectors like fintech, healthcare, and e-commerce. Regulatory changes can sometimes create uncertainties, especially with new laws related to data privacy and consumer protection.

2. Access to Skilled Talent

Although India has a large pool of engineers and entrepreneurs, startups often struggle to find skilled talent, especially in fields such as data science, machine learning, and artificial intelligence. To overcome this challenge, startups are increasingly investing in training programs and building strong in-house teams.

3. Infrastructure Limitations

The lack of infrastructure in certain areas of the country can pose challenges for startups, especially those operating in sectors like logistics and transportation. However, companies like

BigBasket and Amazon have overcome these issues by investing heavily in supply chain infrastructure, warehouses, and local distribution networks.

Conclusion:

Indian startups have proven that success is achievable even in a challenging market environment. Key strategies such as customer-centric innovation, scalability, and leveraging technology have enabled startups to outgrow local competitors and expand globally. With the support of venture capital, government initiatives, and strategic partnerships, Indian startups are positioned to continue thriving. However, challenges such as regulatory constraints and access to talent remain. By maintaining agility, adapting to market conditions, and continuously innovating, Indian startups can sustain their growth in the future.

References:

1. Business Today. (2021). *Ola and the Transformation of India's Mobility Landscape*.
2. Chatterjee, P., & Kumar, V. (2021). *Disruption and Innovation: Case Studies of Indian Startups in the Digital Age*. Journal of Innovation Management, 15(2), 90-103.
3. Economic Times. (2021). *India's Startup Ecosystem: Key Stats and Trends*. Retrieved from https://economictimes.indiatimes.com/
4. Gupta, P. (2020). *Flipkart's E-Commerce Revolution: How Technology Transformed Retail in India*. Business Insights Review, 22(4), 45-50.
5. Singhal, D., & Raghavan, N. (2021). *The Rise of Indian Startups: Scaling and Strategies for Success*. Journal of Entrepreneurship, 29(3), 114-130.
6. World Bank. (2022). *India Country Overview*.

GREEN ACCOUNTING: A PATHWAY TO SUSTAINABLE BUSINESS PRACTICES

R. Vennila, Pooja Kumari and Sudha B. S.

School of Commerce Studies,

Jain Deemed to be University, Bangalore – 560069

Corresponding author E-mail: vennila2302@gmail.com, r.vennila@jainuniversity.ac.in, k.pooja@jainuniversity.ac.in, bs.sudha@jainuniversity.ac.in

Abstract:

In today's environmentally conscious business landscape, green accounting has emerged as a vital tool for aligning economic activities with ecological sustainability. This approach involves the identification, measurement, and inclusion of environmental costs within traditional accounting frameworks. By incorporating the financial impact of environmental factors—such as resource use, emissions, and waste—green accounting enables businesses to better assess their overall performance. It also supports more sustainable decision-making by highlighting the long-term benefits of eco-friendly practices and investments. As regulatory pressures and stakeholder expectations around sustainability continue to grow, green accounting provides a structured way for companies to demonstrate accountability, improve transparency, and enhance their reputation. Ultimately, it bridges the gap between environmental responsibility and financial success, making it an essential element of modern business strategy. Green accounting plays a crucial role in meeting regulatory requirements, facilitating environmental audits, and supporting corporate social responsibility (CSR) initiatives. It enhances transparency and fosters trust among stakeholders, including investors, customers, and policymakers. As environmental risks increasingly influence market dynamics and corporate reputation, green accounting is becoming an essential element of strategic planning, risk management, and sustainable value creation in modern business.

Keywords: Green Accounting, Environmental Accounting, Sustainability, Environmental Costs, Sustainable Business Practices

Introduction:

Businesses are under more and more pressure to act responsibly and sustainably in a time of climate change, limited resources, and growing environmental knowledge. Traditional accounting systems, while effective in capturing financial performance, often overlook the environmental costs and externalities associated with business activities. This gap has led to the evolution of green accounting, also known as environmental accounting—a framework designed to integrate environmental considerations into financial decision-making and reporting. Green accounting provides a structured approach to identifying, measuring, and reporting the environmental impacts of corporate operations. It includes the valuation of natural resources, the cost of environmental degradation, pollution control expenditures, and the benefits derived from sustainable practices. By capturing these elements, green accounting enables businesses to evaluate not only their economic performance but also their ecological footprint.

As global markets shift toward sustainability, regulatory bodies, investors, and consumers are increasingly demanding greater transparency and accountability regarding environmental practices. In this context, green accounting serves as a crucial tool for aligning business objectives with environmental stewardship. It supports strategic planning, enhances compliance with environmental regulations, and strengthens corporate social responsibility initiatives. Moreover, it allows organizations to identify cost-saving opportunities through energy efficiency, waste reduction, and resource optimization. This paper explores the concept of green accounting as a vital component of sustainable business practices. It examines its principles, methods, benefits, and the challenges faced in its implementation, highlighting its role in fostering long-term resilience, stakeholder trust, and responsible growth.

Review of Literature

Gray (1992) laid the foundational theoretical framework for environmental and social accounting. The study emphasized that conventional accounting systematically ignores the broader environmental consequences of economic activity. Gray proposed that a shift toward social and environmental reporting was essential not just for ethical reasons but also to ensure business survival in a changing world.

Herbohn (2005) critically examined the role of environmental accounting in decision-making within organizations and found that many firms lacked the necessary systems and cultural readiness to fully integrate environmental data into core financial reports. The study highlighted that while environmental concerns were often acknowledged, they were not effectively internalized in business accounting systems. This research emphasized the importance of aligning environmental management accounting (EMA) with corporate strategy to drive meaningful change and influence long-term sustainability.

Burritt and Schaltegger (2010) explored how sustainability accounting systems could support management decisions and stakeholder communication. Their work pointed out the need for integrated reporting frameworks that combine financial, social, and environmental indicators. The study stressed that sustainability accounting not only improves transparency but also enhances stakeholder trust and long-term organizational resilience.

Dasgupta (2012) provided a comprehensive discussion on green accounting and sustainable development in the Indian context. The study highlighted that while India had taken steps toward natural resource accounting and green GDP estimation, implementation remained fragmented due to data limitations and lack of standardized methodologies. The paper advocated for institutional reform and stronger policy frameworks to make green accounting more effective in the Indian economic system.

Kumar and Reddy (2015) analyzed the status of environmental accounting practices among Indian industries. The study revealed that while awareness was growing, the actual implementation of green accounting practices was limited to larger, often multinational, corporations. Small and medium enterprises (SMEs), which make up a large part of India's economy, faced challenges related to cost, technical knowledge, and regulatory pressure. The authors recommended capacity building and incentives to encourage wider adoption.

Statement of the Problem

The study of green accounting has become critically important in today's context due to the escalating environmental challenges and the growing demand for sustainable business practices. According to the United Nations Environment Programme (UNEP), global natural capital losses amount to over $4.7 trillion annually, primarily due to environmental degradation, pollution, and resource depletion—costs that are often unaccounted for in traditional financial systems. As climate change accelerates and global carbon emissions hit a record 37.4 billion metric tons in 2023 (Global Carbon Project), there is an urgent need for businesses to assess and report their environmental impacts transparently. Green accounting provides a structured approach to internalizing these costs, enabling companies to manage risks, comply with environmental regulations, and align with global sustainability goals such as the UN Sustainable Development Goals (SDGs). Additionally, investors are increasingly prioritizing Environmental, Social, and Governance (ESG) metrics, with over $41 trillion in ESG assets under management projected by 2025 (Bloomberg Intelligence). This shift underscores the importance of green accounting as a tool for businesses to remain competitive, attract responsible investment, and contribute meaningfully to environmental preservation at a time when ecological accountability is no longer optional, but essential.

The importance of green accounting has intensified in recent years as the world faces unprecedented environmental, economic, and social challenges driven by unsustainable development. Traditional accounting systems, while robust in capturing financial performance, fail to reflect the true cost of environmental degradation, resource depletion, and pollution. This omission creates a misleading picture of corporate profitability and economic progress. Green accounting addresses this gap by incorporating environmental costs into financial systems, thereby enabling more accurate, ethical, and forward-thinking decision-making. One of the major driving forces behind the need for green accounting is climate change. According to the Intergovernmental Panel on Climate Change (IPCC), global temperatures are on track to exceed the 1.5°C threshold within the next two decades if emissions continue unabated. The World Economic Forum (2024) identified environmental risks—such as climate change, biodiversity loss, and extreme weather—as the top threats to global economic stability over the next decade. Businesses, especially those in resource-intensive industries, face growing exposure to climate-related risks that could disrupt operations, supply chains, and market access.

Government policies and international agreements are also reinforcing the need for green accounting. The European Union's Corporate Sustainability Reporting Directive (CSRD), India's Business Responsibility and Sustainability Reporting (BRSR), and other frameworks mandate environmental disclosures for large companies. Simultaneously, international commitments like the Paris Agreement and the UN Sustainable Development Goals (SDGs) require nations and corporations to track and reduce their ecological impacts. Green accounting provides the data-driven foundation necessary to meet these obligations effectively. Moreover, consumers are becoming more environmentally conscious, with studies showing that 73% of global consumers are willing to change their consumption habits to reduce their environmental impact (Nielsen, 2023). This shift in consumer behavior places pressure on companies to adopt greener business models and practices. Green accounting facilitates this transition by helping businesses evaluate the sustainability of their operations, reduce inefficiencies, and promote circular economy principles. Thus the researcher identified the study on the Pathway of Green accounting in sustainable practices is highly significant at this stage.

Objectives

- To understand the principles of Green Accounting practices in India.
- To identify the methods and significance of Green Accounting in India
- To analyze the challenges in sustainable Green Accounting practices and to provide suggestions to overcome the challenges.

Principles of Green Accounting

Green accounting is rooted in a set of foundational principles that guide its implementation and ensure its effectiveness in promoting sustainability within business practices. At its core, it emphasizes the integration of environmental costs into financial decision-making, recognizing that traditional accounting often overlooks the ecological consequences of economic activities. One of the key principles is the valuation of natural resources, which involves assigning economic value to natural capital such as water, forests, air quality, and biodiversity. This enables businesses to understand the true cost of their resource consumption and environmental degradation. Another essential principle is full cost accounting, which goes beyond direct operational costs to include hidden or external costs, such as pollution or long-term environmental damage. Transparency and accountability are also central, requiring organizations to disclose environmental impacts clearly and accurately to stakeholders. This promotes ethical responsibility and builds trust. Furthermore, the principle of sustainability underpins all aspects of green accounting, advocating for business decisions that meet current needs without compromising the ability of future generations to meet theirs. Lastly, preventive action is encouraged—companies are guided not only to track environmental costs but to proactively reduce or avoid them through eco-friendly strategies. Collectively, these principles establish a comprehensive framework that aligns environmental stewardship with economic performance, paving the way for more sustainable and responsible business operations.

Methods of Green Accounting in India

India, as a rapidly developing economy with significant environmental challenges, is increasingly recognizing the need for green accounting to ensure sustainable growth. While still evolving, several methods are being adopted or proposed to implement green accounting in businesses and policymaking:

1. Environmental Management Accounting (EMA): EMA integrates financial and environmental data to help companies make eco-conscious decisions. It tracks costs related to waste, energy use, and pollution control. EMA is increasingly being adopted by Indian companies for internal performance monitoring and cost-saving strategies.

2. Natural Resource Accounting (NRA): NRA focuses on the valuation of natural resources such as water, forests, minerals, and biodiversity. India has implemented pilot studies in forest and water accounting through institutions like the Ministry of Statistics and Programme Implementation (MoSPI).

3. System of Environmental-Economic Accounting (SEEA): This UN-supported framework is used to compile data that links environmental data with national accounts. India has adopted SEEA for pilot natural capital accounting in various states.

4. Life Cycle Assessment (LCA): LCA is used by industries (specially manufacturing and energy sectors) to measure the environmental impact of products from production to disposal. It helps reduce waste and optimize material use throughout a product's life cycle.

5. Carbon and Energy Accounting: Many Indian firms (especially those listed in BSE/NSE indices and covered under ESG norms) now voluntarily or mandatorily report their greenhouse gas (GHG) emissions. Tools like the Perform, Achieve, and Trade (PAT) scheme by the Bureau of Energy Efficiency (BEE) encourage industries to track and reduce energy consumption.

6. Green GDP Calculations: Although not yet fully implemented nationwide, efforts have been made by the Central Statistical Office to assess environmental costs in GDP estimates. Pilot studies have been conducted on green state domestic products (GSDP) in states like Himachal Pradesh and Madhya Pradesh.

Significance of Green Accounting in Sustainable Business Practices in India

- ❖ Green accounting enables Indian businesses to recognize and manage environmental risks, such as resource scarcity, regulatory penalties, or reputational damage. It helps industries comply with environmental laws like the Environment (Protection) Act, Air (Prevention and Control of Pollution) Act, and Water Act.
- ❖ With increasing investor focus on ESG (Environmental, Social, and Governance) metrics, green accounting allows Indian firms to demonstrate compliance with global standards such as GRI, SASB, and CDP. This boosts investor confidence and access to international capital markets.
- ❖ Green accounting supports effective planning and reporting under India's CSR mandate (Companies Act, 2013), especially for projects related to environmental sustainability, afforestation, and waste management. It aligns corporate behavior with national goals like Net-Zero by 2070, National Action Plan on Climate Change (NAPCC), and the UN Sustainable Development Goals (SDGs). Encourages cleaner production, energy efficiency, and circular economy practices.
- ❖ By identifying waste and inefficiencies, green accounting helps reduce costs in energy, water, and material usage—especially vital in sectors like textiles, manufacturing, chemicals, and agriculture.
- It fosters transparency in environmental performance, leading to improved relations with regulators, local communities, NGOs, and customers. Encourages green innovation and sustainable product development, helping companies gain a competitive edge in both domestic and global markets.

Final Remarks:

India's journey toward integrating green accounting is still developing, but it holds immense potential to transform businesses into sustainable, transparent, and responsible entities. As regulatory frameworks and awareness continue to grow, green accounting will become an essential pillar in building a green economy that supports both economic growth and environmental preservation. In conclusion, the study of green accounting is not just relevant—it is essential. It empowers businesses to align with global sustainability goals, reduce risks, attract ethical investment, enhance brand reputation, and contribute meaningfully to environmental preservation. As we enter a decade where environmental concerns are intertwined with financial performance and strategic resilience, green accounting stands as a vital discipline for ensuring that economic growth does not come at the expense of planetary health.

References:

1. Pramanik, A. K., Shil, N. C., & Das, B. (2007). *Environmental accounting and reporting*. Deep & Deep Publications.
2. Herbohn, K. F. (2005). A full cost environmental accounting experiment. *Accounting, Auditing & Accountability Journal*, 18(6), 692–717.
3. Burritt, R. L., & Schaltegger, S. (2010). Sustainability accounting and reporting: Fad or trend? *Accounting, Auditing & Accountability Journal*, 23(7), 829–846.
4. Dasgupta, P. (2012). *Green national accounting for India*. Ministry of Statistics and Programme Implementation, Government of India. Retrieved from https://mospi.gov.in
5. Gray, R. (1992). Accounting and environmentalism: An exploration of the challenge of gently accounting for accountability, transparency and sustainability. *Accounting, Organizations and Society*, 17(5), 399–425.
6. Kumar, K., & Reddy, Y. V. (2015). Environmental accounting and reporting: An Indian perspective. *Asian Journal of Research in Social Sciences and Humanities*, 5(4), 79–91.
7. Kaur, M., & Kapoor, S. (2019). Green accounting: Need of the hour. *International Journal of Research in Engineering, IT and Social Sciences*, 9(2), 118–124.
8. Tilt, C. A. (2009). Corporate responsibility, accounting and accountants. In J. Crowther & N. Capaldi (Eds.), *The Ashgate research companion to corporate social responsibility* (pp. 239–254). Ashgate.
9. Bebbington, J., & Gray, R. (2001). An account of sustainability: Failure, success and a reconceptualization. *Critical Perspectives on Accounting*, 12(5), 557–587.
10. United Nations. (2014). *System of Environmental-Economic Accounting 2012—Central Framework*. United Nations Publications. https://unstats.un.org/unsd/envaccounting/seeaRev

A STUDY ON NON-PERFORMING ASSETS MANAGEMENT AT YES BANK

Shreya K Bhurat and M. Saptarshi

K.L. E'S Institute of Management Studies & Research,

BVB Campus, Vidyanagar, Hubli, Karnataka - 580 031

Corresponding author E-mail: shreyabhurat369@gmail.com, saptarshim@ymail.com

Abstract:

The banking industry in India has undergone significant reforms, largely driven by the substantial impact of risk management. According to Iyer (1999), credit risk stands out as a major threat, leading to Non-Performing Assets (NPAs). As per the Reserve Bank of India, an NPA is an asset that ceases to generate income for the bank due to non-payment of principal or interest. The classification of NPAs has evolved over time. Initially, assets were considered NPAs if payments were overdue by 180 days, but this period was reduced to 90 days in March 2004. The Reserve Bank of India also phased out the concept of "past due" in 2001, due to advancements in payment systems and technology. NPAs are a widespread issue affecting the entire banking industry, not just public sector banks. Many bad debts in Indian banks stem from priority sector lending under political pressure. Effective loan monitoring could have mitigated this problem. The growth of NPAs has significantly impacted banks' asset and liability performance, necessitated higher provisioning and affected industry stability, particularly in the public sector. This study uses secondary data from past bank records to analyse NPA trends at Yes Bank and propose resolutions. By understanding NPA trends and causes, banks can develop strategies to manage and reduce their impact, ensuring financial stability and growth.

Keywords: Non-Performing Assets, Management, Yes Bank

Introduction:

Non-Performing Assets (NPA)

Meaning:

In the banking world, when a loan or advance given to a customer stop generating income for the bank, it is called a Non-Performing Asset (NPA). This usually happens when the borrower fails to repay the loan installments or interest within a specified time. Originally, a loan was classified as an NPA if the borrower had not paid the dues for 180 days. But in order to improve the financial system and align with global standards, the Reserve Bank of India (RBI) revised the rules. Since March 31, 2004, if the borrower doesn't pay for 90 days, the loan is now considered non-performing.

Definition (According to RBI):

The RBI defines a Non-Performing Asset (NPA) as a loan or leased asset that stops providing income to the bank. More specifically, it refers to any credit facility where the interest or the principal amount remains unpaid for a set period of time.

Before March 2001, any overdue payment not cleared within 30 days of the due date was termed as “past due.” However, with improvements in banking systems and payment recovery processes, the ‘past due’ concept was removed.

From March 31, 2001, a loan is treated as an NPA under the following situations (based on the 180-day rule at that time):

- For term loans, if interest or principal is not paid for more than 180 days.
- For overdraft or cash credit accounts, if the account is considered "out of order" for more than 180 days.
- If a bill purchased or discounted by the bank remains unpaid for more than 180 days.
- For agricultural loans, if payments remain overdue for two harvest seasons, but not more than two half-years.
- If any other amount due to the bank remains unpaid for over 180 days.

Revised Norms (Effective from March 31, 2004):

To bring Indian banking practices in line with international standards and make loan monitoring more transparent, RBI reduced the period for recognizing NPAs from 180 days to 90 days.

From March 31, 2004 onwards, a loan is classified as a Non-Performing Asset if:

- In the case of a term loan, if interest or principal remains unpaid for more than 90 days.
- In an overdraft or cash credit account, if the account remains out of order for over 90 days.
- If a bill purchased or discounted by the bank is overdue for more than 90 days.
- For loans given for agriculture, if payments are overdue for two crop seasons (not exceeding two half-years).
- Any other amount due to the bank stays unpaid for more than 90 days.

Categories of Non-Performing Assets (NPAs):

Banks don’t just stop at identifying a loan as a Non-Performing Asset (NPA); they go a step further and classify NPAs into four categories depending on how long the loan has not been repaid and how likely it is that the bank will recover the money.

1. Standard Assets

These are healthy assets. The loan is being paid on time or is only slightly delayed but not enough to be called an NPA. In simple terms, it carries normal risk, and the borrower is mostly reliable. It hasn’t remained overdue long enough to worry the bank. These loans are performing well and do not pose a serious risk

2. Sub-standard Assets

These are loans that have become NPAs and have stayed that way for up to 18 months (as per the latest rules from March 2001). In this case, the borrower’s financial situation or the value of the security given (like property or assets) is not strong enough to fully cover the loan. There’s a real risk that the bank may not get back the full amount unless things improve. These loans show clear signs of weakness**,** and if not handled properly, may result in a **loss** to the bank.

3. Doubtful Assets

These are NPAs that have remained unpaid for more than 18 months. These loans are more serious than sub-standard ones. They carry all the problems of sub-standard assets, but with one major difference: the chances of recovering the full loan are now very uncertain. The risk is much higher, and banks start to lose hope that the borrower will repay. These assets are considered very risky, and recovery is highly doubtful under current conditions.

4. Loss Assets

These are the worst-case scenario loans. The bank, its auditors, or the RBI have already confirmed that the loan cannot be recovered**.** Even though the loan amount may still be recorded in the bank's books, it's practically worthless**.** There might still be a very small chance of getting back a little money (called salvage value), but overall, the bank accepts that this loan is a total loss**.** These loans are beyond recovery and should be written off as they are no longer useful to keep on the bank's balance sheet.

Managing NPAs: What Banks Need to Do

Handling NPAs is not just about recognising bad loans—it's about actively managing them to reduce damage and prevent more from happening in the future. Banks focus on several key areas to manage NPAs effectively:

1. Identifying NPAs Early

Banks need to detect signs of trouble as early as possible. This allows them to take action before the loan becomes a serious problem.

2. Preventing NPAs

Prevention is better than cure. By choosing the right borrowers, monitoring loans regularly, and having strict loan approval systems, banks can reduce the chances of loans turning bad.

3. Recovering Long-standing NPAs

For loans that have already turned bad and stayed that way for a long time (called chronic NPAs), banks need to use legal and financial tools to recover what they can.

4. Creating a Clear NPA Policy

Banks must have a proper strategy or policy that explains how to deal with NPAs—from handling small delays to writing off hopeless loans.

5. Knowing the Total NPA Amount

It's important for banks to know exactly how much money is stuck in NPAs, as this affects their financial health and ability to lend to others.

6. Keeping Accurate Records

Proper accounting of NPAs helps banks track losses, provisions, and recoveries correctly. This also helps them stay compliant with RBI guidelines.

7. Using Technology and MIS

Using Management Information Systems (MIS) and digital tools helps banks monitor loans more efficiently. This can also predict possible defaults in the future and allow for quick decision-making.

Provision Norms for Different Categories of NPAs

Provisioning refers to the money that banks are required to set aside from their profits to cover potential losses from bad loans (NPAs). This ensures the bank stays financially strong even if some borrowers fail to repay.

The Reserve Bank of India (RBI) has set rules for how much banks should provide based on the type and severity of the NPA.

As C.S. Balasubramaniam rightly said: *"Provisioning norms help banks improve efficiency, reduce NPAs, and protect their overall financial health."*

1. Loss Assets

These are loans that are confirmed to be unrecoverable.

What banks must do? 100% of the loan amount must be written off or fully provided for. Even if the loan is still shown in the bank's books, the entire amount must be covered.

Example: If a borrower is bankrupt and there is no collateral, the full amount must be provisioned.

2. Doubtful Assets

These are loans that have been NPAs for **more than 18 months**. Some portion might still be recoverable depending on the security (collateral) the bank holds.

If secured by collateral:

Provision is based on how long it has remained doubtful:

Doubtful Period	**Provision Requirement**
Up to 1 year	20% of the secured part
1 to 3 years	30% of the secured part
More than 3 years	50% (or up to 100%)

If not secured (no collateral):

Bank must provide 100% of the loan amount, because there's no guarantee of recovery.

Example: If a ₹10 lakh loan is secured with property worth ₹6 lakh and has been doubtful for 2 years, provision = ₹6 lakh × 30% + ₹4 lakh × 100%

Note on Updated Provisioning Rules (Post March 2001):

When the RBI changed the rule in 2001 (reduced the sub-standard period to 18 months), banks had to:

- By March 31, 2001: Provide 50% of the extra provisioning needed.
- By March 31, 2002: Provide the remaining 50% along with regular provisioning.

3. Sub-standard Assets

These are loans that have remained NPA for up to 18 months.

- **Provision required: -**Banks must make a minimum provision of 10% of the total outstanding loan amount. *Example: If a loan of ₹5 lakh turns sub-standard, the bank needs to set aside ₹50,000.*

4. Standard Assets

These are performing loans—meaning, no issues with repayments yet. However, banks still need to keep a small buffer just in case.

The required provision depends on the type of loan:

Type of Loan	Provision (%)
SME & Agriculture	0.25%
Residential Housing	0.75%
Commercial Real Estate	1.00%
All other types (e.g. personal, auto)	0.40%

Even if a loan is doing fine, the bank must still set aside a small portion as a precaution.

Summary Table of Provision Requirements

Asset Classification	Secured Provision %	Unsecured Provision %
Standard Assets	0.25% – 1% (based on type)	–
Sub-standard Assets	10%	10%
Doubtful (up to 1 year)	20%	100%
Doubtful (1–3 years)	30%	100%
Doubtful (>3 years)	50% or up to 100%	100%
Loss Assets	100%	100%

Introduction of Yes Bank:

Yes Bank Ltd is a public sector bank in India with its main office in Mumbai. It was started by Rana Kapoor and Ashok Kapur. The bank provides a wide variety of banking and financial services for both individual and corporate clients. These services include retail banking, asset management, and more.

Vision and Mission:

- **Vision:** To become India’s most respected and high-quality large bank, recognized globally, while positioning itself as the "Professionals’ Bank of India".
- **Mission:** To create a customer-focused, service-oriented private Indian bank that supports the growing needs of modern Indian businesses.

Competitors:

Yes Bank operates in a competitive environment and faces challenges from many major banks in India such as Kotak Mahindra Bank, HDFC Bank, ICICI Bank, Axis Bank, SBI, IndusInd Bank, Punjab National Bank, IDFC First Bank, RBL Bank, and DHFL.

Crisis at Yes Bank:

Yes Bank faced a serious crisis when government agencies uncovered financial misconduct by its co-founder, Rana Kapoor. The Enforcement Directorate found that Kapoor and his family created several shell companies to receive illegal payments. These funds were reportedly invested in properties and other assets without following the proper legal process.

Rana Kapoor was arrested for money laundering. Soon after, the Reserve Bank of India took control of Yes Bank by placing it under a temporary moratorium and replacing its board. Authorities explained that Kapoor used family-controlled companies to divert funds and that more investigation was needed.

At one time, Kapoor claimed that his shares in Yes Bank were highly valuable and that he would never sell them. But later, he and his firms sold a large portion of their shares in the open market, which reduced their stake in the bank significantly.

Kapoor had high ambitions for Yes Bank and wanted it to become as successful as other top private banks. However, his aggressive approach to lending—where loans were given to many companies without careful checks—led to major financial trouble. In a review, the RBI found that Yes Bank had reported far fewer bad loans than it actually had.

Authorities also discovered that Kapoor received financial benefits from DHFL in return for investing Yes Bank’s money into its debentures. These deals were made through companies owned by his wife and daughters. This raised serious concerns about conflict of interest and abuse of position.

It was revealed that a large amount of money was involved in these illegal transactions. The main reason behind the growing number of unpaid loans was found to be deliberate defaults by borrowers who took loans and didn’t repay.

Effect of the Crisis:

Following RBI’s announcement, the bank’s market value fell drastically. Earlier, it had been one of the most valuable banks, but investor trust collapsed, and its share prices dropped sharply.

Though this was a big turning point, issues had been building for a long time. Experts say that when the level of bad loans in a country becomes a significant portion of its economy, it signals a major banking crisis. RBI had already raised several concerns over Yes Bank’s loan practices and weak internal controls.

Some major events that led to the bank's downfall include:

- **Reckless Lending:** Rana Kapoor allowed large loans to be given to companies that were already under financial stress, which carried high risks.
- **Leadership Conflict:** After Ashok Kapur's death, a legal dispute arose between his wife, Madhu Kapur, and Rana Kapoor over control of board appointments. A court later ruled that Madhu had equal rights in this matter.
- **Warning by UBS:** A financial firm, UBS, warned about the bank's growing loans to struggling companies. Instead of addressing the concern, Yes Bank filed a complaint against UBS.
- **Change in Leadership:** At its peak, Yes Bank was performing well in the market. But when the RBI allowed Kapoor to stay on as CEO for only a short time—despite the board wanting a longer term—investors lost confidence and the stock began to decline.
- **Leak of Confidential Report:** The bank claimed that an RBI audit found no errors in how it reported bad loans. However, RBI responded sharply, saying that the bank had shared confidential details in a misleading way.
- **Regulatory Penalties:** Yes Bank was also fined multiple times by the RBI for not following rules related to payment systems and other banking procedures.

Non-Compliance with SWIFT System, Prepaid Instrument Rules, and Other Regulations

Research Approach

A. Purpose of the Study:

- To identify the reasons behind and consequences of Non-Performing Assets (NPAs) at Yes Bank.
- To recommend strategies to Yes Bank for effective NPA management.
- To assess Yes Bank's financial stability by analyzing NPA trends through ratio analysis.

B. Goals of the Study:

- To explore the definition and categories of non-performing assets.
- To investigate the factors contributing to NPAs at Yes Bank.
- To examine the Reserve Bank of India (RBI) guidelines on non-performing assets.
- To analyze Yes Bank's performance and potential obstacles concerning NPAs.
- To evaluate the NPA trends at Yes Bank over the years.

C. Tools for Data Gathering

- Bank annual reports, online sources, and publications.

Analysis and Interpretation:

	For the year ended		
PARTICULARS	**31-03-2023**	**31-03-2024**	**Growth %**
A. CAPITAL AND LIABLITIES			
Capital	5,75,09,551	5,75,35,764	0.045
Reserves and Surplus	34,04,31,129	35,44,34,232	3.95
Deposits	2,17,50,18,616	2,66,37,21,717	18.34663
Borrowings	77,45,19,923	79,94,08,803	3.113411
Other liabilities and provisions	19,08,98,171	17,03,45,465	-12.0653
Contingent Liability	6,61,38,54,796	7,96,95,72,249	17.01117
TOTAL(A)	**10,15,22,32,186**	**10,34,98,79,039**	**1.909654**
B. ASSETS			
Cash and balances with RBI	12,86,40,853	18,13,92,387	29.08145
Balances with banks and money at call and short notice	6,41,03,522	79,04,007	-711.026
Investments	76,88,82,974	90,23,51,322	14.79117
Advances	2,03,26,94,436	2,27,79,94,720	10.76826
Fixed assets	2,44,47,724	2,85,65,218	14.41436
Other assets	52,90,91,799	65,67,22,245	19.43446
Contingent liability	6,61,38,54,796	7,96,95,72,249	17.01117
TOTAL(B)	**10,16,17,16,104**	**12,02,45,02,148**	**15.49159**

Interpretation

This table compares Yes Bank's financials for two years:

March 31, 2023

March 31, 2024

It shows how different parts of the bank's capital, liabilities, and assets have changed and the growth percentage.

Key takeaways: -

1. Capital & Liabilities Section

- Capital stayed almost the same — very small increase (0.045%).
- Reserves and Surplus (extra money the bank saved) went up by about 3.95%, which is a healthy sign.
- Deposits (money from customers) increased by 18.35%, showing more people are trusting the bank with their money.
- Borrowings (money taken from others) actually went down by 3.11%, which is good — it means the bank relied less on borrowing.
- Other liabilities went up slightly.
- Contingent liabilities (possible future payments) increased by 17.01%, meaning the bank has taken on more possible risks.
- Total Capital & Liabilities grew by 1.91% — a modest but stable growth.

2. Assets Section

- Cash with RBI (money held with the Reserve Bank of India) grew 29%, a good liquidity sign.
- Balances with other banks dropped massively (-711%) — this looks like the bank pulled money out from other banks.
- Investments increased by 17.92%, showing the bank is putting more money into growing it.
- Loans/Advances (money lent to customers) rose by 10.76% — a sign of growing business.
- Fixed assets (buildings, computers, etc.) also increased — maybe new branches or upgrades.
- Other assets and contingent liabilities grew as well.
- Total Assets rose by 15.49% — this is a healthy sign showing the bank has grown overall in what it owns.

Final Verdict

Yes Bank had stable and healthy growth from 2023 to 2024. It got more deposits, lent more money, and invested more wisely. It also reduced borrowing, which is a good move. Though it reduced balances with other banks, the total assets increased nicely. This shows the bank is growing in strength and trust, and managing its finances better.

BALANCE SHEET OF THE YES BANK LTD FROM 2015 TO 2024.

Particulars (in thousands)	2015	2016	2017	2018	2019
A. CAPITAL AND LIABLITIES					
Capital	4177.36	4205.32	4564.86	4605.93	4630.07
Reserves and surplus	112477.86	13360.67	215975.74	252976.86	264411.90
Deposits	911587.77	1117195.33	1428738.57	2007381.48	2276101.82
Borrowings	262204.01	316589.77	386066.73	748935.81	1084241.09
Other liabilities and provisions	70982.74	80983.03	115253.29	110555.95	178876.79
Contingent liability	3372992.52	3312391.97	3795641.60	5818296.39	6541617.39
TOTAL	**4734422.26**	**4965026.09**	**5946240.78**	**8942752.42**	10349879.04
B. ASSETS					
Cash and balances with RBI	52406.53	57761.64	69520.70	114257.49	107977.37
Balances with banks and money at call and short notice	23167.45	24422.60	125973.74	133086.18	160917.75
Investments	465702.37	488384.66	500317.98	683989.39	895220.33
Advances	755498.16	982099.27	1322626.77	2035338.63	2414996.02
Fixed assets	3218.22	4707.18	6835.39	8323.92	8169.96
Other assets	61437.02	95258.77	125324.60	149460.44	220980.23
Contingent liability	3372992.52	3312391.97	3795641.60	5818296.39	6541617.39
TOTAL	4734422.26	4965026.09	5946240.78	8942752.42	10349879.04

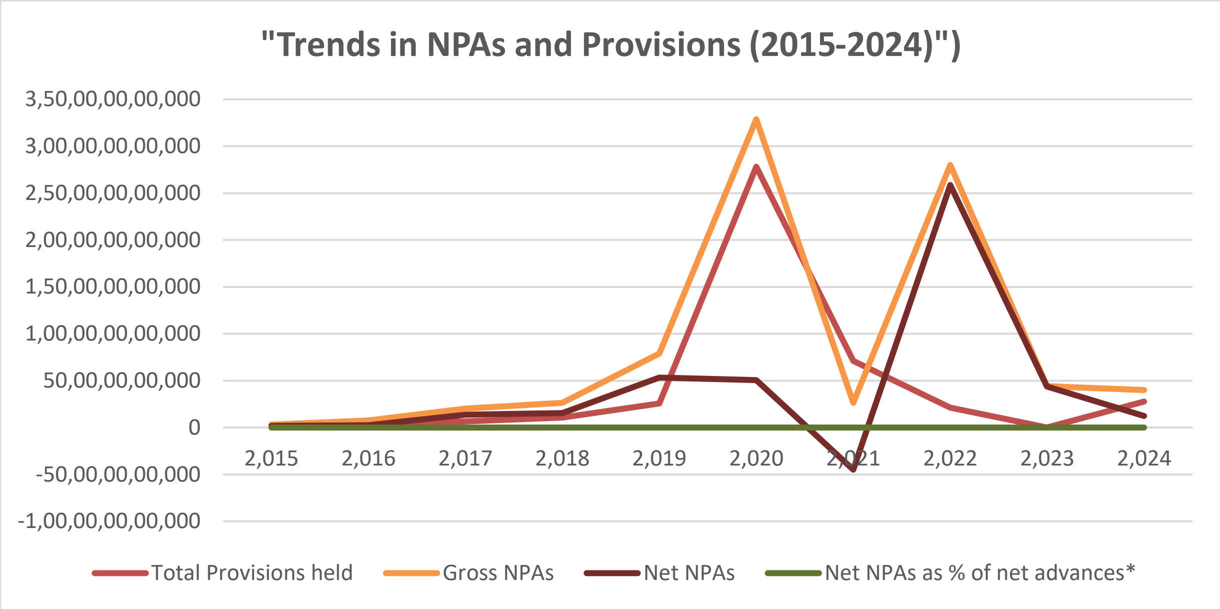
Particulars (in thousands)	2020	2021	2022	2023	2024
A. CAPITAL AND LIABLITIES					
Capital	2,51,00,944	5,01,09,812	5,01,09,906	5,75,09,551	5,75,35,764
Reserves and surplus	19,21,61,992	28,18,53,472	28,73,08,864	34,04,31,129	35,44,34,232
Deposits	1,05,36,39,434	1,62,94,66,422	1,97,19,17,331	2,17,50,18,616	2,66,37,21,717
Borrowings	1,13,79,05,026	63,94,90,848	72,20,45,835	77,45,19,923	79,94,08,803
Other liabilities and provisions	16,94,61,829	13,45,07,099	15,08,20,314	19,08,98,171	17,03,45,465
Contingent liability	4,58,52,60,892	4,59,64,22,189	6,80,14,62,379	6,61,38,54,796	7,96,95,72,249
TOTAL	**7,16,35,30,117**	**7,33,18,49,842**	**9,98,36,64,629**	**10,15,22,32,186**	12,01,50,18,230
B. ASSETS					
Cash and balances with RBI	5,94,36,550	6,81,27,898	9,06,72,666	12,86,40,853	18,13,92,387
Balances with banks and money at call and short notice	2,43,93,460	22,49,59,426	37,57,23,228	6,41,03,522	79,04,007
Investments	43,91,48,259	43,31,91,476	51,89,55,557	76,88,82,974	90,23,51,322
Advances	1,71,44,32,943	1,66,89,29,938	1,81,05,19,910	2,03,26,94,436	2,27,79,94,720
Fixed assets	1,00,90,882	2,14,85,304	2,13,31,268	2,44,47,724	2,85,65,218
Other assets	33,07,67,131	31,87,33,611	36,49,99,621	52,90,91,799	65,67,22,245
Contingent liability	4,58,52,60,892	4,59,64,22,189	6,80,14,62,379	6,61,38,54,796	7,96,95,72,249
TOTAL	7,16,35,30,117	7,33,18,49,842	9,98,36,64,629	10,16,17,16,104	12,02,45,02,148

Comparative Study of NPA Position: Position of Gross NPA / Net NPA

PARTICULARS	2024	2023	2022	2021	2020
(in thousands)					
Gross Advance	22,77,99,47,20,000	20,32,69,44,36,000	18,10,51,99,10,000	16,68,92,99,38,000	17,14,43,29,43,000
Total Provisions held	27,64,26,86,000	4,51,09,000	21,15,78,27,000	71,15,81,90,000	2,78,06,03,57,000
Net advances	22,50,34,77,28,000	20,32,64,93,27,000	17,89,36,20,83,000	15,97,77,17,48,000	14,36,37,25,86,000
Gross NPAs % to Gross Advances	0.017482481	0.021619088	0.154518599	0.015708868	0.191768947
Total deductions	-	-	-	-	-
Gross NPAs	39,82,50,00,000	43,94,50,00,000	2,79,75,90,00,000	26,21,70,00,000	3,28,77,50,00,000
Total Provisions held	27,64,26,86,000	4,51,09,000	21,15,78,27,000	71,15,81,90,000	2,78,06,03,57,000
Net NPA	12,18,23,14,000	43,89,98,91,000	2,58,60,11,73,000	-44,94,11,90,000	50,71,46,43,000
Net NPAs as % of net advances	0.005413525	0.021597376	0.144521433	-0.028127416	0.035307443

PARTICULARS	2019	2018	2017	2016	2015
(in thousands)					
Gross Advance	24,14,99,60,24,000	20,35,18,82,50,000	13,32,62,67,69,000	9,82,09,92,70,000	7,55,49,81,62,000
Total Provisions held	25,66,95,35,000	10,79,26,41,000	6,63,44,14,000	4,97,90,20,000	1,30,00,99,000
Net advances	23,89,32,64,89,000	20,24,39,56,09,000	13,25,99,23,55,000	9,77,12,02,50,000	7,54,19,80,63,000
Gross NPAs % to Gross Advances	0.032639805	0.012906914	0.015146777	0.007626331	0.004148268
Total deductions	-	-	-	-	-
Gross NPAs	78,82,50,00,000	26,26,80,00,000	20,18,50,00,000	7,48,98,14,000	3,13,40,09,000
Total Provisions held	25,66,95,35,000	10,79,26,41,000	6,63,44,14,000	4,97,90,20,000	1,30,00,99,000
Net NPA	53,15,54,65,000	15,47,53,59,000	13,55,05,86,000	2,51,07,94,000	1,83,39,10,000
Net NPAs as % of net advances	0.02224705	0.007644434	0.010219204	0.002569585	0.002431603

Line chart of NPAs and Provisions (2015-2024)



Interpretation:

- Gross NPAs (green line) and Net NPAs (brown line) increased sharply around 2019–2020, peaked in 2020, and then dropped sharply after 2021.
- Total Provisions Held (orange line) followed a similar pattern—rising until 2020, then falling.
- There was a sudden dip in Net NPAs in 2021, likely due to high provisioning or write-offs.
- After 2022, all values—Gross NPAs, Net NPAs, and Provisions—reduced significantly, indicating improvement in the asset quality of banks.
- Net NPAs as % of net advances (gray line) also shows a sharp drop after 2020, suggesting banks managed NPAs better in recent years.

Findings:

- 2020 was the peak year for NPAs and provisions—this may reflect the impact of economic stress (possibly COVID-related).
- Sharp decline in 2021 shows effective NPA management, maybe through provisioning, write-offs, or recovery.
- From 2022 to 2024, the overall trend is downward, meaning banks are healthier and have improved loan quality.
- Provisioning levels were highest during peak NPA years, indicating that banks prepared for possible losses.
- Recent years (2023–2024) show stability and lower NPA levels—positive for the banking sector.

Additional Ratios:

1. Problem Assets Ratio:

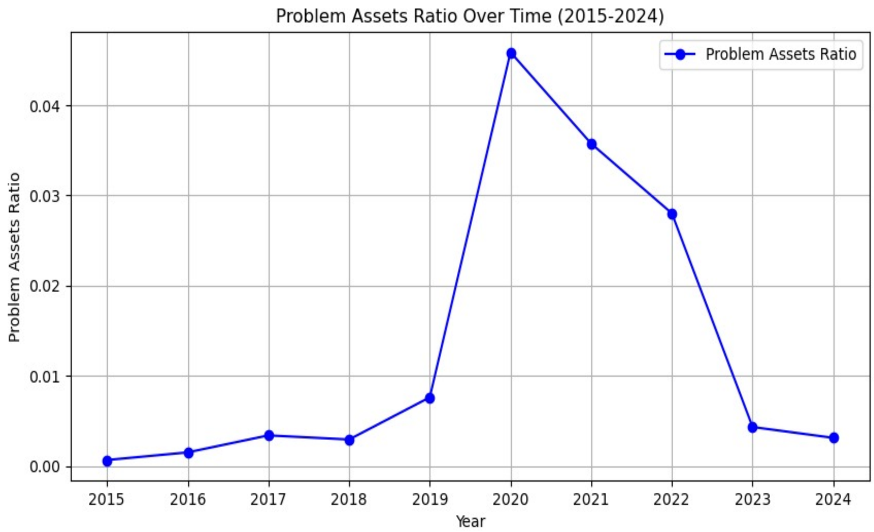
The Problem Asset Ratio tells us how much of a bank's total assets are actually in trouble — meaning, they are not earning money or may not be repaid. Think of it like this: if a bank gave out loans, this ratio shows what part of those loans have gone bad (NPAs). A higher ratio means more of the bank's money is stuck in risky or bad loans.

Formula for Problem Assets Ratio: -

Problem Asset Ratio = Gross NPAs ÷ Total Assets

So, this ratio helps us understand how healthy or risky a bank's asset (loan) portfolio is.

Year	Gross NPA	Total Assets	Problem Assets Ratio
2024	39,82,50,00,000	1,20,24,50,21,48,000	0.003311987
2023	43,94,50,00,000	1,01,61,71,61,04,000	0.004324565
2022	2,79,75,90,00,000	99,83,66,46,29,000	0.028021674
2021	26,21,70,00,000	73,31,84,98,42,000	0.003575769
2020	3,28,77,50,00,000	71,63,53,01,17,000	0.045895668
2019	78,82,50,00,000	1,03,49,84,18,52,000	0.007616058
2018	26,26,80,00,000	89,42,75,24,23,000	0.002937351
2017	20,18,50,00,000	59,46,24,07,78,000	0.003394582
2016	7,48,98,14,000	49,65,02,60,91,000	0.001508515
2015	3,13,40,09,000	47,34,69,66,15,000	0.000661924



Interpretation:

The Problem Assets Ratio stayed very low from 2015 to 2019, showing that financial institutions were managing their assets well during that time. But in 2020, there was a sharp jump—the ratio spiked dramatically. This likely reflects the financial impact of the COVID-19 pandemic, when many businesses and individuals struggled to meet their obligations, leading to more loans and assets turning problematic.

After 2020, the ratio began to decline steadily. This shows that conditions started to improve. By 2023 and 2024, the ratio had dropped close to where it was before the pandemic, which is a positive sign. It means banks or financial institutions are again seeing fewer problem assets and better loan performance.

2. Shareholders' Risk Ratio

The shareholders' risk ratio shows how much of a company's assets are supported by the shareholders' own money (equity) instead of borrowed money (debt). A lower ratio means the company depends more on debt. This ratio is calculated by dividing the Net NPA by the company's total assets and multiplying by 100. It tells us how much of the company's risky or bad assets are related to what shareholders own.

$$\text{Shareholders risk ratio} = \frac{\text{Net NPA *}}{\text{Total capital and free reserves}}$$

(In thousands)

Year	Net NPA	Total Capital and Reserves	Shareholders risk Ratio
2024	12,18,23,14,000	4,11,96,99,96,000	0.029570877
2023	43,89,98,91,000	3,97,94,06,80,000	0.110317676
2022	2,58,60,11,73,000	3,37,41,87,70,000	0.766410159
2021	-44,94,11,90,000	3,31,96,32,84,000	-0.135380002
2020	50,71,46,43,000	2,17,26,29,36,000	0.233425194
2019	53,15,54,65,000	2,69,04,19,61,000	0.19757314
2018	15,47,53,59,000	2,57,58,27,98,000	0.060079163
2017	13,55,05,86,000	2,20,54,05,93,000	0.061442593
2016	2,51,07,94,000	1,37,86,59,87,000	0.018211845
2015	1,83,39,10,000	1,16,79,98,19,000	0.015701309

Interpretation:

From 2015 to 2019, the shareholder risk ratio was low and increased gradually—suggesting that companies were relatively stable and shareholders faced minimal risk.

In 2020, the risk continued rising slightly, but in 2021, it suddenly dropped to a very low point, which might mean the company became less risky or reduced its financial exposure for shareholders that year.

However, in 2022, there was a massive spike—the ratio jumped to its highest point, indicating a period of very high risk for shareholders. This could have been due to financial instability, losses, or major business challenges.

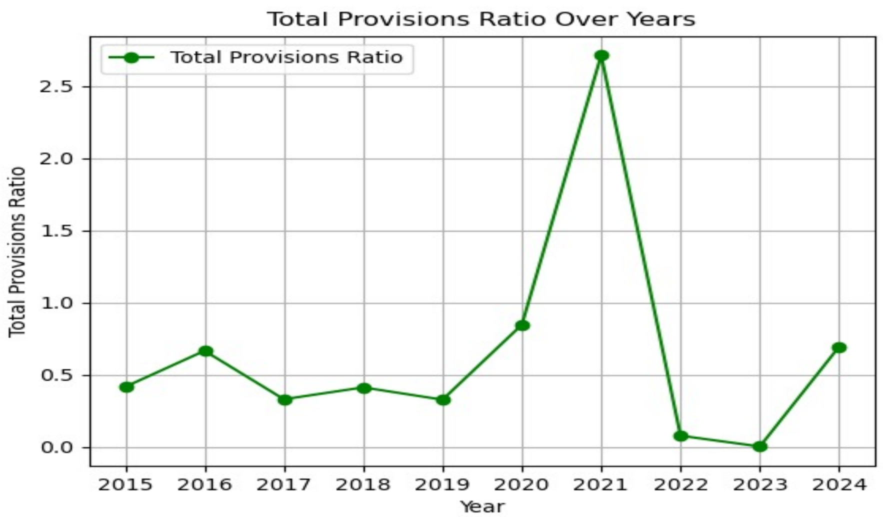
Thankfully, by 2023 and 2024, the risk ratio dropped back down, showing signs of recovery and improved financial stability.

3.Total Provisions Ratio:

The Total Provisions Ratio is a financial metric that shows how much a company (especially a bank or financial institution) has set aside to cover possible future losses—compared to its total assets or loans.

Total Provision Ratio = Total Provisions / Total Gross NPA.

Year	Total Provisions	Gross NPA	Total Provisions ratio
2024	27,64,26,86,000	39,82,50,00,000	0.694103854
2023	4,51,09,000	43,94,50,00,000	0.001026488
2022	21,15,78,27,000	2,79,75,90,00,000	0.075628763
2021	71,15,81,90,000	26,21,70,00,000	2.714200328
2020	2,78,06,03,57,000	3,28,77,50,00,000	0.845746657
2019	25,66,95,35,000	78,82,50,00,000	0.325652204
2018	10,79,26,41,000	26,26,80,00,000	0.410866492
2017	6,63,44,14,000	20,18,50,00,000	0.328680406
2016	4,97,90,20,000	7,48,98,14,000	0.664772183
2015	1,30,00,99,000	3,13,40,09,000	0.414835758



Interpretation:

From 2015 to 2019, the total provisions ratio stayed relatively low and stable, showing that the company or bank didn't feel the need to set aside a large amount for possible losses—things seemed under control. In 2020, the ratio started to rise, likely due to growing uncertainty (possibly due to early signs of the COVID-19 pandemic). Then in 2021, there was a huge spike—the ratio peaked sharply. This means the institution set aside a large amount of money to cover potential losses, most likely as a precaution during the financial stress caused by the pandemic. After that, in 2022 and 2023, the ratio dropped significantly, even reaching near zero. This indicates that the company either felt more confident in its assets or had already dealt with most of the expected risks. By 2024, the ratio increased again—possibly as a cautious step in response to new uncertainties or as a sign of more conservative financial planning.

Comparative NPA ratios of yes bank:

- **Gross NPA Ratio (%)**
  - ➢ It shows how much profit a company makes on selling goods, before paying for other expenses like rent, salaries, electricity, etc.
  - ➢ It tells how well the company controls cost of goods and how efficiently it is selling.
  - ➢ Gross NPA ratio is calculated by using the below formula:

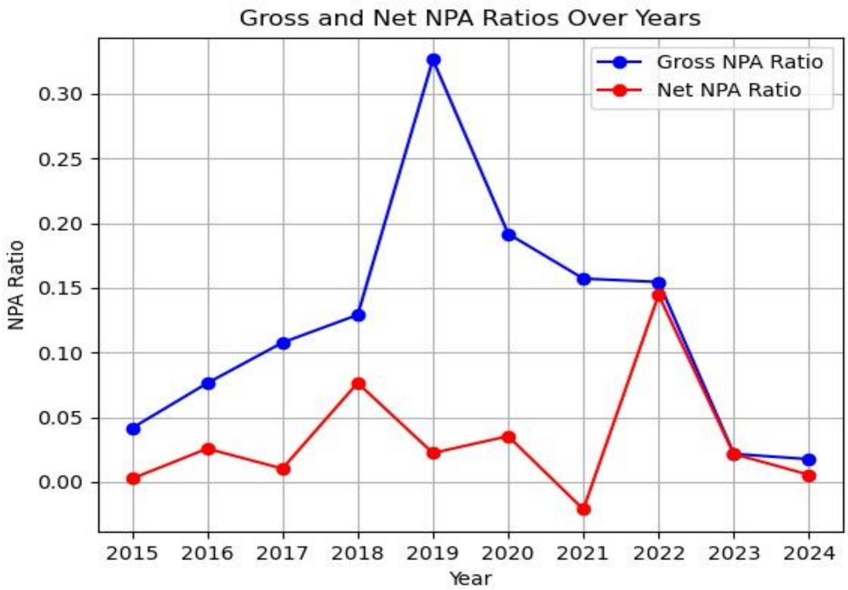
$$\text{Gross NPA ratio} = \frac{\text{Gross NPA* } 100}{\text{Gross Advances}}$$

- **Net NPA ratio (%)**
  - ➢ It shows how much profit a company keeps after paying all expenses, including admin costs, interest, and taxes.
  - ➢ It tells the company's overall profitability—how much of the total sales becomes actual profit.
  - ➢ It is found by dividing Net NPA by Net Advances.

$$\text{Gross NPA ratio (\%)} = \frac{\text{Gross NPA}}{\text{Net Advances}}$$

Comparative NPA Ratios

Year	Gross NPA ratio	Net NPA ratio
2024	0.017482481	0.005413525
2023	0.021619088	0.021597376
2022	0.154518599	0.144521433
2021	0.015708868	-0.028127416
2020	0.191768947	0.035307443
2019	0.032639805	0.02224705
2018	0.012906914	0.007644434
2017	0.015146777	0.010219204
2016	0.007626331	0.002569585
2015	0.004148268	0.002431603



Interpretation:

Gross NPA Ratio (blue line) increased steadily from 2015 and peaked sharply in 2019 (above 30%). After that, it declined gradually till 2024. Net NPA Ratio (red line) also increased till 2018, but remained much lower than Gross NPA Ratio throughout. Both ratios fell sharply after 2019, showing better management of NPAs by banks. By 2024, both Gross and Net NPA Ratios are very low, which is a positive sign for the banking system.

Findings: What We Learned About Yes Bank's NPA Situation

1. **Big NPA Spike in 2020:** The year 2020 was tough for Yes Bank—NPAs (bad loans) shot up a lot, likely because of the COVID-19 pandemic, which made it hard for borrowers to repay loans.
2. **Improvement After 2021:** After 2021, things got better. Both Gross and Net NPAs dropped sharply, showing that the bank started handling bad loans more effectively.
3. **Provisions Peaked in 2021:** The bank set aside a huge amount of money (provisions) in 2021 to cover potential losses, but this amount decreased a lot by 2023, meaning fewer worries about bad loans.
4. **Shareholders' Risk Jumped in 2022:** In 2022, the risk for shareholders spiked to a very high level, which was a scary time for investors, but it came down again by 2023–2024.
5. **Overall Recovery by 2024:** By 2024, NPAs, provisions, and risk ratios were much lower, showing that Yes Bank has been working hard to clean up its loan portfolio and is in a healthier spot now.

Suggestions: Tips for Yes Bank to Handle NPAs Better

1. **Catch Problems Early:** Keep a close eye on loans and spot any signs of trouble (like late payments) right away, so you can act before they turn into NPAs.
2. **Be Picky with Borrowers:** Before giving loans, double-check if the borrower can actually repay—don't lend to risky companies or people without a proper plan.

3. **Use Tech to Stay on Top:** Use smart technology to track loans and predict which ones might go bad, so you can step in early and avoid bigger problems.
4. **Make a Clear NPA Plan:** Create a simple, step-by-step guide for dealing with NPAs—from small delays to loans that can't be recovered—so everyone at the bank knows what to do.
5. **Recover Old Loans Smartly:** For loans that have been bad for a long time, use legal options or work with borrowers to recover as much money as possible without dragging things out too long.

Conclusion: Wrapping It All Up

1. **Yes Bank Faced Big Challenges:** NPAs were a huge problem for Yes Bank, especially around 2020, due to economic stress and past risky lending practices.
2. **They've Made Good Progress:** The drop in NPAs and provisions after 2021 shows that Yes Bank has been working hard to fix its issues and manage loans better.
3. **Stability is Returning:** By 2024, the bank looks much healthier, with lower NPAs and risks, which is great news for its future.
4. **Lessons Learned:** This journey taught Yes Bank the importance of careful lending, early action, and following rules to avoid big crises like the one caused by financial misconduct.

References:

1. Balasubramaniam, C. S. (2002). Non-performing assets and profitability of commercial banks in India: Assessment and emerging issues. *Babasaheb Gawde Institute of Management Studies, Mumbai*, *1*(7). ISSN 2277-1166.
2. Reserve Bank of India. (1981). *The report of the Committee to Review Arrangements for Institutional Credit for Agricultural and Rural Development (CRAFICARD)*. Bombay: Author.
3. Roy, A. (2001). A decade of financial sector reforms. *The Hindu* (Chennai), p. BS-1+.
4. Iyer, T. N. A. (1999). Bank supervision and the management of non-performing advances. *The Journal of the Indian Institute of Bankers*, 7–9.
5. Michael, J. N., Vasanthi, G., & Selvaraju, R. (2006). Effect of non-performing assets on operational efficiency of central co-operative banks. *Indian Economic Panorama*, *16*(3), 33–34, 39.
6. Khan, M. Y., & Bishnoi, T. R. (2001). Banking crisis and financial reforms: Lessons for India. *Chartered Secretary*, 44–48.
7. Jain, J. L., & Balachandran, K. (1997). Managing financial risks in banking. *The Banker*, *44*(6), 23–33.
8. Bhurat, S. K., & Saptarshi, M. (2020). NPA and its importance – With reference to Azad Co-operative Bank, Gadag. *A Journal of Composition Theory*, *13*(1). ISSN: 0731-6755.

A STUDY ON NON-PERFORMING ASSETS MANAGEMENT AT ICICI BANK

K V Sumukh and M. Saptarshi

K.L.E'S Institute of Management Studies & Research,

BVB Campus, Vidyanagar, Hubli, Karnataka - 580 031

Corresponding author E-mail: vhegdesumukh@gmail.com, saptarshim@ymail.com

Abstract:

The Indian banking sector has also seen substantial change as a result of reforms in the financial sector, and ICICI Bank, being a large private sector bank, has led the change. Banking is naturally subject to several risks such as credit risk, market risk, operational risk, liquidity risk, and management risk. Of these, credit risk in the form of Non-Performing Assets (NPAs) has been the most vital challenge (Iyer, 1999). A loan asset is treated as non-performing if the borrower does not pay interest or principal for 90 days, according to the new RBI guidelines that came into effect from March 2004. Earlier, the default period was 180 days. A non-performing asset, according to the Reserve Bank of India, is one which stops earning income for the bank and is overdue by a certain period. This classification reflects an asset's failure to perform its intended financial function. Even though NPA problem is generally related to public sector banks, private banks such as ICICI Bank have also been affected to a considerable extent. ICICI Bank with its large retail and corporate loan book has had to deal with asset quality challenges, especially during economic slowdown or regulatory tightening cycles. The increase in NPAs brings higher provisioning, which goes straight to the bottom line and affects the profitability and asset-liability management of the bank. This study is grounded on secondary data, which is mainly sourced from the financial statements and regulatory reports of the bank. The aim is to analyze the NPA trends at ICICI Bank, identify factors contributing to them, and suggest strategic steps to contain and reduce bad assets. The problem of NPAs still affects not only operational effectiveness but also the bank's financial stability and the overall financial system.

Keywords: Non-Performing Assets, Credit Risk, Loan Default, Asset Quality, ICICI Bank, Banking Sector Reforms, Provisioning"

Introduction:

ICICI Bank Limited is a private sector bank headquartered in Mumbai, India. It was formed in 1994 as a fully owned subsidiary of Industrial Credit and Investment Corporation of India (ICICI), but over time it evolved as a full-service commercial bank providing a complete range of financial products and services. It serves its corporate and retail customers through diversified delivery channels as well as through its group companies.

Vision and Mission Statements

Vision: To become the leading financial services company in India and a global industry leader.

Mission: To provide more and sustainable value to all stakeholders by being customer centric, innovative, and excellent.

Competitors: ICICI Bank is in a very competitive market with other giants like HDFC Bank, Axis Bank, Kotak Mahindra Bank, State Bank of India, Yes Bank, IndusInd Bank, and Punjab National Bank. They compete in retail, corporate, investment, and digital banking operations.

ICICI Bank and the NPA Issue

Like other Indian major banks, ICICI Bank has also faced challenges with the rise of Non-Performing Assets (NPAs), especially during economic slowdowns and periods of aggressive corporate lending. Despite its robust infrastructure and technology-driven processes, ICICI Bank has witnessed NPA pressure primarily because of large corporate defaults, infrastructure lending, and stressed sectors of power, telecom, and real estate.

One of the largest cases that impacted the bank's reputation was the Videocon loan case. There were allegations that the senior management of the bank, including former CEO Chanda Kochhar, approved high-risk loans to the Videocon Group, which later turned into NPAs. The allegations led to an internal investigation and enforcement action, evoking concerns about governance, transparency, and accountability in managing credit risk.

The Reserve Bank of India's Asset Quality Review (AQR) placed greater emphasis on ICICI Bank's books, revealing a mismatch between reported and actual NPAs. This led to provisioning expenses, impacting profitability and giving rise to investor concerns over asset quality.

Key Developments Related to NPA Issues:

ICICI Bank grew its loan book in the early 2000s, which led to high exposure to big companies, many of which later failed to pay back.

The Videocon Group case prompted the CBI and ED to investigate raising concerns about conflicts of interest and how well the bank checked things out.

The bank had to write off large amounts in the power, steel, and real estate sectors.

Even with these problems, ICICI Bank has bounced back by making its risk management stronger setting aside more money for bad loans, and getting better at recovering debts.

Research Methodology

A. Need for the Study:

- To examine why NPAs are increasing at ICICI Bank and what this means.
- To offer ways to boost asset quality and manage risk better.
- To see how NPAs affect ICICI Bank's money situation and stability by looking at financial ratios and trends.

B. Objectives of the Study:

- To grasp what Non-Performing Assets are and how they're grouped.
- To find out what's causing NPAs at ICICI Bank.
- To look at RBI rules and how much money banks must set aside for NPAs.
- To track how NPAs at ICICI Bank have changed over time.
- To share ideas and policy advice for handling NPAs well.

C. Research Design

This study uses information that's already out there, like public financial reports, RBI documents, industry studies, and trustworthy news articles.

D. Data Collection Tools

- ICICI Bank reports
- Reserve Bank of India papers
- Money-focused journals and data banks
- News stories and regulatory documents

Analysis and Interpretation

Financial Position of The ICICI Bank 2023- 2024:

	For the year ended		
PARTICULARS	**31-03-2023**	**31-03-2024**	**Growth %**
A. CAPITAL AND LIABILITIES			
Capital	1,39,67,750	1,40,46,790	0.56
Employees stock options outstanding	76,08,859	1,40,53,180	45.87
Reserves And Surplus	1,98,55,77,170	2,35,58,93,246	15.18
Deposits	11,80,84,06,972	14,12,82,49,513	16.41
Borrowings	1,19,32,54,936	1,24,96,75,779	4.51
Other Liabilities and provisions	83,32,50,836	95,32,27,258	12.58
Contingent Liability	42,83,16,54,487	46,55,76,17,752	8
TOTAL (A)	15,84,20,66,523	18,71,51,45,766	
B. ASSETS			
Cash and Balance with RBI	68,52,61,721	89,71,16,960	24
Balances with banks and money at call	50,91,21,002	50,21,43,120	-1
Investments	3,62,32,97,355	4,61,94,22,722	22
Advances	10,19,63,83,053	11,84,40,63,894	14
Fixed Assets	9,59,98,412	10,85,98,403	12
Other assets	73,20,04,980	74,38,00,667	2
Contingent Liability	42,83,16,54,487	46,55,76,17,752	8
Total (B)	15,84,20,66,523	18,71,51,45,766	

Interpretation

A. Capital and Liabilities

1. Capital (↑ 0.56%)

- The increase is tiny.
- This points to a steady ownership structure without any big cash injections.

2. Employees Stock Options Outstanding (↑ 45.87%)

- The jump is huge.
- This hints at a strong push to keep and motivate staff maybe to draw or hold onto talent in a tough job market.

3. Reserves and Surplus (↑ 15.18%)

- The growth is robust.
- This shows kept profits and healthy internal savings reflecting good business performance.

4. Deposits (↑ 16.41%)

- The increase is substantial.
- This reveals growing customer faith and effective money gathering due to better interest deals or service reach.

5. Borrowings (↑ 4.51%)

- The rise is modest.
- This suggests more borrowing but in check—perhaps used to fund growth or fill cash gaps.

6. Other Liabilities and Provisions (↑ 12.58%)

- The growth is significant.
- This might be due to higher set-asides (e.g., for bad loans) or more operational debts, which need watching.

7. Contingent Liability (↑ 8%)

- Slight uptick.
- Shows greater off-balance-sheet exposure—this could involve guarantees, letters of credit, and so on suggesting more risk management duties.

B. Assets

1. Cash and Balance with RBI (↑ 24%)

- Big increase.
- Shows a stronger cash position or meets regulatory reserve rules.

2. Balances with Banks and Money at Call (↓ 1%)

- Small decrease.
- Points to moving liquid resources maybe to assets that earn more.

3. Investments (↑ 22%)

- Big rise.
- smart investments in government bonds or other safe options—shows careful use of money.

4. Advances (↑ 14%)

- Shows strong growth in lending.
- Hints at trust in giving loans perhaps with bigger loan portfolios.

5. Fixed Assets (↑ 12%)

- Small growth.
- Might come from spending on buildings, tech, or new branches.

6. Other Assets (↑ 2%)

- Little change.
- Steady asset group maybe includes earned income, tax assets, or various money owed.

7. Contingent Liability (↑ 8%)

- Matches the liability side—normal practice.

Balance Sheet of ICICI Bank From (2015 To 2019)

PARTICULARS	2015	2016	2017	2018	2019
A. CAPITAL AND LIABILITIES					
Capital	1,15,96,608	1,16,31,656	1,16,51,071	1,28,58,100	1,28,94,598
Employees stock options outstanding	74,388	67,019	62,562	55,699	46,755
Reserves And Surplus	79,26,22,557	88,56,57,157	98,77,97,070	1,03,86,75,565	1,07,07,39,063
Deposits	3,61,56,27,301	4,21,42,57,086	4,90,03,90,648	5,60,97,52,085	6,52,91,96,711
Borrowings	1,72,41,73,498	1,74,80,73,779	1,47,55,61,521	1,82,85,86,206	1,65,31,99,742
Other Liabilities and provisions	31,71,98,572	34,72,64,350	34,24,51,588	30,19,63,958	37,85,14,609
Contingent Liability	8,51,97,76,091	9,00,79,87,789	10,30,99,37,127	12,89,24,40,018	19,22,03,82,868
TOTAL (A)	**6,46,12,92,924**	**7,20,69,51,047**	**7,71,79,14,460**	**8,79,18,91,613**	**9,64,45,91,478**
B.ASSETS					
Cash and Balance with RBI	25,65,29,069	27,10,60,888	31,70,24,051	33,10,23,817	37,85,80,118
Balances with banks and money at call and short note	16,65,17,084	32,76,26,531	44,01,06,563	51,06,69,991	42,43,82,742
Investments	1,86,58,00,348	1,60,41,17,966	1,61,50,65,454	2,02,99,41,808	2,07,73,26,800
Advances	3,87,52,20,728	4,35,26,39,419	4,64,23,20,842	5,12,39,52,856	5,86,64,65,827
Fixed Assets	4,72,55,187	7,57,69,200	7,80,52,072	7,90,35,149	7,93,14,287
Other assets	24,99,70,508	57,57,37,043	62,53,45,478	71,72,67,992	81,85,21,704
Contingent Liability	8,51,97,76,091	9,00,79,87,789	10,30,99,37,127	12,89,24,40,018	19,22,03,82,868
Total (B)	**6,46,12,92,924**	**7,20,69,51,047**	**7,71,79,14,460**	**8,79,18,91,613**	**9,64,45,91,478**

Balance Sheet Expansion: Total size went up substantially—from ₹15.84 lakh crore to ₹18.71 lakh crore (~18.1% growth).

Positive Indicators:

- Deposits, reserve, and advance growth signify operational health.
- Growth in investment and cash balances points to superior liquidity and risk management.

Watch Areas:

- Growing contingent liabilities must be tracked to eliminate off-balance sheet risk.
- A substantial employee stock option increase would have to be quantified both in cost and dilution terms.

Balance Sheet of ICICI Bank From (2020 To 2024)

PARTICULARS	2020	2021	2022	2023	2024
A. CAPITAL AND LIABILITIES					
Capital	1,29,47,649	1,38,34,104	1,38,99,662	1,39,67,750	1,40,46,790
Employees stock options outstanding	34,858	31,010	26,64,141	76,08,859	1,40,53,180
Reserves And Surplus	1,15,20,61,563	1,46,12,26,736	1,68,85,55,941	1,98,55,77,170	2,35,58,93,246
Deposits	7,70,96,89,946	9,32,52,21,605	10,64,57,16,132	11,80,84,06,972	14,12,82,49,513
Borrowings	1,62,89,67,599	91,63,09,564	1,07,23,13,597	1,19,32,54,936	1,24,96,75,779
Other Liabilities and provisions	47,99,49,877	58,77,03,739	68,98,27,947	83,32,50,836	95,32,27,258
Contingent Liability	25,23,82,57,975	26,48,64,06,690	38,67,67,58,717	42,83,16,54,487	46,55,76,17,752
TOTAL (A)	**10,98,36,51,492**	**12,30,43,26,758**	**14,11,29,77,420**	**15,84,20,66,523**	**18,71,51,45,766**
B. ASSETS					
Cash and Balance with RBI	35,28,39,592	46,03,11,902	60,12,08,198	68,52,61,721	89,71,16,960
Balances with banks and money at call and short note	83,87,17,797	87,09,70,599	1,07,70,15,434	50,91,21,002	50,21,43,120
Investments	2,49,53,14,805	2,81,28,65,399	3,10,24,10,024	3,62,32,97,355	4,61,94,22,722
Advances	6,45,28,99,697	7,33,72,90,904	8,59,02,04,390	10,19,63,83,053	11,84,40,63,894
Fixed Assets	8,41,02,853	8,87,75,806	9,37,38,159	9,59,98,412	10,85,98,403
Other assets	75,97,76,748	73,41,12,148	64,84,01,215	73,20,04,980	74,38,00,667
Contingent Liability	25,23,82,57,975	26,48,64,06,690	38,67,67,58,717	42,83,16,54,487	46,55,76,17,752
Total (B)	**10,98,36,51,492**	**12,30,43,26,758**	**14,11,29,77,420**	**15,84,20,66,523**	**18,71,51,45,766**

Comparative Study of NPA Position

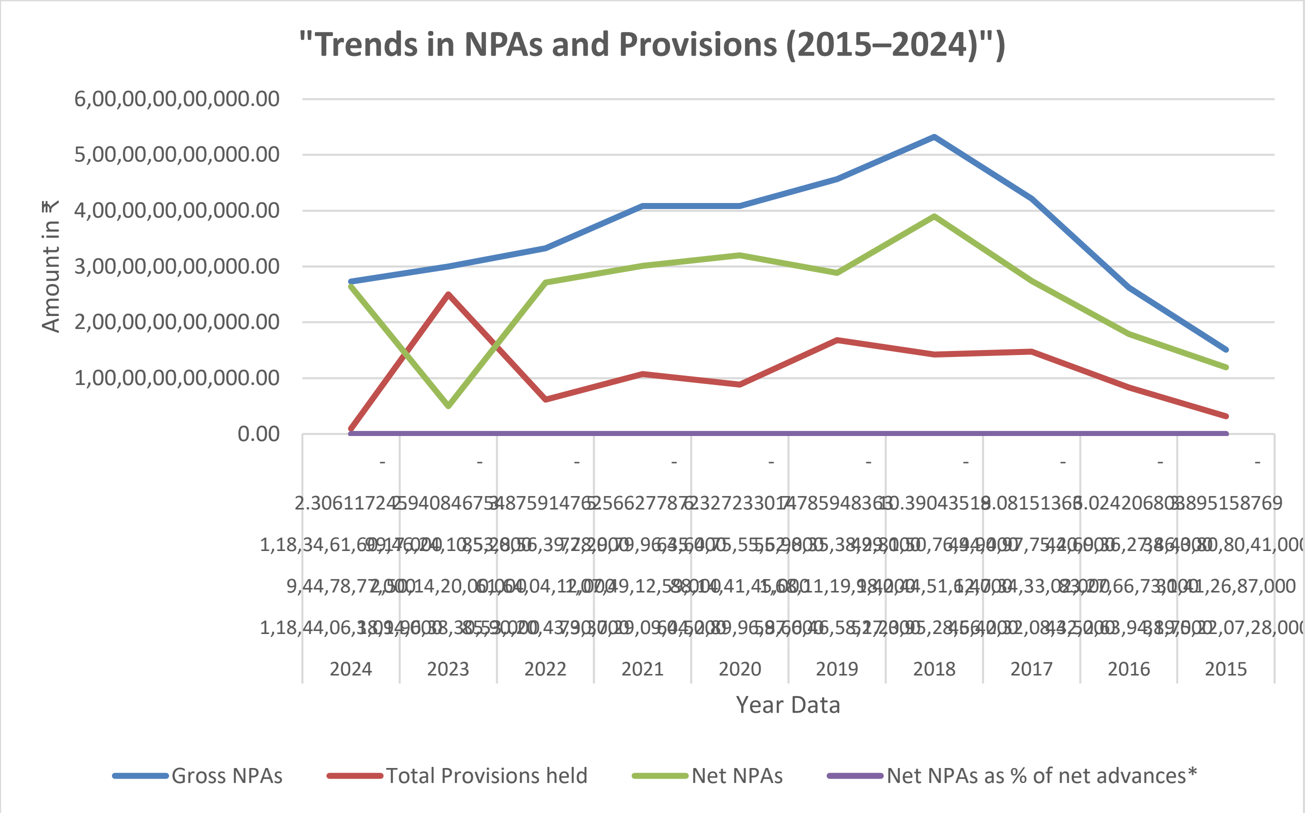
Position of Gross NPA / Net NPA

From The Year 2024 to The Year 2020

PARTICULARS	**2024**	**2023**	**2022**	**2021**	**2020**
Gross Advance	1,18,44,06,38,94,000	1,01,96,38,30,53,000	85,90,20,43,90,000	73,37,29,09,04,000	64,52,89,96,97,000
Total Provisions held	9,44,78,77,000	2,50,14,20,00,000	61,64,04,12,000	1,07,49,12,59,000	88,14,41,45,000
Net advances	1,18,34,61,60,17,000	99,46,24,10,53,000	85,28,56,39,78,000	72,29,79,96,45,000	63,64,75,55,52,000
Gross NPAs % to Gross Advances	2.306117245	2.940846754	3.875914762	5.566277872	6.327233014
Total deductions	-	-	-	-	-
Gross NPAs	2,73,13,80,00,000.00	2,99,86,00,00,000.00	3,32,94,90,00,000.00	4,08,41,40,00,000.00	4,08,29,00,00,000.00
Total Provisions held	9,44,78,77,000	2,50,14,20,00,000	61,64,04,12,000	1,07,49,12,59,000	88,14,41,45,000
Net NPAs	2,63,69,01,23,000.00	49,71,80,00,000.00	2,71,30,85,88,000.00	3,00,92,27,41,000.00	3,20,14,58,55,000.00
Net NPAs as % of net advances*****	2.228125717	0.499867234	3.181175503	4.162255606	5.029978801

From the year 2019 to the year 2015

Line chart of NPAs and Provisions (2015-2024)



The chart shows the trend from 2015 to 2024 for the following banking metrics:

- **Gross NPAs** (Non-Performing Assets)
- **Total Provisions held**
- **Net NPAs**
- **Net NPAs as % of Net Advances**

Important Notions:

- Peak: About 2018–2020, with a notable increase, Gross NPAs (Blue Line).
- Fall: There will be a sharp decline till 2024 following 2020.

1. Reading:

- Up until 2020, banks carried growing bad debt.
- Writ-offs, improved underwriting, and aggressive recovery initiatives post-2020 seem to have lower gross NPAs.

2. Total Provisions Held (Orange Line) Variations:

- Peaked sometime between 2018 and 2019.
- Rather constant then declining a little.

3. Interpretive interpretation:

- Provisions raised as banks expected or acknowledged bad loans.
- Banks needed somewhat less provisions as NPAs slumped after 2020.

- Though generally lower since provisions lower Net NPAs, Grey Line follows the same trend as Gross NPAs.

Translation:

- Net NPAs peaked also around 2018–2019.
- The notable decline later reveals not only recovery but also better provisioning.

4. Net NPAs expressed as % of Net Advancement (yellow line):

- Peak around 2018–2019 (>10%)—that is, more than 10% of net loans were bad assets!).
- Regular autumn following, under 4% by 2024.

Translation:

- The general state of banks after 2019 much improved.

Period Situation Rising:

- 2015–2018 NPAs, banks under crisis, expanding provisions.
- Peak stress in 2018–2020—the worst NPA period.
- Post-2020 improvement: better bank balance sheets and a sharp drop in NPAs.

Additional Ratios:

1. Problem Assets Ratio:

The Problem Asset Ratio is a financial metric that shows the proportion of a bank's or lender’s total assets that are classified as problematic, meaning loans that are at risk of not being repaid.

In simple words:

Problem Asset Ratio = Gross NPAs / Total Assets

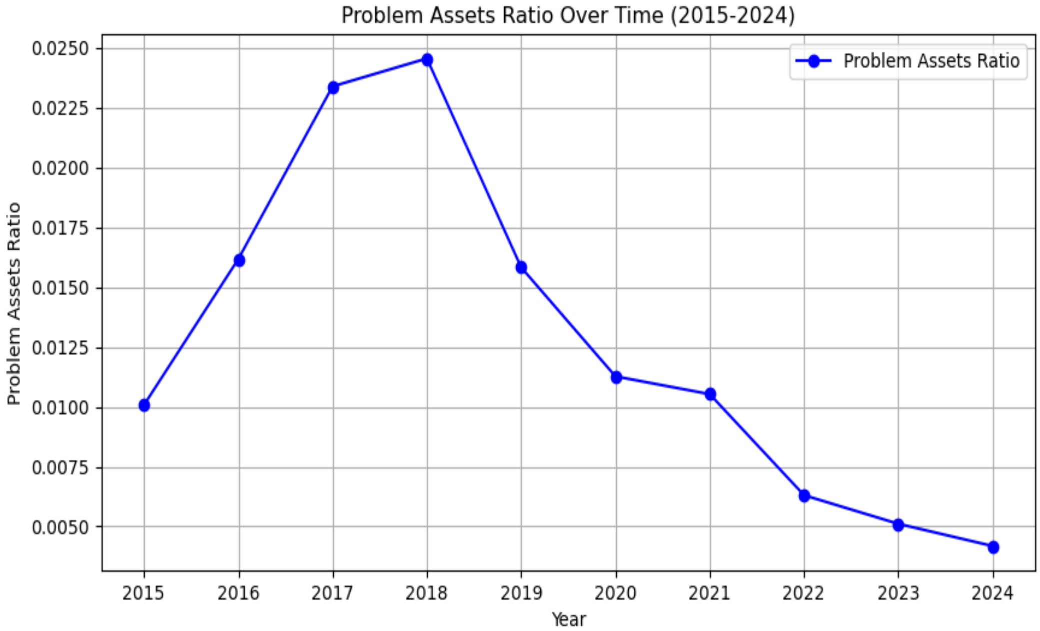
Year	Gross NPA	Total Assets	Problem Assets Ratio
2024	2,73,13,80,00,000.00	6,52,72,76,35,18,000	0.004184563
2023	2,99,86,00,00,000.00	5,86,73,72,10,10,000	0.005110635
2022	3,32,94,90,00,000.00	5,27,89,73,61,37,000	0.006307078
2021	4,08,41,40,00,000.00	3,87,90,73,34,48,000	0.010528649
2020	4,08,29,00,00,000.00	3,62,21,90,94,67,000	0.011271907
2019	4,56,76,00,00,000.00	2,88,64,97,43,46,000	0.015824022
2018	5,32,40,10,00,000.00	2,16,84,33,16,31,000	0.024552336
2017	4,21,59,30,00,000.00	1,80,27,85,15,87,000	0.023385648
2016	2,62,21,20,00,000.00	1,62,14,93,88,36,000	0.016171014
2015	1,50,94,60,00,000	1,49,81,06,90,15,000	0.010075783

Interpretation:

First Increase (2015–2018): In 2015, the ratio was 0.0101, and in 2018, it peaked at 0.0246. This shows an increasing percentage of problem assets in comparison to total assets, which may indicate that the institution's portfolio is being impacted by problems such as declining asset quality, a rise in loan defaults, or economic difficulties.

Sharp Decline (2018–2022): The ratio experienced a sharp decline to 0.0063 by 2022 following its peak in 2018. This sharp drop indicates that problem assets were probably addressed with effective measures, such as better risk management, loan restructuring, or defaults being reduced by economic recovery. The steady decline indicates an improving financial situation.

Stabilisation (2022–2024): The ratio decreased from 2022 to 2024, albeit more slowly, and in 2024 it reached 0.0042. This shows a low-level stabilisation, pointing to ongoing enhancements in asset quality and perhaps a more advantageous economic climate or more stringent lending regulations.



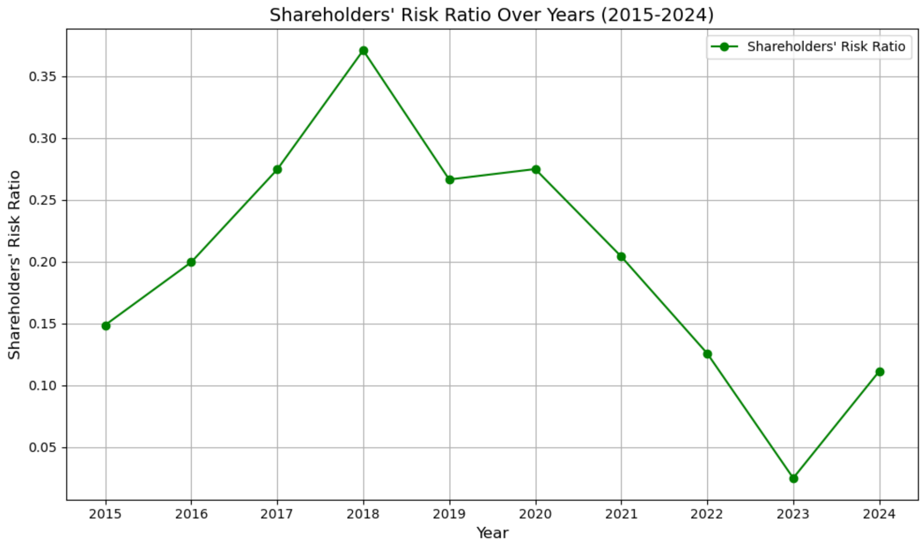
General Interpretation: The pattern demonstrates a cycle of increasing financial stress from 2015 to 2018, which was followed by a robust recovery and stabilisation from 2018 to 2024. By 2024, the institution's balance sheet should be healthier as a result of the successful strategies it employed to manage problematic assets. However, since the state of the economy can change, monitoring should continue to make sure the ratio stays low.

2. Shareholders Risk Ratio:

The Shareholders' Risk Ratio shows how much risk the shareholders (owners) of a bank are exposed to because of the bank's problem assets (mainly bad loans).

$$\textbf{Shareholders risk ratio (In thousands)} = \frac{\text{Net NPA} * 100}{\text{Total capital and free reserves}}$$

Year	Net NPA	Total Capital and Reserves	Shareholders risk Ratio
2024	2,63,69,01,23,000.00	23,69,94,00,36,000	0.11126447
2023	49,71,80,00,000.00	19,99,54,49,20,000	0.024864658
2022	2,13,97,21,23,000.00	17,02,45,56,03,000	0.125684407
2021	3,00,92,27,41,000.00	14,75,06,08,40,000	0.204007003
2020	3,20,14,58,55,000.00	11,65,00,92,12,000	0.274801136
2019	2,88,64,80,02,000.00	10,83,63,36,61,000	0.266370465
2018	3,89,95,58,38,000.00	10,51,53,36,65,000	0.370844844
2017	2,74,24,96,98,000.00	9,99,44,81,41,000	0.274401129
2016	1,78,93,53,27,000.00	8,97,28,88,13,000	0.199417762
2015	1,19,53,33,13,000.00	8,04,21,91,65,000	0.148632759



Interpretation:

General Direction:

From 2015-2018, Shareholders' Risk Ratio also increased year over year, peaking in the year 2018.

Since 2018, the ratio has been declining overall, with sharp falls in 2021, 2022, and 2023, before reversing the trend somewhat in 2024.

Observations:

2015 to 2018

- The ratio rose from about 0.15 to 0.37.
- This indicates that shareholder risk was rising, possibly because of increasing NPAs or poorer asset quality.

2019 until 2020:

- A slight decrease in 2019, but a slight stabilization in 2020.
- Exhibits some attempts at managing risks but still at comparatively high levels.

2021 - 2023

- Dramatically reduced, with the rate declining sharply to as low as 0.02 in 2023.
- Signals improved asset quality, lower NPAs, or more robust capital base.

2024

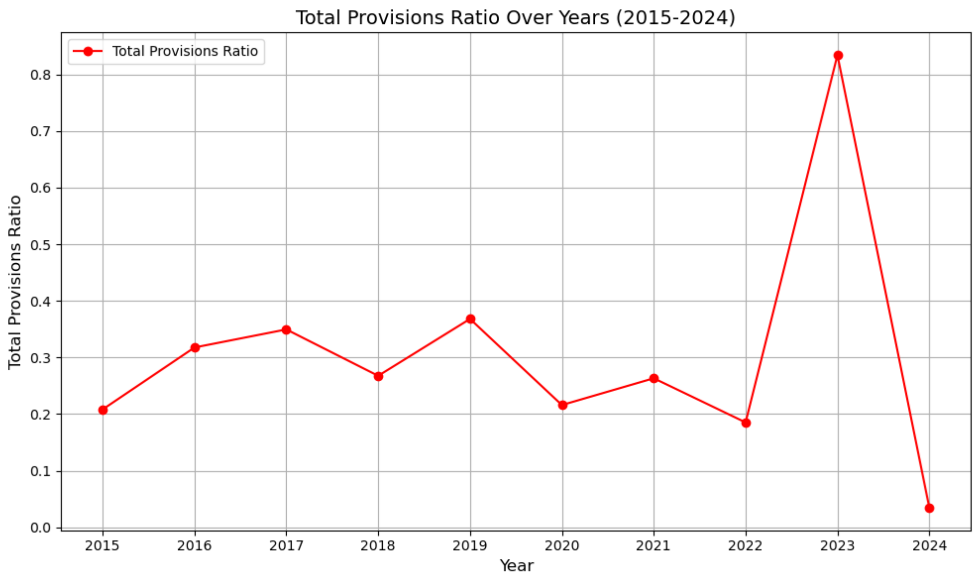
- Small rise again to about 0.11.
- Suggests a modest increase in risk, but far superior to the peak years.

3. Total Provisions Ratio:

The Total Provision Ratio is a financial metric that measures a bank's ability to cover its Non-Performing Assets (NPAs) by setting aside a percentage of its total assets as a provision. It's calculated as:

Total Provision Ratio = Total Provisions / Total Gross NPA.

Year	Total Provisions	Gross NPA	Total Provisions ratio
2024	9,44,78,77,000	2,73,13,80,00,000.00	0.034590123
2023	2,50,14,20,00,000	2,99,86,00,00,000.00	0.834195958
2022	61,64,04,12,000	3,32,94,90,00,000.00	0.185134696
2021	1,07,49,12,59,000	4,08,41,40,00,000.00	0.263191906
2020	88,14,41,45,000	4,08,29,00,00,000.00	0.215886123
2019	1,68,11,19,98,000	4,56,76,00,00,000.00	0.36805324
2018	1,42,44,51,62,000	5,32,40,10,00,000.00	0.267552394
2017	1,47,34,33,02,000	4,21,59,30,00,000.00	0.349491813
2016	83,27,66,73,000	2,62,21,20,00,000.00	0.317592913
2015	31,41,26,87,000	1,50,94,60,00,000	0.208105462



Interpretation:

This graph illustrates the fluctuations in the Total Provisions Ratio over the years from 2015 to 2024. It shows significant variations, with peaks and dips that indicate periods of higher and lower provisions.

Key Observation:

1. **2015-2017:** A steady increase, reaching a peak around 0.4 in 2017.
2. **2018-2020:** A fluctuating period with a drop in 2018, a rise in 2019, and a sharp decline to **0.2** in 2020.
3. **2021-2023:** Another rise, culminating in the highest peak (0.8) in 2023, indicating a major shift.
4. **2024:** A significant drop to 0.1, marking the lowest ratio in the ten-year span.

Possible Interpretation:

- The fluctuations could reflect changes in financial or economic conditions, adjustments in regulatory policies, or shifting market dynamics.
- The sharp rise in 2023 might indicate an increase in provisions due to unforeseen risks, economic instability, or a change in accounting strategies.
- The drastic decline in 2024 could suggest improved financial conditions, fewer expected losses, or a shift in risk assessment.

Comparative NPA RATIOs of ICICI Bank:

Gross NPA Ratio (%)

The Gross NPA (GNPA) ratio, also known as the Gross Non-Performing Assets ratio, is a financial metric that indicates the percentage of a bank's total assets that are classified as non-performing**.**

$$\text{Gross NPA ratio} = \frac{\text{Gross NPA} * 100}{\text{Gross Advances}}$$

Net NPA Ratio (%)

The Net NPA Ratio, or Net Non-Performing Asset Ratio, is a financial metric that indicates the proportion of a bank's loan portfolio that has become non-performing after accounting for provisions (set aside funds to cover potential losses) made by the bank.

Formula:

Net NPA Ratio = (Net NPAs / Total Advances) * 100.

Comparative NPA Ratios

Interpretation:

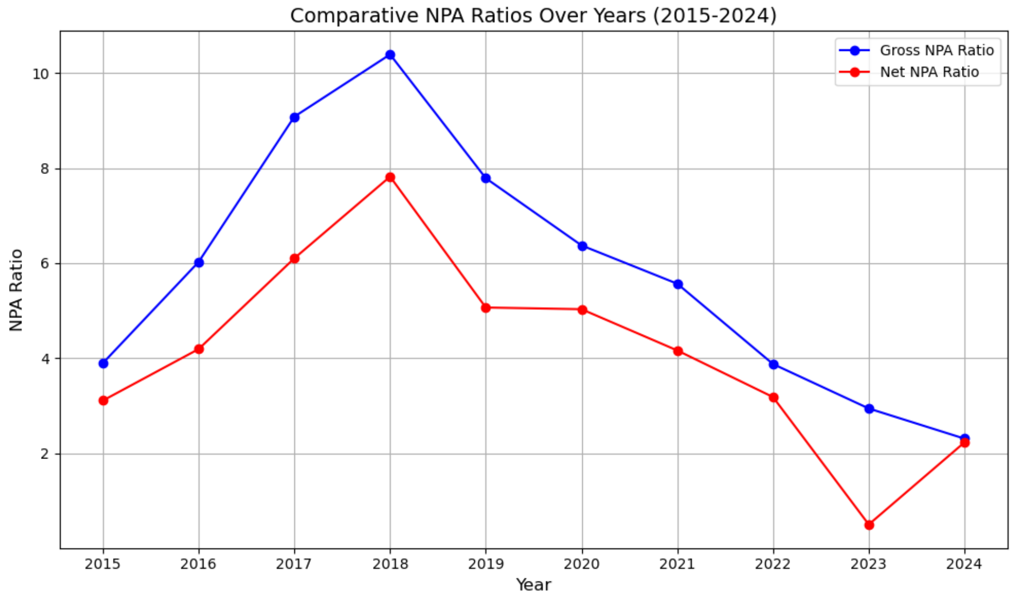
This graph displays the changes in Gross NPA Ratio and Net NPA Ratio from 2015 to 2024. It gives us a picture of how non-performing assets (NPAs) have changed over time.

Main Points:

- 2015-2018: Both Gross and Net NPA Ratios went up hitting their highest points in 2018.
- Gross NPA climbed to about 10.

- Net NPA topped out at 6.
- This points to a jump in bad loans during this time maybe because of economic slumps or problems in the banking world.
- 2018-2023: Both ratios kept going down.
- Shows better asset quality and more successful recovery work.
- Banks and other money lenders might have gotten better at managing loans and getting them back.
- 2023: Net NPA hit its lowest mark—hinting at a time when bad loans were at their smallest.
- 2024: Net NPA Ratio went up a bit, while Gross NPA kept falling.
- This could mean that even though overall bad loans have gone down, some haven't been recovered yet.

Year	Gross NPA ratio	Net NPA ratio
2024	2.306117245	2.228125717
2023	2.940846754	0.499867234
2022	3.875914762	3.181175503
2021	5.566277872	4.162255606
2020	6.327233014	5.029978801
2019	7.785948363	5.065462951
2018	10.39043518	7.828068568
2017	9.08151363	6.101247349
2016	6.024206803	4.191148367
2015	3.895158769	3.109762811



Here's what we can gather:

- The increase in NPAs from 2015 to 2018 might point to economic troubles sloppy lending, or more people failing to pay back loans.
- The drop in NPAs between 2018 and 2023 could mean tougher rules reshaping of loans, or the economy getting better.
- The path in 2024 hints at ongoing work to handle NPAs, but with some small hiccups along the way.

Findings:

1. Awareness and Implementation Gap: Although the public and policymakers agree that sustainable development is important, there is a sizable implementation gap at the local level.

2. Policy-Driven but Weak Enforcement: Although India has a thorough policy framework pertaining to sustainable development, compliance and enforcement are still lacking.

3. Industrial Impact: Because of pollution and overuse of natural resources, rapid industrialisation has had a negative impact on environmental sustainability.

4. Urban vs. Rural Divide: Sustainable practices are more obviously adopted in urban areas than in rural ones, where resources and awareness are lower.

5. Public Participation: Due mostly to a lack of knowledge, instruction, and incentives, public participation in sustainability initiatives is still low.

6. Corporate Social Responsibility (CSR): In India holds great promise for fostering sustainable development. However, many of the initiatives we see tend to be short-lived and often miss the mark when it comes to aligning with long-term sustainability goals.

Recommendations:

1. Strengthen Policy Enforcement: Stronger enforcement of environmental and sustainability-related policies with well-defined accountability mechanisms is necessary.

2. Raise Awareness and Education: Integrate sustainability issues into diverse courses and undertake mass awareness campaigns in a bid to promote community involvement.

3. Support Rural Development: Establish targeted programs to promote rural sustainable practices, such as the use of renewable energy and sustainable agriculture.

4. Incent Green Practices: Offer tax incentives, subsidies, or awards to green individuals and businesses.

5. Promote Long-Term CSR Initiatives: Encourage companies to make sustainability a long-term approach and not a short-term marketing exercise or a compliance initiative.

6. Leverage Technology: Use the internet and websites to track sustainability indicators and create awareness.

Conclusion:

India stands at a turning point in its journey toward sustainable development. The country has put strong policies in place, but struggles to put them into action. To bridge this gap between plans and real-world results, India must focus on its rural areas and less privileged groups. Three main areas need attention: teaching people about sustainability making sure rules are followed, and giving rewards for eco-friendly choices. This approach aims to make sustainability more than just a government goal – it should become something everyone cares about. If the government, businesses, and regular people all work together, India can create a future that's fair for everyone and good for the environment.

References:

1. Balasubramaniam, C. S. (2002). Non-performing assets and profitability of commercial banks in India: Assessment and emerging issues. *Abhinav National Monthly Refereed Journal of Research in Commerce & Management*, *1*(7). ISSN 2277-1166.
2. Bhurat, S. K., & Saptarshi, M. (2020). NPA and its importance – With reference to Azad Co-operative Bank, Gadag. *A Journal of Composition Theory*, *13*(1). ISSN 0731-6755.
3. Iyer, T. N. A. (1999). Bank supervision and the management of non-performing advances. *The Journal of the Indian Institute of Bankers*, 7–9.
4. Jain, J. L., & Balachandran, K. (1997). Managing financial risks in banking. *The Banker*, *44*(6), 23–33.
5. Khan, M. Y., & Bishnoi, T. R. (2001). Banking crisis and financial reforms: Lessons for India. *Chartered Secretary*, 44–48.
6. Michael, J. N., Vasanthi, G., & Selvaraju, R. (2006). Effect of non-performing assets on operational efficiency of central co-operative banks. *Indian Economic Panorama*, *16*(3), 33–34, 39.
7. Roy, A. (2001). A decade of financial sector reforms. *The Hindu* (Chennai), p. BS-1+.
8. Alred, G. J., Brusaw, C. T., & Oliu, W. E. (2009). *The business writer's handbook*. St. Martin's Press.
9. Gambles, I. (2009). *Making the business case: Proposals that succeed for projects that work*. Ashgate.
10. Reserve Bank of India. (1981). *The report of the Committee to Review Arrangements for Institutional Credit for Agricultural and Rural Development (CRAFICARD)*. Bombay: Author.
11. Reserve Bank of India. (2011). *Master Circular - Income Recognition, Asset Classification, Provisioning and Other Related Matters*. Retrieved from https://www.rbi.org.in

WOMEN ENTREPRENEURS AS CATALYSTS FOR SUSTAINABLE DEVELOPMENT: OPPORTUNITIES, CHALLENGES, AND IMPACT ON GLOBAL BUSINESS PRACTICES

Ekta

P. G. Department of Commerce,

Khalsa College for Women, Civil Lines, Ludhiana

Corresponding author E-mail: ektamehra50921@gmail.com

Abstract:

Women entrepreneurs are becoming revolutionary leaders in the promotion of sustainable practices in the modern global environment. Their creative methods, which range from environmentally friendly goods to neighborhood-based initiatives, are essential for coordinating commercial endeavors with the Sustainable Development Goals (SDGs). This study examines the opportunities and challenges women entrepreneurs face in achieving these objectives while emphasizing their contributions to the global business environment's progressive sustainability initiatives.

The objectives of this research are:

1. To explore the opportunities and challenges faced by women entrepreneurs in aligning their business ventures with the objectives of the SDGs.
2. To evaluate the critical role of women entrepreneurs in driving progressive sustainability initiatives within the global business landscape.

Through the use of case studies and secondary data, this study investigates how women entrepreneurs are overcoming obstacles, promoting inclusive growth, and putting eco-friendly business practices into effect. The results highlight their important contributions to the advancement of important Sustainable Development Goals (SDGs), especially those related to climate action, gender equality, and responsible consumerism. In order to strengthen their position as sustainability leaders, the report also emphasizes the significance of creating inclusive policies, guaranteeing fair access to funds, and encouraging teamwork.

According to the study's findings, supporting women entrepreneurs is crucial for both accomplishing sustainability goals and building a more resilient and ecologically conscious future.

Keywords: Women Entrepreneurs, Sustainability, Sustainable Development Goals (Sdgs), Green Business Practices, Gender Equality, Social Entrepreneurship, Circular Economy, Inclusive Leadership.

Introduction:

Women entrepreneurship is a dynamic and evolving concept that highlights the active participation of women in the business landscape. It encompasses various forms of business ownership and engagement, reflecting the diverse entrepreneurial activities undertaken by women across the globe. Women entrepreneurs play a pivotal role in identifying and leveraging business opportunities, managing risks, and assuming leadership roles to achieve their entrepreneurial aspirations. Their contributions are instrumental in driving innovation, generating employment, and fostering economic growth. By shaping inclusive and resilient entrepreneurial ecosystems, women entrepreneurs significantly impact both social and economic development.

Women’s entrepreneurial activities span a wide spectrum, ranging from self-employment to the establishment and management of small and medium-sized enterprises (SMEs) and technology-driven start-ups. Many women operate as sole proprietors, engaging in freelancing, consulting, retail businesses, and small-scale enterprises. For example, Joy Mangano, an American entrepreneur, transformed the household products industry with her invention of the Miracle Mop, later expanding her business to include other innovative home products. Additionally, an increasing number of women entrepreneurs are actively participating in the start-up ecosystem, leveraging technology, digital platforms, and innovative business models to create and expand new ventures. Whitney Wolfe Herd, the founder of Bumble, revolutionized the online dating industry by introducing a platform that empowers women to make the first move, demonstrating how female entrepreneurs are redefining digital business spaces.

Beyond business ownership, women entrepreneurs play a crucial role in every stage of business development—from ideation and market analysis to strategic planning, execution, and expansion. They bring unique perspectives, skills, and experiences to their enterprises, fostering creativity, resilience, and a commitment to driving positive change. Dr. Precious Moloi-Motsepe, a South African entrepreneur and philanthropist, has been instrumental in expanding Africa’s fashion industry through her company, African Fashion International (AFI), which provides a platform for local designers to gain global recognition.

However, multiple factors influence women’s entrepreneurial journeys, including social, cultural, economic, and institutional dynamics. While motivations such as financial independence, passion for a particular industry, and the aspiration to challenge gender norms drive many women to pursue entrepreneurship, they often encounter unique challenges. These include gender biases, limited access to financial resources, cultural expectations, and the complexities of maintaining a work-life balance. For instance, Falguni Nayar, the founder of Nykaa, overcame societal expectations and financial barriers to build one of India's leading beauty and wellness e-commerce platforms.

To mitigate these barriers, it is imperative to establish supportive ecosystems, inclusive policies, and targeted initiatives that promote gender equality, facilitate access to capital and professional networks, and foster an enabling business environment. Women entrepreneurs are not only catalysts for economic growth and job creation but also key agents of social transformation. Sara Blakely, the founder of Spanx, built her billion-dollar empire with limited capital, proving that innovative thinking and resilience can lead to success despite financial constraints. Similarly, Radhika Ghai, co-founder of ShopClues, played a crucial role in shaping India's e-commerce sector by providing small retailers with a digital marketplace.

By breaking traditional gender barriers and reshaping business norms, women contribute to a more equitable and sustainable global business landscape. Recognizing and supporting the diverse forms of women entrepreneurship is essential for fostering an environment where women can pursue their entrepreneurial ambitions, contribute meaningfully to sustainable development, and maximize their impact on the global economy.

Review of Literature

Research on women entrepreneurs as catalysts for sustainable development has grown significantly in recent years. Scholars continue to explore the role of women in economic growth, the barriers they face, and the innovative ways they contribute to sustainable business practices. This literature review integrates the most recent studies from 2022 to 2024, focusing on key areas such as opportunities, challenges, and policy interventions that shape female entrepreneurship globally.

1. Women Entrepreneurs and Sustainable Development

Women entrepreneurs have emerged as key drivers of sustainable development by fostering economic resilience, promoting inclusive growth, and integrating sustainability into business practices. A recent study by Iodice and Tregua (2024) emphasizes the importance of entrepreneurship education and training (EET) in supporting women entrepreneurs in their transition to sustainable business models. Their research highlights the need for educational programs to empower female entrepreneurs with skills that align with sustainability goals. *(Source: Iodice & Tregua, 2024)*

Similarly, Sulaj and Themelko (2024) explore how women entrepreneurs in rural Albania are leveraging agritourism as a pathway to economic empowerment and environmental conservation. Their findings suggest that female-led businesses in agritourism contribute significantly to sustainable development by preserving local culture and biodiversity. *(Source: Sulaj & Themelko, 2024)*

Another significant contribution to this field is the study by Alkharafi (2024), which highlights the role of women entrepreneurs in national innovation systems. The study underscores how female-led enterprises integrate social responsibility into their business models, aligning with broader sustainability objectives. *(Source: Alkharafi, 2024)*

2. Opportunities for Women Entrepreneurs in the Global Market

With the rise of digital transformation and policy interventions, new opportunities have emerged for women entrepreneurs worldwide. Mavin and Grandy (2024) discuss how business schools can play a critical role in normalizing women's leadership in entrepreneurship, advocating for curriculum reforms that emphasize gender inclusivity and sustainable business strategies. *(Source: Mavin & Grandy, 2024)*

The role of technology in empowering women entrepreneurs is further explored in a study by Santhi (2024), which examines how mobile applications facilitate business expansion for rural female entrepreneurs in India. The findings suggest that digital tools have significantly lowered entry barriers and improved access to markets for women entrepreneurs. *(Source: Santhi, 2024)*

Additionally, Nevi *et al.* (2024) investigate the drivers and barriers faced by female entrepreneurs in Italy, providing insights into how government incentives and business mentorship programs contribute to women's success in the entrepreneurial ecosystem. *(Source: Nevi et al., 2024)*

3. Challenges Faced by Women Entrepreneurs

Despite their contributions, women entrepreneurs continue to face significant obstacles. Gender biases, limited access to finance, and socio-cultural expectations remain major challenges. Elamine (2024) highlights how the COVID-19 pandemic exacerbated financial inequalities, making it even more difficult for female entrepreneurs in Africa to secure funding. The study underscores the need for digital financial services and targeted economic policies to address these disparities. *(Source: Elamine, 2024)*

Similarly, Paliwal and Bhatt (2025) discuss the intersection of social entrepreneurship and ecofeminism, using the case of Piplantri, India, to illustrate how women-led initiatives can drive environmental sustainability despite systemic gender barriers. *(Source: Paliwal & Bhatt, 2025)*

Moreover, Wang & Wang (2024) explore the impact of women's leadership in family businesses and their role in shaping environmental, social, and governance (ESG) compliance. The study finds that female chairpersons in businesses tend to implement more sustainable and ethical business practices compared to their male counterparts. *(Source: Wang & Wang, 2024)*

4. Policies and Support Mechanisms for Women Entrepreneurs

Governments and international organizations have been increasingly investing in gender-inclusive policies to support women entrepreneurs. Vuciterna *et al.* (2024) provide a bibliometric analysis of women's entrepreneurial journeys, highlighting the importance of policy frameworks in both developed and developing nations. The study suggests that countries with strong gender-focused policies see higher rates of women-led business success. *(Source: Vuciterna et al., 2024)*

Another study by Mishra (2024) explores the impact of sustainable business models on women's entrepreneurship, using the Twirl Store case study to showcase how upcycling and ethical production methods can drive both environmental and economic sustainability. *(Source: Mishra, 2024)*

Furthermore, Naghibi and Valmohammadi (2025) assess the role of industrial start-ups led by women, focusing on the adoption of circular economy strategies. Their findings indicate that female entrepreneurs are more likely to implement sustainable production methods, emphasizing the need for better financial incentives for women-led green businesses. *(Source: Naghibi & Valmohammadi, 2025)*

5. The Impact of Women Entrepreneurs on Global Business Practices

Women entrepreneurs are reshaping business practices through sustainability and corporate social responsibility (CSR). Aggarwal (2024) discusses how mobile technologies are transforming rural women's access to global markets, fostering economic independence and business growth. *(Source: Aggarwal, 2024)*

Additionally, Cariello *et al.* (2024) examine the role of social cohesion in women-led businesses, emphasizing the importance of community-driven entrepreneurship in achieving long-term sustainability. *(Source: Cariello et al., 2024)*

Findings

The following key findings highlight the role of women entrepreneurs as catalysts for sustainable development, their opportunities, challenges, and their overall impact on global business practices.

1. Women Entrepreneurs Drive Sustainable Development

Women entrepreneurs significantly contribute to sustainable development through economic growth, environmental responsibility, and social impact.

- **Integration of Sustainability:** Research by **Iodice & Tregua (2024)** indicates that women entrepreneurs increasingly incorporate sustainable business models, aligning with global Sustainable Development Goals (SDGs). Many prioritize social entrepreneurship, focusing on community-based businesses that promote environmental conservation and social equity.
- **Women in Agritourism: Sulaj & Themelko (2024)** found that female entrepreneurs in agritourism sectors help preserve cultural heritage while promoting eco-friendly tourism, reinforcing the link between entrepreneurship and sustainability.
- **National Innovation & Women Entrepreneurs: Alkharafi (2024)** highlights that women-owned businesses are at the forefront of national innovation, particularly in sectors focused on social responsibility and sustainable business practices.

Women entrepreneurs are instrumental in fostering sustainable economic growth, particularly through social enterprises, environmental-friendly business practices, and innovation-driven initiatives.

2. Expanding Opportunities for Women Entrepreneurs

Technological advancements and supportive policies have created more opportunities for women in business.

- **Role of Digitalization: Santhi (2024)** demonstrates that digital tools, such as mobile applications, have enabled rural women entrepreneurs to access markets, manage business operations, and improve financial inclusion.
- **Impact of Business Education: Mavin & Grandy (2024)** emphasize the importance of integrating gender-focused entrepreneurship training in business schools to enhance leadership skills and increase female participation in sustainable business ventures.

- **Government & Institutional Support: Nevi *et al.* (2024)** show that government incentives and mentorship programs have significantly improved the success rate of female entrepreneurs, particularly in countries with strong gender-focused policies.

The rise of digital entrepreneurship, access to funding, and policy reforms are critical in expanding opportunities for women-led businesses and fostering economic empowerment.

3. Persistent Challenges for Women Entrepreneurs

Despite progress, women entrepreneurs continue to face gender-based obstacles that hinder business growth.

- **Financial Barriers: Elamine (2024)** found that women entrepreneurs, particularly in Africa, struggle with securing funding due to systemic biases in financial institutions.
- **Gender Bias & Societal Expectations: Paliwal & Bhatt (2025)** identified that women in social entrepreneurship often face gender discrimination and limited decision-making power, particularly in conservative societies.
- **Balancing Work & Family: Wang & Wang (2024)** highlight the double burden of managing businesses while fulfilling traditional family responsibilities, which affects the scalability of women-led businesses.

Women entrepreneurs face significant challenges, including financial exclusion, gender biases, and societal pressures, necessitating stronger policy interventions and support systems.

4. Policy Interventions & Support Mechanisms

Efforts to close the gender gap in entrepreneurship have led to various policy interventions and support mechanisms.

- **Government Programs & Mentorship: Vuciterna *et al.* (2024)** found that countries with robust gender-based policies and financial support systems exhibit higher success rates for women-led businesses.
- **Green & Circular Economy Initiatives: Naghibi & Valmohammadi (2025)** emphasize that women entrepreneurs are more likely to adopt sustainable production models, but they require better access to financial incentives to scale green businesses.
- **Impact of Sustainable Business Models: Mishra (2024)** provides evidence that sustainable practices, such as upcycling and ethical production, help female entrepreneurs build financially viable and environmentally responsible businesses.

Strengthening financial inclusion policies, improving mentorship programs, and encouraging sustainable business models are critical for fostering female entrepreneurship.

5. Women Entrepreneurs are Reshaping Global Business Practices

Women entrepreneurs are actively transforming corporate cultures and business practices worldwide.

- **Mobile Technology & Market Expansion: Aggarwal (2024)** shows that mobile technology is helping women entrepreneurs in rural areas access global markets, fostering economic independence.

- **Women-Led Businesses & CSR: Cariello *et al.* (2024)** demonstrate that women-led businesses tend to focus more on corporate social responsibility (CSR), creating socially and environmentally conscious business models.

Women entrepreneurs are reshaping business landscapes by prioritizing sustainability, diversity, and ethical leadership, contributing to more responsible global business practices.

Recommendations:

Based on the findings, the following recommendations are proposed to enhance the role of women entrepreneurs in sustainable development:

1. **Improve Access to Finance & Investment Opportunities**
    - Governments, financial institutions, and venture capitalists should implement gender-inclusive funding programs to address financial barriers.
    - Expanding microfinance initiatives and women-focused investment funds can support the growth of female-led businesses.
2. **Strengthen Entrepreneurship Education & Digital Skills Training**
    - Business schools and training institutions should integrate gender-focused entrepreneurship courses, emphasizing sustainability and leadership development.
    - Digital skills training programs can empower women to leverage e-commerce, fintech, and digital marketing tools for business expansion.
3. **Enhance Policy Support & Regulatory Frameworks**
    - Policymakers should design and enforce laws that promote gender equality in business ownership, corporate leadership, and financial inclusion.
    - Strengthening social protections, such as childcare support and parental leave policies, can help women balance work and family responsibilities.
4. **Encourage Sustainable & Green Business Practices**
    - Governments and private organizations should provide incentives for women entrepreneurs to adopt sustainable business models, such as circular economy initiatives.
    - Promoting mentorship programs and networks for female entrepreneurs in green industries can facilitate knowledge sharing and collaboration.

By implementing these recommendations, societies can create a more inclusive and sustainable entrepreneurial ecosystem, empowering women to drive long-term economic growth and social change.

Conclusion:

The findings from the latest research (2022–2024) reinforce that women entrepreneurs play a crucial role in sustainable development. While opportunities are expanding due to digitalization, policy reforms, and education, persistent challenges such as financial barriers and gender biases continue to hinder their progress. Addressing these issues through targeted interventions, financial inclusion programs, and business mentorship can enable women entrepreneurs to reach their full potential.

By fostering an inclusive entrepreneurial ecosystem, societies can unlock the full potential of women entrepreneurs, leading to more sustainable, innovative, and equitable global business environments.

References:

1. Iodice, G., & Tregua, M. (2024). *Elevating female transitional entrepreneurs for social sustainability: Revisiting the need for entrepreneurship education*. In *Proceedings of the International Conference on Educational Management (ICEM 2024)* (p. 59).
2. Sulaj, A., & Themelko, H. (2024). Agritourism as a pathway to women's empowerment: Insights from rural Albania. *European Countryside*, *14*(1), Article 0032.
3. Alkharafi, N. (2024). The role of women in driving national innovation and entrepreneurship. *Journal of Innovation & Knowledge*, *9*(1).
4. Mavin, S., & Grandy, G. (2024). Wanted: Courageous business schools to challenge patriarchy. *Global Focus Magazine*.
5. Santhi, P. (2024). What drives rural women entrepreneurs towards adoption of mobile applications in business? *SDMIMD Journal of Management*, *15*(1).
6. Nevi, G., Ancillai, C., & Palladino, R. (2024). Investigating female entrepreneurship: A micro-perspective of drivers and barriers for aspiring and experienced women entrepreneurs. *Journal of Entrepreneurship and Innovation*.
7. Elamine, M. (2024). The catalytic effect of digitalization and health measures during COVID-19 on corporate social responsibility in the African context. *Journal of Financial Reporting and Accountability*, *22*(1).
8. Paliwal, U. L., & Bhatt, N. (2025). Social entrepreneurship through ecofeminism: A case of Piplantri, India. *Emerald Emerging Markets Case Studies*.
9. Wang, H., & Wang, W. (2024). Chairperson gender, policy compliance, and ESG performance of family firms. *International Review of Economics & Finance*, *89*.
10. Vuciterna, R., Ruggeri, G., & Mazzocchi, C. (2024). Women's entrepreneurial journey in developed and developing countries: A bibliometric review. *Agricultural and Food Economics*, *12*, Article 19.
11. Mishra, O. (2024). Twirl Store: Pioneering sustainable textile practices by closing the loop. *Emerald Emerging Markets Case Studies*.
12. Naghibi, M., & Valmohammadi, C. (2025). The relationship between factors affecting the development of industrial startups using fuzzy cognitive mapping. *Journal of Value Creating in Business Management*.
13. Aggarwal, K. K. (2024). Mobile smartphones' effect on rural entrepreneurs. In *Sustainability Entrepreneurship* (pp. 203–216). Springer.
14. Cariello, A., Ferorelli, R., & Rotondo, F. (2024). Social cohesion and resilience in women-led businesses. In *Handbook of Women in Business and Management*. Edward Elgar Publishing.

FOLK HEALING PRACTICES EMPLOYED AMONG THE TAI-AHOM COMMUNITY OF ASSAM

Sunayana Gogoi* and Toslima Sultana Begum

Department of Human Development and Family Studies,

College of Community Science, Assam Agricultural University, Jorhat, Assam, India

*Corresponding author E-mail: sunayanagogoi01@gmail.com

Abstract:

Assam is home to a diverse array of tribes, each possessing a distinct set of cultural customs and beliefs. This chapter delves into the diverse folk medicine and healing procedures used by Assam's Tai Ahom population. This chapter details on traditional folk medicinal practices, which include animal and plant-based cures fundamental to Tai Ahom ethnomedicine, through an extensive review of existing ethnographic literature and previous research studies. The ethnomedicine is mostly focused on locally accessible materials used to treat ailments. Analysis reveals that the Tai-Ahom healing practices integrates the elements of animistic belief systems. Today, this traditional knowledge is gradually dwindling from urbanization and changing demographics, thus this chapter emphasizes the necessity of conservation efforts, as well as the long-term preservation and evolution of this traditional knowledge for future healthcare applications.

Keywords: Assam, Ethnomedicine, Folk Medicine, Tai Ahom, Traditional Knowledge

Introduction:

Folk medicines and traditional healing practices are essential components of the cultural legacy of several indigenous cultures around the globe. Traditional herbal medicine plays an essential role in rural India's basic healthcare system. They are thought to be safe, effective, and economical, and there is a worldwide movement towards the resurgence of traditional herbal therapy (Buragohain, 2011). Assam, situated in the northeast corner of the Indian subcontinent, is characterized by its rich biodiversity, encompassing a wide variety of flora and fauna. Extending from latitude $24^{0}10'$ N to $27^{0}58'$ N and longitude $89^{0}49'$ E to $97^{0}26'$ E between the foothills of the eastern Himalayas and the Patkai and Naga Ranges, the region boasts a diverse range of medicinal plants. It is renowned for the utilization of folk medicines and traditional healing practices by its diverse communities to address a multitude of ailments. Living in isolated forest regions, the ethnic communities of Assam continue to rely on their traditional medical expertise (Dutta and Dutta, 2005). Wild plants have been food and medicine for centuries (Basumatary *et al.*, 2014). These indigenous groups have a wide variety of traditional or ethno-medicinal knowledge, including culinary, medicinal, ceremonial, ritual, and therapeutic uses. Through generations, people have verbally learned the traditional healing practices and folk medicines. Folk medicine refers to the traditional healing practices and beliefs that involve herbal medicine, spirituality, and manual therapies or exercises to diagnose, treat, or prevent an ailment or illness. The World Health Organization (WHO) defines traditional medicine, which includes folk medicine, as "the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, used in the maintenance of health as well as in the prevention, diagnosis, improvement, and treatment of physical and mental illness (WHO, 2023).

Among the diverse communities of Assam, the Tai population of Assam has a variety of traditional medicines and healing techniques that utilize locally available natural resources including flora and fauna in healthcare practices. The Tai-Ahoms are the descendants of the ethnic Tai people who entered the Brahmaputra valley with the Tai prince Siu-Ka-Pha in 1228. Situated in Charaideo, Sivasagar as their capital, the Tai-Ahom prince Chao Lung Siu-Ka-Pha established the Ahom dynasty, which flourished under his rule for six centuries (1228 – 1826). The Tai people who were linked to the Shan were known to be migrated from Mong Mao of South China, present-day Yunnan Province, China (Gogoi, 1998). The Tai community has several sub-groups along with Tai-Ahom, including Tai-Khamti, Tai-Turung, and Tai-Khamyang. As an exceptional ethnic group in Assam, the Tai community possesses distinctive traditions and cultural wisdom for healing ailments. In the beginning, their understanding of medicine was closely connected to the Shan-Burman medical system, which has similarities with traditional Chinese and Tibetan medicine. As they journeyed through various regions, such as present-day Thailand, Laos, and parts of China, they incorporated additional healing knowledge from these cultures. Upon settling in Assam, the Tai-Ahom people also encountered India's ancient and diverse Ayurvedic tradition. A syncretic traditional medical system has evolved over centuries by amalgamating their original Shan-Burman practices with Ayurvedic principles and local Assamese folk remedies. Their folk medicine and traditional healing practices encompass indigenous knowledge, spiritual beliefs, and empirical practices, reflecting a profound understanding of the natural world that should be conserved and utilized conscientiously.

Traditional Ethnomedicinal Practices

The Tai-Ahom people's approach to health is deeply rooted in their animistic beliefs, which hold that every natural element possesses a spirit. They view health as the harmonious balance between an individual's body, mind, and the surrounding environmental spirits. Traditionally they believed illness is perceived to arise when this equilibrium is disrupted, often due to offending a spirit or encountering malevolent spiritual influences. The information about folk medicines and traditional healing practices used by the Ahoms was passed down the generations and documented in ancestral manuscripts. One such text is the “Baidyar Puthi”, written in the Tai-Ahom script, which provides a comprehensive guide to their medical practices. It details plant and animal-based remedies, spiritual healing techniques, and dietary advice. The traditional healers in the Ahom community are known as “Bej (male)” or “Bejini (female)”, who prepare and administer different medical formulations to cure ailments. Up to 80% of the world’s population of over six billion people estimated by the World Health Organization (WHO) predominately rely on plant and animal-based medications. Many indigenous people rely on herbal treatments for daily health care (Bailung and Puzari, 2016).

Tai-Ahom's healing practices exemplify ethnomedicine, the traditional knowledge of a culture regarding treatments and health management that includes culturally defined signs and symptoms of illness and appropriate processes for seeking health care. Tai Ahoms have long used their knowledge of locally accessible medicinal materials and ancestral documents to successfully treat various diseases afflicting Assamese people (Dohutia *et al.,* 2016). Traditional ecological knowledge, often known as TEK, is the medicinal knowledge of many plants, animals, and other resources in an ecosystem that serves as the foundation for ethnomedicine. The treatment of human illnesses via the use of medications originating from animals is known as zootherapy (Costa-Neto, 1999). The zootherapeutic practices of the Tai-Ahom community are primarily rooted in the fauna of Assam. The utilization of animal products in traditional medicine within diverse religious and cultural customs, as well as in various recipes, has become prevalent and customary among the indigenous population residing in Upper Assam (Bhuyan, 2016). Phytotherapy, also referred to as herbal medicine, involves using plants and their extracts for medicinal purposes, forming the foundation of traditional medicine. Within this framework, the Ahoms leverage their extensive herbal knowledge to harness the flora of Assam for therapeutic applications. The Ahom tribe relies heavily on medicinal plants to heal various diseases and employs wild and cultivated plant species to prepare ethnomedicine (Konwar *et al.,* 2020). Folk medicinal formulations are available in several forms, including juice, powder, infusion, decoction, paste, tincture, and raw (Gogoi and Sen, 2023).

Animal and Plant Resources as Folk Medicine

Folk healers are readily accessible, and their methods are widely embraced, especially in areas with limited communication and accessibility. Traditional healing practices offer a wide range of services, surpassing other medical systems, and provide a sustainable form of healthcare for rural communities. Traditional healing practices are often the first point of contact for healthcare in rural areas, as seen in Bangladesh, where they serve around 80% of the population and these practices are culturally relevant which align with the beliefs and values of local communities, enhancing their acceptance and effectiveness (Haque *et al.,* 2018; Suwankhong and Liamputtong, 2014). Traditional medicine supports local economies by utilizing indigenous resources and knowledge, which can stimulate economic growth in rural areas and promotes sustainable healthcare by using eco-friendly practices and local medicinal plants, reducing dependency on imported pharmaceuticals (Patwardhan *et al.,* 2023). Plant-based medications have been used for millennia to treat a wide range of diseases, from the common cold to cancer (Devendrakumar *et al.,* 2009). The Tai Ahom community has a longstanding reputation for its skilled healers who specialize in traditional folk medicine and healing techniques. These healers utilize resources found within their local environment to effectively treat various illnesses. Table 1 offers a comprehensive summary of the animal resources used by these healers and how they are specifically applied to address different health conditions.

Table 1: Traditional zootherapeutic practices followed by Tai Ahoms (Bhuyan, 2016; Dohutia *et al.*, 2016)

English name	Zoological name	Family	Application	Disease
1. Apple snail	*Pila globusa*	Ampullaridae	Body flesh or meat is roasted and consumed.	Asthma and Tuberculosis
2. Cockroach	*Periplaneta Americana*	Blattidae	Water mixed with the roasted insect extract is consumed.	
3. Crab	*Cancer spp.*	Canceridae	The boiled extract is obtained after grinding the animal and consumed.	Jaundice
4. Leech	*Hirudinaria granulosa*	Hirudinae	The extract of the animal is applied to the wounds.	Blood clotting
5. Earthworm	*Pheritima posthuma*	Megascholecidae	The whole animal is boiled and the extract is taken.	Constipation and Piles
6. Muga silkworm	*Antharea assama*	Saturnidae	Boiled and fried animal is taken.	Weakness, Anaemia
7. Mongoose	*Herpestes javanicus*	Herpastidae	Cooked meat is consumed, and powdered bone and fat are used for massage and application.	Rheumatic pain
8. Crow	*Corvus splendens*	Corvidae	Cooked meat is consumed, while fat and feather ash are to be applied.	Dysentery, typhoid, malaria
9. Fruit bat	*Cynopterus*	Vespertilionidae	Cooked meat is consumed.	
10. Magur	*Clarius batracus*	Claridae	Cooked and consumed.	Pox
11. Sea snail	*Monetaria Moneta* Linn.	Cypraeidae	The snail is kept in the juice till it dissolves and then consumed.	Gall bladder stones
12. Indian bullfrog	*Hoplobatrachus tigerinus*	Dicroglossidae	The blood of the frog is consumed.	Goitre
13. Common mud dauber wasp	*Sceliphron laetum*	Sphecidae	Insect nest is finely powdered and taken.	Blister, Stomach ailment
14. Porcupine	*Atherurus macrourus*	Hystricidae	The intestine of the porcupine is consumed.	Pneumonia
15. Fire ant	*Solenopsis spp.*	Formicidae	Wrap seven ants in paper, four facing clockwise and three facing anti-clockwise, then bind them to the hand or lower back.	Epilepsy

In addition to animal resources, traditional medicine predominantly emphasizes the use of ethnomedicinal plants. These plants possess diverse therapeutic properties that aid in the treatment of a wide array of illnesses. Table 2 provides an overview of the different plants commonly employed in traditional Tai Ahom healing practices, detailing the key plants utilized, their medicinal applications, and the specific ailments for which they are beneficial.

Table 2: Plants used by Tai Ahoms as folk medicines (Bailung and Puzari, 2016; Dohutia *et al.*, 2016; Dutta, 2023; Konwar *et al.*, 2020)

English name	Assamese name	Scientific name	Family	Application	Disease
1. East Indian glory bower	Nephaphu	*Clerodendrum colebrookianum*	Lamiaceae	Leaves are consumed in steamed condition.	High blood pressure
2. Indian snakeroot	Sarpagandha	*Rauvolfia serpentina*	Apocynaceae	Both root juice and leaves are consumed.	
3. Utrasum Bead tree	Rudraksha	*Elaeocarpus ganitrus*	Elaeocarpaceae	Seeds are worn to control blood pressure and while praying.	
4. Indian devil tree	Satiana	*Alstonia scholaris*	Apocynacea	Leaves of the plant are to be worn around the neck.	Jaundice
5. Bermuda grass	Dubori Bon	*Cynodon dactylon*	Poacea	The juice of the crushed grass is consumed till the color of the urine turns normal.	
6. Spiny amaranth	Hati khutora	*Amaranthus spinosus*	Amaranthaceae	The extract of the fresh roots is mixed with water and taken twice daily.	
7. Star fruit	Kordoi	*Averrhoa carambola*	Oxalidaceae	The fruit juice is consumed with sugarcane juice for three times a day.	
8. Black plum	Jamuk	*Syzygium cumini*	Myrtaceae	Powder of the bark and seeds are consumed with milk.	Diabetes mellitus
9. Wild Asparagus	Satmul	*Asparagus racemosus*	Asparagaceae	Tuber juice is consumed, curdled with a pinch of salt.	
10. Bitter gourd	Titakerela	*Momordica charantia*	Cucurbitaceae	Fruits are rubbed on the foot and their juice is consumed, except those with gastric issues.	
11. Spiny Lasia	Chengamora	*Lasia spinosa*	Araceae	Its rhizome is boiled and consumed.	Irregular

12. Asoka tree	Ashok phul	*Saraca asoca*	Caesalpiniaceae	Dried bark powder is consumed with milk.	menstruation
13. Hibiscus	Jobaphul	*Hibiscus rosa-sinensis*	Malvaceae	Dried root powder is consumed with water.	
14. Turmeric	Halodhi	*Cucurma longa*	Zingiberaceae	The paste of the rhizome is used as bandage over the fracture area.	Bone fracture
15. Nongmangkha	Titaphul	*Phylogacanthus thyrsiformis*	Acanthaceae	Dried or cooked delicate leaves and flowers are consumed.	Asthma
16. Indian trumpet tree	Bhat ghila	*Oroxylum Indicum Vent.*	Bignoniaceae	The seed is burned, and the flesh within is ingested. It can also be used topically.	Piles
17. Wood apple	Bel	*Aegle marmelos*	Rutaceae	Fruit is consumed with milk	
18. Stixis	Madhoi maloti	*Roydsia* suaveolens (Roxb.)	Resedaceae	Decoction of the roots is used.	
19. Holy basil	Tulokhi	*Ocimum sanctum*	Lamiaceae	Leaf with a lime mixture placed over the affected area	Ringworm
20. Goethe plant	Dupor tenga	*Kalanchoe Pinnata Pers.*	Crassulaceae	Juice extract of the leaves is consumed.	Kidney stones
21. Radish	Mula	*Raphanus sativus*	Brassicaceae	Consumed in its raw form or cooked.	
22. Shiny-leaf prickly-ash	Tejmui	*Zanthozylum Nitidum Wall.*	Rutaceae	Leaf juice is consumed.	
23. Indian soapberry	Monisal	*Sapindus mukrossi L.*	Sapindaceae	Paricarp is used with hot water to gurgle.	Tonsilitis
24. Prickly-ash	Mezenga	*Zanthoxylum oxyphyllum* Edgn.	Rutaceae	Root bark of the plant is used.	Rheumatism
25. Chaste tree	Posotia	*Vitex negundo*	Lamiaceae	Leaves are consumed.	
26. Tamarind	Teteli	*Tamarindus indica* L.	Fabaceae	Extract of the leaves is used.	

Conclusion:

The exploration of folk medicine in the Tai Ahom community reveals a rich cultural heritage and native wisdom that has been passed down through generations. This ethnomedical system emphasizes the balance of nature, the use of herbal remedies and rituals, and community-centered healing practices. These principles can serve as a model for a more compassionate and long-lasting healthcare system. The knowledge gained from the Tai Ahom people's ethnomedical practices offers unique insights into the integration of traditional and modern medicine, promoting a comprehensive approach to healthcare. To progress, we must promote efforts to document and protect ancient healing methods. Collaboration between traditional healers and modern medical professionals can improve healthcare outcomes and foster mutual respect. Research should prioritize the evolving nature of ethnomedicine and preserve the knowledge of native cultures like the Tai Ahom for benefit of the future generations.

References:

1. Bailung, B., & Puzari, M. (2016). Traditional use of plants by the Ahoms in human health management in upper Assam, India. *Journal of Medicinal Plants Studies*, *4*(2), 48-51.
2. Basumatary, N., Teron, R., & Saikia, M. (2014). Ethnomedicinal practices of the Bodo-Kachari tribe of Karbi Anglong district of Assam. *International Journal of Life Sciences Biotechnology and Pharma Research*, *3*(1), 161-167.
3. Bhuyan, D. D. (2016) Studies on ethno medicinal aspects and zoo therapeutic knowledge of Tai-Ahom people of Upper Brahmaputra Valley. *International Journal of Fauna and Biological Studies, 3*(1): 130-133
4. Buragohain, J. (2011). Ethnomedicinal plants used by the ethnic communities of Tinsukia district of Assam, India. *Recent research in Science and Technology*, *3*(9): 31-42.
5. Costa-Neto, E. M. (1999). Healing with animals in Feira de Santana city, Bahia, Brazil. *Journal of ethnopharmacology*, *65*(3), 225-230.
6. Devendrakumar, D., Anbazhagan, M., Gomathi, V., & Rajendran, R. (2009). Traditional phytotherapy for diabetes used by the people of perambalur district, tamilnadu, south India. *Recent Research in Science and Technology*, *1*(6): 287-290.
7. Dohutia, C., Chetia, D., & Upadhyaya, S. (2016). Ethno-medicinal survey on Tai-Ahom community of Assam. *Studies on Ethno-Medicine*, *10*(4), 461-471.
8. Dutta, B. K. & Dutta, P. K. (2005). Potential of ethnobotanical studies in North East India: An overview. *Indian Journal of Traditional Knowledge*, 4(1): 7-14.
9. Dutta, D. (2023). Some Traditional plants used by the Ahoms in health management and medicine in upper Assam, India. *Antrocom: Online Journal of Anthropology*, *19*(2): 197-200.
10. Gogoi, P., & Sen, S. (2023). Ethnobotanical study of medicinal plants used traditionally for managing cuts and wounds by the rural people of Kailashpur, Assam, India. *Ind. J. Pharm. Edu. Res*, *57*(3s), s678-s689.

11. Gogoi, P. (1998). An evaluation of original Tai cultural heritage among the Tai Ahom of Assam in the light of their ethno-cultural contacts and exchanges with other ethnic groups in northeast India. *Tai Studies Proceedings*, 299-311.
12. Haque, M. I., Chowdhury, A. A., Shahjahan, M., & Harun, M. G. D. (2018). Traditional healing practices in rural Bangladesh: a qualitative investigation. *BMC complementary and alternative medicine*, *18*, 1-15.
13. Konwar, T., Hazarika, P. P., & Bora, R. L. (2020). Traditional use of some ethnomedicinal plants by Ahom community in Chengalijan Village of Dibrugarh District, Assam, India.
14. Patwardhan, B., Wieland, L. S., Aginam, O., Chuthaputti, A., Ghelman, R., Ghods, R.,... & Acharya, R. (2023). Evidence-based traditional medicine for transforming global health and well-being. *Journal of Integrative and Complementary Medicine*, *29*(9), 527-530.
15. Suwankhong, D., & Liamputtong, P. (2014). Traditional health services utilization among indigenous peoples. *The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society*, 2462-2465.
16. World Health Organization, Traditional medicine. Available online: https://www.who.int/news-room/questions-and-answers/item/traditional-medicine

ECONOMIC IMPACT OF GEOGRAPHICAL INDICATION IN THE CONTEXT OF INDIA

Pooja Tamuli

Department of Economics, Gauhati University, Assam

Corresponding author E-mail: tamulipooja708@gmail.com

Abstract:

Geographical Indication (GI) is an addition to the Intellectual Property Rights. Apart from Patents, Trademarks, Industrial Designs, etc., Geographical Indications have gained immense importance in the modern world. From preserving traditional knowledge to exporting finished products internationally, GI plays a pivotal role in the emerging economy, augmenting the economic status of people. The study explores the evolution of Geographical Indications in India and examines their financial status. In the study, two GI products are examined, Alphonso Mango and Pochampalli Ikat, using secondary sources. The findings suggest that GI has improved the market recognition of the products, promoted economic development, and enhanced the competitiveness of the products nationally and internationally.

Keywords: Geographical Indications, India, Economic Development, GI Tag

Introduction:

The Geographical Indication acts as a medium that helps protect traditional knowledge associated with that particular geographical region, enabling producers to differentiate their products from unfair competition that comes from cheap products available in the market. By providing this unique tag, it guarantees the quality, reputation, and authenticity of products originating from specific regions. GIs have gained significant eminence globally, particularly in countries with rich cultural heritage and diverse products. This highlights a vibrant array of goods, specially in the context of India, which has been actively participating in promoting GI protection, thereby reinforcing the prosperity of local producers. The certification of GI discourages the illegal use of these geographical products. GIs foster the development of the rural economy escalating competitiveness of the original products in domestic and international markets.

Literature Review

1 Sood and Sharma (2024) in their research paper, "Geographical indicators as tools of economic development" presented the role of geographical indications in rural development and outlined the multifaceted role of geographical indications.

2 Ingole, A. D., *et al.* (2023) in their research paper highlighted particularly the fruit sector using both the quantitative and qualitative research methodologies. The paper explored the benefits of GIs to consumers, producers, and geographical regions highlighting the

importance of cultural preservation, economic development, and the need for a supportive legal framework.

3 Chaudhary, M., *et al.* (2022) presented an overview of the current status of registered geographical indications in Uttar Pradesh in the traditional handicraft sector. The resultant of the paper found that the handicraft industry did not properly understand the concept of GIs, which led to the deterioration of the artisan's work overtime.

4 Haldar (2020) described the importance of GIs in the traditional handicraft sector with reference to West Bengal, emphasizing the current scenario of GI registration in West Bengal and highlighting the importance of GIs in improving the production, and branding of handicraft products.

Definition of Geographical Indication

According to WIPO, "A geographical indication (GI) is a sign used on products that have a specified geographical origin and possess qualities or a reputation that are due to that origin. In order to function as a GI, a sign must identify a product as originating in a given place."[1]

"Geographical indications" ("GIs") are defined at Article 22(1) of the World Trade Organization's (WTO) 1995 Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) as "indications that identify a good as originating in the territory of a member, or a region or locality in that territory, where a given quality, reputation, or other characteristic of the good is essentially attributable to its geographical origin."[2]

Origin and History

It was during 1824 that GI legislation was first used by France. And in 1919, France passed the "appellation of origin" legislation, expanding protection to wines and cheeses from specific regions. This had a significant impact; more likely it was set as an example, and likewise European countries started following the French example. Primarily agricultural products like Idaho potatoes or Bordeaux wines were given this unique tag of GI. This was because its product quality was tied up with the place of production. However, it is not the only way to address a product with GI tag. GIs can also be given based upon the unique labor and material associated. In order to understand, we take the example of "Swiss made" for watches, which is considered GI because of its unique characteristics, which encompass reputation and quality. While sometimes there is a confusion between GI and indication of source. GIs attribute the qualities of reputation or other characteristics specific to the geographical region, but indication of source is different that it simply means the country of origin. To be more precise, "Made in Switzerland" is an indication of source. Perplexity also arises with the term "rules of origin". "Rules of origin" particularly describe various trade policy purposes, implementing measures such as tariff preferences or anti-dumping duties.

Evolution of GIs Over Time

GIs were recognized in the intellectual property rights in the Paris Agreement, but it was in the Madrid Agreement that they were expanded. The main reason behind it was to safeguard the interest of the product's origin so that the nucleus point is to subdue false marketing of the product. This aims to protect consumers and preserve the reputation of the products. After the Madrid Agreement, the Lisbon Agreement (1958) came up to stop such forms of false and preventing misuse of protected products. This agreement was open to any country which was a member of the Paris Convention. The emphasis was on "appellation of origin" which was described in Article 2. While the Lisbon agreement limits the scope to geographical names. But it was under the TRIPS in 1994, which encompassed a detailed coverage including both direct and indirect GIs.

Trips Agreement

The TRIPS agreement establishes a framework for the protection of intellectual property rights, including all forms of copyright, trademarks, industrial designs, geographical indications, and many more. The TRIPS came into effect on 1st of January 1995, one of the most comprehensive multilateral agreements on intellectual property. It was under the TRIPS agreement that GI was incorporated. The treaty relevant to GI was the Paris Convention. The TRIPS provision on GI consists of three provisions. Article 22 deals with the definition of GI and addresses the relationship between GIs and trademarks. Article 23 provides additional protection for GIs identifying wines and spirits, also mandating a multilateral system of notification and registration of GIs for wines. The last provision is that Article 24 allows the use of GIs for goods that may not be associated with that particular region, with certain exceptions. Thus, it was under the TRIPS agreement that GI got incorporated. While the European Union had a strong emphasis on including GIs in the TRIPS agreement during the Uruguay Round negotiations.

Evolution of GIs in India

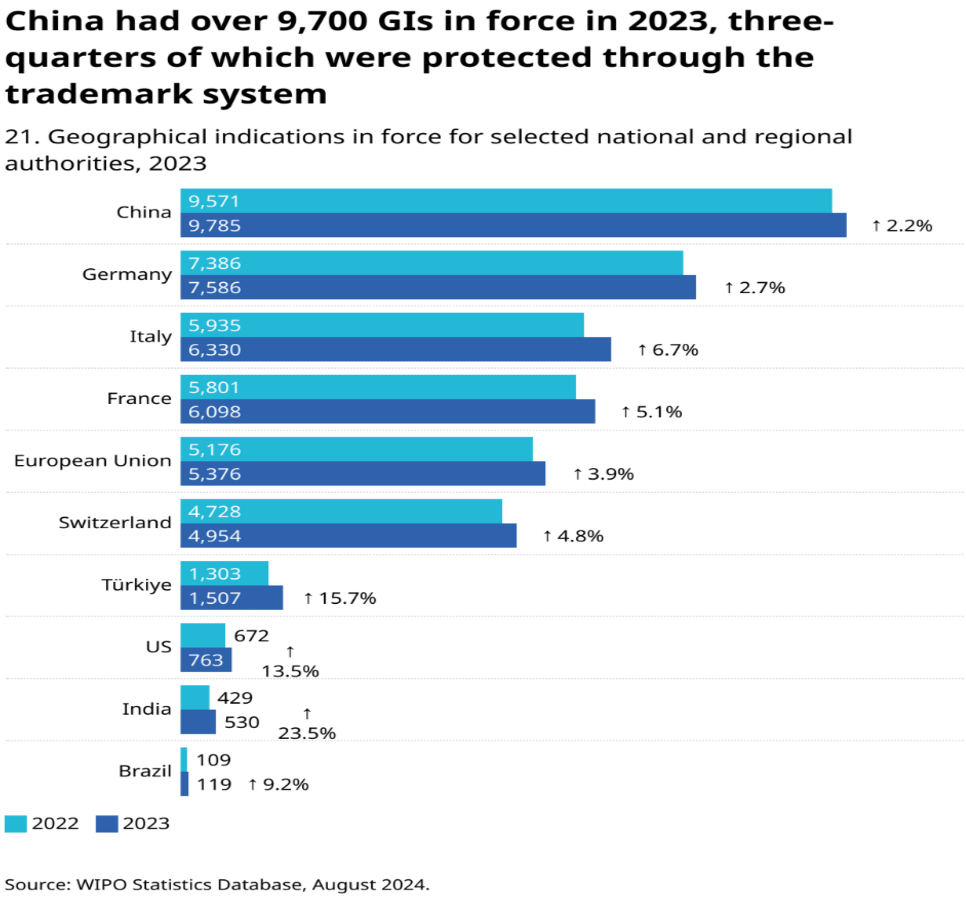
India became a member of the World Trade Organization (WTO) on January 1st in 1995, and thereby became a member of the TRIPS. The parliament of India passed the Geographical Indications of Goods (Registration and Protection) Act 1999. This act was enacted and came into effect on September 15, 2003. Darjeeling tea was the first product of India to receive a GI tag in 2004. Darjeeling tea in itself was an exclusive product due to its exotic smell, taste, and flavor, and this was because of its intrinsic quality of soil and the climatic condition of its region of Darjeeling in West Bengal. This tea is considered the "Champagne of Teas." This was taken into consideration because of the imitation of false products of this tea in the market, jeopardizing its authenticity and reputation. The success of the Darjeeling tea in the market paved the way for other exclusive products to choose the same direction, and ensure rights over their products. This not only helped them protect their cultural heritage but also ensured sustainability, helping both the local producers gain economic development, and consumers become aware of the true product.

As of 2024, India is home to 605 GI-tagged products. The categories are-

- 342 handicraft products.
- 197 agricultural products.
- 18 manufactured products.

- 45 food products.
- 3 natural products.

As of 2025, Uttar Pradesh ranks top with the most GI tags. In 2007-08, it had only one GI product, namely "Allahabad Surkha Guava." But now, this state holds the highest number of GI products and has surpassed Tamil Nadu. This increase is due to the efforts by the stakeholders, including the NABARD. The second position is secured by the state of Tamil Nadu. But, as per the world ranking, India is far behind many countries.



As per data from 2023, China ranks highest with 9,785 products registered, followed by Germany (7,586), Italy (6,330), and France (6,098). And India has only 530 products registered. When it comes to the category of handicrafts, India holds 2nd position with 274 products registered under GI.

Economic Development in the Context of India

GIs over the period have been recognized as a great tool for promoting economic development, and preserving traditional knowledge along with cultural heritage. It's a commanding tool to defend the ownership rights on products[3]. Now the question is, what is the current scenario of India? What kind of economic development has taken place after receiving the GI tag? For that, we would be taking some products classified state wise, where we will conduct an economic assessment. Some of the GI-registered products are compiled and given below:

From April 2004- March 2005

Geographical Indications	Goods (As Per Sec 2(F) of GI Act 1999)	State
Darjeeling Tea	Agriculture	West Bengal
Pochampalli Ikat	Handicraft	Telangana
Chanderi Sarees	Handicraft	Madhya Pradesh

From April 2024-March 2025 (Source: Data compiled from Registration detail of GI report, GI Registry office)

Geographical Indications	Goods (As Per Sec 2(F) of GI Act 1999)	State
Pilkhuwa Hand Block Print Textile	Handicraft	Uttar Pradesh
Banaras Metal Casting Craft	Handicraft	Uttar Pradesh
Bareilly Cane & Bamboo Craft	Handicraft	Uttar Pradesh
Tharu Embroidery of Uttar Pradesh	Handicraft	Uttar Pradesh
Bareilly Zari Zardoji	Handicraft	Uttar Pradesh
Banaras Tirangi Barfi	Food stuff	Uttar Pradesh
Kutch Ajrakh	Handicraft	Gujarat
Bodo Aronai	Handicraft	Assam
Bodo Napham – Fermented Fish	Food Stuff	Assam
Bodo Ondla	Food Stuff	Assam
Bodo Gwkha – Gwkhwi	Food Stuff	Assam
Bodo Jou Gwran	Manufactured	Assam
Bodo Jou Gishi	Manufactured	Assam
Bodo Maibra Jou Bidwi	Manufactured	Assam
Bodo Narzi	Agriculture	Assam
Nicobari Canoe - Hodi Craft of Andaman & Nicobar	Handicraft	Andaman and Nicobar Islands
Nicobari Mat (Chatrai / Hileuoi) of Andaman & Nicobar	Handicraft	Andaman and Nicobar Islands
Andaman Karen Musley Rice	Agriculture	Andaman and Nicobar Islands
Nicobari Tavi-i-Ngaich (Virgin Coconut Oil) of Andaman & Nicobar	Manufactured	Andaman and Nicobar Islands
Nguat–Kuk'–'Khawtha' Coconut of Andaman & Nicobar	Agriculture	Andaman and Nicobar Islands
Padauk Wood Craft of Andaman & Nicobar	Handicraft	Andaman and Nicobar Islands
Nicobari Hut of Andaman & Nicobar	Handicraft	Andaman and Nicobar Islands

For an analysis, we are taking one agricultural product and one handicraft product to have an understanding regarding the economic impact.

- Firstly, we are taking the Alphonso Mango (agricultural product), which received the prestigious GI tag in the year 2018. Hailed as the "King of Mangoes", this esteemed variety originates from the Konkan region of Maharashtra. Two districts mainly associated with the cultivation of this special variety are Ratnagiri and Sindhudurg. The unique characteristic that this variety of mango holds is the buttery, creamy, and sweet flavor with a pinch of acidity and aromatic fragrance. The global demand for Alphonso mangoes is particularly from countries like the United Kingdom, the United States, and the United Arab Emirates. Even before receiving the GI tag Alphonso Mango already had an international market. But, after receiving the GI tag, the market widened. It is mainly exported as fresh fruit. Due to asymmetric information, the market was flooded with the mixture of the original and the fake product. But, after receiving the GI tag, this helped consumers to check for the original product by scanning the QR code. The high demand internationally has encouraged farmers to adopt modern technologies, resulting in improved quality and yields. This has not only generated employment opportunities in the rural economy but also improved their economic life.
- Analyzing another GI-tagged product from the subdivision of handicraft-Pochampalli ikat. This handicraft product received the GI tag in 2005 from Telangana. Famous for its geometric pattern, the Ikat textile is woven by using tie-dye techniques on yarn. This traditional weaving industry is a livelihood to almost 5000 households. But the imitation product has reduced the number of the original product. In such a circumstance, it became quite important to protect this traditional art structure where so many artisans' livelihoods were dependent on it. The protection of this handicraft led to the increase in the demand of the product, productivity, and employment.

Conclusion:

The GI tag has been helpful in contributing to economic development and preserving the traditional knowledge. Though in terms of the world, India is still lagging behind in terms of registration of GI items, its number of registrations is increasing year by year. Our analysis of the Alphonso mango and Pochampalli Ikat suggests that GI has increased the market demand of the original product, helped people in identifying the original and the intimation products and enhanced the income of the people involved in these sectors. Products combined with the GI tag have enabled producers to command a premium price in domestic and international markets.

References:

1. http://www.wipo.int/freepublications/en/geographical/952/wipo_pub_952.pdf
2. http://www.wto.org/english/docs_e/legal_e/27-trips_04b_e.htm
3. Sharma, S. (2019). Geographical Indication In India: Current Scenario And Their Product Distribution. *International Journal of Social Science and Economic Research*, *4*(4), 2792-2806.

4. https://www.wto.org/english/tratop_e/trips_e/ta_docs_e/modules4_e.pdf
5. Sood, E., & Sharma, Y. (2024). Geographical Indicators as Tools of Economic Development. *Indian Journal of Public Administration*. https://doi.org/10.1177/00195561241248137
6. Ingole, A. D., Kumar, A., Jadhav, P. J., & Kulkarni, S. H. (2023). Geographical Indication of Fruit Crops in India and Its Protection Abroad. *International Journal of Enviornment and Climate Change*. https://doi.org/10.9734/ijecc/2023/v13i113252
7. Chaudhary, M., Agarwal, B., & Bhatia, M. (2022). Geographical indications in India: A case of Handicraft industry in Uttar Pradesh. *The Journal of World Intellectual Property*, *25*(3), 617–634. https://doi.org/10.1111/jwip.12244
8. Haldar, G. (2020). Importance of the Geographical Indication of Traditional Handicraft with Reference to West Bengal, India. *Turkish Online Journal of Qualitative Inquiry*. https://doi.org/10.53555/tojqi.v11i4.10283
9. https://taxguru.in/corporate-law/geographical-indications-history-evolution-future.html
10. https://ipindia.gov.in/about-us-gi.htm
11. https://www.ibef.org/giofindia
12. World Intellectual Property Organization (WIPO) (2024).*WIPO IP Facts and Figures 2024.* Geneva: WIPO. DOI: 10.34667/tind.57723

RESHAPING KNOWLEDGE LANDSCAPES:
A STUDY OF EMERGING RESEARCH TRENDS POST-2020

Manisha Kaushal Arora*, Ruchi Malhotra and Jatin Lamba

Gitarattan International Business School,

Sector 14, Rohini, Delhi, 110085

*Corresponding author E-mail: manishakaushal07@gmail.com

Abstract:

The paradigms of research in the fields of management, business, and the humanities have undergone a dramatic shift in the post-2020 period. Rapid technological breakthroughs, the global pandemic, and shifting societal priorities have all contributed to the shift in academic research towards multidisciplinary, technologically enabled, and socially meaningful frameworks. With an emphasis on adaptability, inclusivity, and relevance, these changes have reshaped the character, extent, and technique of research. The quicker incorporation of cutting-edge technology like data analytics, machine learning, and artificial intelligence into the research process has been one of the most noteworthy advancements. These tools have changed the way knowledge is created, disseminated, and used in addition to increasing the potential for data-driven insights.

Furthermore, conventional institutional and geographic barriers have been broken down by the increasing adoption of digital collaboration platforms and remote work, which have made it possible for more flexible, inclusive, and global research ecosystems. At the same time, there has been an increasing focus on using multidisciplinary research and cross-sectoral collaborations to address difficult global issues including social injustice, climate change, and health crises. Consequently, social responsibility, ethics, and sustainability have become central issues in academic writing. Institutions are rewriting regulations to encourage creativity and resilience in academic processes, while researchers are embracing more flexible, iterative approaches to stay sensitive to quickly shifting circumstances.

This chapter analyses current literature, case studies from the actual world, and changing policy frameworks to look at these new tendencies. In addition to offering strategic guidance for researchers and institutions to prosper in this dynamic and unpredictable research climate, it delivers insightful information about how knowledge landscapes are changing.

Keywords: Artificial Intelligence, Digital Transformation, Interdisciplinary Research, Post-Pandemic Trends, Sustainability

Introduction:

Following significant global events after 2020, such as the COVID-19 pandemic, the quick growth of digital technology, and changes in global economic and social agendas, the field of academic study has undergone a significant alteration. These factors have not only completely changed the way that research is carried out, but they have also radically changed the character and focus of scholarly investigation in a number of fields, particularly in the humanities, business, and management. Collaborative, multidisciplinary, and solution-oriented research frameworks that seek to address complex, real-world situations are replacing the historically strict borders that once divided academic fields.

Scholars are adjusting to new tools, methods, and higher expectations in this quickly changing research environment. Artificial intelligence, big data analytics, and digital platforms are now crucial parts of research workflows because they enable more effective knowledge creation and deeper insights. Emerging global issues including sustainability, ethics, inclusion, and resilience have also become more prominent at the same time, impacting institutional priorities as well as research agendas. The processes of knowledge generation, diffusion, and application in the academic world beyond 2020 are being redefined by these revolutionary changes, which are examined in detail in this chapter. This analysis emphasises the necessity of flexible, progressive research methodologies that can successfully address the ever-changing concerns of the present and the future.

Literature Review

Particularly in the wake of the COVID-19 epidemic, the sector of digital transformation has experienced substantial change. After a thorough examination of 217 academic publications, Cenamor *et al.* discovered a framework that connects digital transformation to fundamental management and business procedures and suggested a study agenda. Parida *et al.* further develop this theme by outlining the thematic evolution of business management research, with a focus on operational and strategic changes.

Cabanelas, Lampón, and González-Sánchez offer a comprehensive study in the marketing area that emphasises the impact of digitalisation on corporate processes, human resources, and customer relationship management. They also stress the need for more quantitative approaches. González-Sánchez et al.'s parallel review supports similar conclusions and positions marketing as a key area of digital transformation.

According to Bucăţa and Rizescu, who examined innovation determinants and the growing significance of digital skills in crisis resilience, the post-COVID era sparked a reconsideration of digital strategy. In a similar vein, Srivastava and Agrawal talk about how digital maturity is changing HR practices, emphasising flexibility, innovation, and ongoing learning. Vial emphasises the need for continued research into digitalisation across corporate functions, arguing that regular scholarly re-engagement is necessary due to the dynamic nature of technology progress.

Additionally, digital revolution cuts across conventional discipline lines. Using a multidisciplinary approach, Lee, Trimi, and Kim pinpoint artificial intelligence (AI) as the key to improved organisational performance, lower expenses, and more efficiency. According to global bibliometric research by Chatterjee *et al.* that shows the surge in blockchain and IoT use for resilience and sustainability due to the pandemic, these benefits are especially evident in supply chains. Ayed and Adnan highlight how digital technologies are changing company models and innovation strategies by identifying five new topic clusters in generative AI research from an entrepreneurial perspective.

Digitalisation is also changing the humanities field. In their introduction to the idea of "quantum humanities," Sauer and Schüttpelz describe how media science data analysis could be transformed by quantum computing. Hill and Good, who study collaborative data behaviours in digital humanities teams and offer fresh frameworks for transdisciplinary knowledge production, are in line with this technological advancement. Singh and Raj also examine how AI and machine learning fit into circular economies, particularly in relation to waste management and sustainable development.

In terms of education and policy, The Guardian mentions a postgraduate program at Alliance Manchester Business School that seeks to develop digital leaders in artificial intelligence, blockchain, and quantum computing, while Times News Network promotes interdisciplinary admissions in Tamil Nadu universities to boost global competitiveness. When taken as a whole, this body of research confirms that digital transformation is a complex phenomenon that impacts marketing, entrepreneurship, human resources, business strategy, the humanities, and education. Future research must take an interdisciplinary and flexible approach due to the opportunities and challenges presented by the integration of cutting-edge technologies like artificial intelligence, blockchain, and quantum computing.

Research Methodology

This chapter aggregates and analyses secondary data from 15 peer-reviewed publications, preprints, and media stories using a qualitative meta-synthesis approach. Reputable databases such as ScienceDirect, SpringerLink, MDPI, Wiley, arXiv, and news articles were used as sources. Recurring patterns were found and research trends after 2020 were divided into three primary areas using thematic analysis: post-pandemic transformation, interdisciplinary collaboration, and technology integration.

Key Findings

Technological Integration in Research

Digital technologies, particularly artificial intelligence (AI), blockchain, the Internet of Things (IoT), and quantum computing, have had a profound impact on the way research is performed and used across disciplines. They promote consumer interaction, business model reconfiguration, and innovation in management and commerce. They support collaborative studies, data visualisation, and even philosophical investigation into the relationship between humans and technology in the humanities.

Rise of Interdisciplinary and Transdisciplinary Models

Research conducted after 2020 shows an increasing break from disciplinary silos. These days, interdisciplinary approaches are crucial, particularly when combining the social sciences and technology. The merger of historically unconnected subjects is exemplified by digital humanities and sustainable business practices, which match approaches for complicated problem-solving.

Redefining Resilience in Business and Academia

The importance of adaptability was highlighted during the pandemic. While scholars started concentrating on resilience, flexibility, and creativity, organisations and educational institutions adopted digital-first policies. Redesigned HRM procedures, reorganised supply networks, and dynamic learning ecosystems are examples of this change.

Implications and Future Directions

A substantial paradigm shift in the production, dissemination, and use of knowledge is shown by the examination of post-2020 research landscapes. In light of this changing environment, research priorities and methodology need to be rethought in order to better reflect the complexity of the modern world. Interdisciplinary curriculum and cooperative research initiatives that dismantle conventional academic silos should be aggressively promoted by future research initiatives. By promoting interdisciplinary communication and integration, academics can better tackle complex global issues by utilising a range of viewpoints and knowledge.

The ethical and sociological ramifications of emerging technologies like artificial intelligence and quantum computing are an important topic for further research. In addition to their enormous potential, these potent tools bring up urgent issues of responsibility, bias, privacy, and the digital divide. In order to ensure that emerging technologies promote justice and do not worsen already-existing inequities, academics must rigorously evaluate the wider effects on society in addition to advancing technological progress.

Furthermore, fostering inclusive digital ecosystems is essential to closing knowledge gaps between global and local and rural and urban areas. Expanding digital literacy, infrastructure, and technology access is necessary to guarantee fair involvement in the production and sharing of information. In addition to empowering marginalised populations, this inclusivity will promote a more varied and representative research environment.

Lastly, research ought to be more supportive of evidence-based policies, especially when it comes to the digital transition. To create solutions that support social fairness, economic resilience, and sustainable development, policymakers need solid, data-driven knowledge. All things considered, new technologies need to be humanized—created and applied with a thorough awareness of their social implications, ethical considerations, and dedication to equality. This strategy will guarantee that advancements in technology result in significant and equitable advantages for everybody.

Conclusion:

The post-pandemic era, which has been a time of significant change and opportunity, has radically changed the worldwide study agenda in the domains of management, commerce, and the humanities. The quick development and broad use of digital tools and technology has greatly improved academic research productivity, creativity, and teamwork. But these developments also put old scholarly frameworks to the test, forcing scholars and organisations to reconsider established methods, epistemologies, and ways of disseminating information. Discipline divisions are becoming more hazy, and the complexity of today's global problems necessitates multidisciplinary and integrative research methodologies.

This chapter emphasises how urgently the research community must adopt paradigms that are anchored on ethics, social responsibility, and technological fluency. Scholars must be flexible enough to quickly adjust to new trends and technology, as well as inventive in their approaches to problem-solving, in order to succeed in the knowledge landscapes of the future. Furthermore, navigating the possible hazards and societal effects of new technology and research procedures requires ethical forethought.

Today's researchers need to deliberately develop these traits by encouraging a culture of critical reflection, teamwork, and ongoing learning. With this strategy, they will be able to make a significant contribution to the resolution of difficult problems like social inequality, digital divides, and climate change. Institutions also need to help these initiatives by supporting policies that put fairness and inclusion first, investing in digital infrastructure, and stimulating multidisciplinary research. All things considered, the post-pandemic research climate offers a singular chance to rethink scholarship in ways that are creative, significant, and socially responsible.

References:

1. Cenamor, J., Parida, V., & Wincent, J. (2021). Digital transformation in business and management research: A review and research agenda. *Information & Management*, *58*(6), 103509. https://doi.org/10.1016/j.im.2021.103509
2. Cabanelas, P., Lampón, J. F., & González-Sánchez, R. (2023). Digital transformation and marketing: A systematic and thematic literature review. *Journal of the Knowledge Economy*. https://doi.org/10.1007/s43039-023-00067-2
3. Bucăţa, G., & Rizescu, A. M. (2022). Digital transformation strategy in the post-COVID era: A focus on innovation and digital capabilities. *Information*, *13*(7), 323. https://doi.org/10.3390/info13070323
4. Srivastava, M., & Agrawal, S. (2023). Digital maturity in transforming human resource management: A post-COVID perspective. *Administrative Sciences, 15*(2), 51. https://doi.org/10.3390/admsci15020051
5. Vial, G. (2021). Understanding digital transformation: Insights from a systematic literature review. *Journal of Business Research*, *129*, 902–913. https://doi.org/10.1016/j.jbusres.2020.06.057
6. Lee, S. M., Trimi, S., & Kim, C. (2021). Innovation and digital transformation in business ecosystems. *International Journal of Information Management*, *60*, 102395. https://doi.org/10.1016/j.ijinfomgt.2021.102395
7. Chatterjee, S., Rana, N. P., Sharma, A., & Dwivedi, Y. K. (2023). Digital transformation and sustainability in post-pandemic supply chains: A bibliometric and thematic analysis. *Sustainability*, *15*(7), 3009. https://doi.org/10.3390/su15073009

8. Ayed, R. B., & Adnan, N. (2024). Generative artificial intelligence in entrepreneurship: A systematic literature review. *arXiv preprint*. https://arxiv.org/abs/2505.05523
9. Sauer, C., & Schüttpelz, E. (2021). From digital humanities to quantum humanities: A media science perspective. *arXiv preprint*. https://arxiv.org/abs/2103.11825
10. Singh, A., & Raj, A. (2022). Machine learning and artificial intelligence in circular economy: A bibliometric and systematic review. *arXiv preprint*. https://arxiv.org/abs/2205.01042
11. Hill, A., & Good, D. (2024). Collaborative data behaviors in digital humanities research teams. *arXiv preprint*. https://arxiv.org/abs/2503.06871
12. Times News Network. (2024, May 1). Interdisciplinary admissions needed in Tamil Nadu state universities for global competitiveness. *The Times of India*. https://timesofindia.indiatimes.com/city/chennai/interdisciplinary-admissions-needed-in-tamil-nadu-state-universities-for-global-competitiveness/articleshow/121006959.cms
13. The Guardian. (2025, February 14). From AI to quantum computing: A postgrad degree for the next generation of digital leaders. *The Guardian*. https://www.theguardian.com/next-generation-of-digital-leaders/2025/feb/14/from-ai-to-quantum-computing-a-postgrad-degree-for-the-next-generation-of-digital-leaders
14. González-Sánchez, R., Cabanelas, P., & Lampón, J. F. (2023). Digital transformation and marketing: A systematic and thematic literature review. *Journal of the Knowledge Economy*. https://doi.org/10.1007/s43039-023-00067-2
15. Parida, V., Sjödin, D., Reim, W., & Visnjic, I. (2021). Digital transformation and business model innovation: A thematic evolution overview. *Information & Management*, *58*(6), 103509. https://doi.org/10.1016/j.im.2021.103509

RESHAPING RESEARCH METHODOLOGIES ACROSS DISCIPLINES

Ruchi Malhotra, Manisha Arora Kaushal* and Namrata Jain

Gitarattan International Business School, Sector 14, Rohini, Delhi, 110085

*Corresponding author E-mail: manishakaushal07@gmail.com

Abstract:

A critical examination of how research methodologies are changing in response to the increasing demand for interdisciplinary inquiry can be found in Reshaping Research Methodologies across Disciplines. Traditional, discipline-specific approaches frequently fall short when global issues get more intricate and intertwined. In response to this reality, this volume explores how academics from all disciplines are reevaluating and reforming their research methodologies in order to promote creativity, inclusion, and practical impact.

The chapter explores how study design is changing, emphasizing how qualitative and quantitative methods are combining, how community-based and participatory approaches are becoming more popular, and how digital tools and data analytics are being used. By demonstrating how researchers are negotiating the conflicts and opportunities that emerge when disciplinary borders are breached, it highlights the need of methodological flexibility and reflexivity.

The chapters offer a comprehensive grasp of how methodological changes are empowering researchers to address urgent global concerns like social inequality, digital disruption, climate change, and health crises through an extensive compilation of case studies, theoretical debates, and practical insights. Every contribution shows how creative methodological decisions can deepen analysis, extend viewpoints, and generate knowledge that is more inclusive and influential.

For academics, researchers, and students looking to broaden their methodological toolkits and adopt more comprehensive and responsive research procedures, this volume ultimately acts as a guide and source of inspiration. In order to reimagine knowledge production in the twenty-first century, Reshaping Research Methodologies Across Disciplines promotes methodological pluralism and challenges conventional paradigms. It presents methodological innovation as essential to advance scholarship and tackling the complex issues of our day, rather than as a passing fad.

Keywords: Epistemology, Interdisciplinary Research, Methodological Innovation, Research Design, Reflexivity

Introduction:

The nature of research is changing significantly in the quickly changing intellectual and global scene of today. The limitations of purely discipline-bound approaches become more evident as complex social, environmental, technical, and economic concerns arise. This change is addressed in Reshaping Research Methodologies Across Disciplines, which looks at how research procedures are being rethought to satisfy the needs of multidisciplinary investigation and practical problem-solving**.**

The assumptions and priorities of their fields are frequently reflected in traditional research procedures, which have their roots in particular academic silos. When applied to problems that cut across several domains, these approaches can stifle creativity even when they have yielded profound insights in their own fields. In light of this, academics are increasingly using integrative methodologies, which combine quantitative and qualitative techniques, include emerging technologies like digital ethnography, data analytics, and artificial intelligence, and draw from participatory and practice-based frameworks.

This book brings together contributions from researchers across the humanities, social sciences, and natural sciences to examine the evolving methodological landscape. It highlights both the theoretical foundations and practical applications of interdisciplinary research, showcasing how scholars navigate methodological tensions, negotiate epistemological differences, and construct new pathways for inquiry.

The idea of methodological reflexivity—the understanding of how positionality, context, and purpose influence research topics, instruments, and practices—is essential to this conversation. This volume invites researchers to reject inflexible frameworks and embrace more flexible, inclusive, and effective approaches by embracing methodological variety and openness.

In the end, transforming research methodologies across disciplines necessitates reconsidering how information is produced and verified in an interconnected society. It seeks to encourage scholars, instructors, and students to use methodological innovation as a critical response to the intricacies of modern life, as well as a tool for scholarly inquiry.

Literature Review

A significant change in the way research is conceptualized and carried out across disciplines has been prompted by the increasing complexity of global concerns. In this fundamental review of interdisciplinary research, Repko, Szostak, and Buchberger offer a methodical framework for combining knowledge from several disciplines. Frodeman *et al.* supplement their work by arguing that multidisciplinary thinking is necessary to address "wicked problems," and they provide useful instruments for methodological convergence.

Creswell and Plano Clark promote the use of mixed methods research in the social sciences, arguing that qualitative and quantitative approaches should be combined to capture complex phenomena. By pointing out epistemological obstacles that impede methodological integration and highlighting the necessity of institutional support and cultural shifts inside academia, Bryman furthers this conversation. Guba, Lincoln, and Lynham support the notion of changing paradigms by describing how constructivist and transformational viewpoints contradict conventional positivist techniques.

Research procedures have also changed as a result of emerging digital methodologies. Denzin and Lincoln examine how online qualitative methods and digital ethnography are changing qualitative inquiry, especially when it comes to remote research. By highlighting the need of reflexivity in research design and urging academics to maintain their adaptability in the face of digital disruption, Maxwell contributes to this discussion.

Barad's idea of "agential realism" in the natural and computer sciences calls for an intertwined understanding of methodology and ontology, introducing a posthumanist viewpoint that crosses the boundaries of science, philosophy, and feminist theory. Similarly, by taking a comprehensive and inclusive approach to knowledge production, Nicolescu's notion of transdisciplinarity aims to go beyond academic bounds.

Methodological innovation has also been observed in the education and healthcare sectors. Mertens advocates for participatory methods that focus on social justice and inclusion, whereas Greenhalgh and Papoutsi argue for complexity-informed approaches in health research. Hill and Good explore co-creation practices in digital humanities and offer new models for multidisciplinary team science in their analysis of the emergence of collaborative research teams.

Nowotny, Scott, and Gibbons present the idea of "Mode 2" knowledge production—context-driven, problem-focused, and transdisciplinary—on the frontier of policy and application, asking academics to reconsider research outside of conventional academic silos. This change is also supported by Schön's reflective practitioner model, which emphasizes how methodological innovation may be fueled by practice-based knowledge and hands-on experience.

The Shift from Disciplinary to Interdisciplinary Research

Academic fields have historically established distinctive methodological traditions based on their own theoretical frameworks and epistemologies. However, academics like Repko ***et al.*** (2017) and Frodeman *et al.* (2010) urge for systematic integration across areas as knowledge generation increasingly transcends disciplinary silos. By integrating several viewpoints to tackle intricate issues that no one profession can adequately handle, interdisciplinary research promotes creativity.

Among the main causes of this change are:

1. The complexity of global issues.
2. The growth of networked, cooperative knowledge production.
3. Enhanced availability of digital research resources and information.

Both methodological adaptability and epistemic openness—a readiness to reevaluate fundamental presumptions about what qualifies as legitimate knowledge—are required for this progress.

Methodological Innovation in Practice

Methodological hybridity is becoming more and more popular in research today. Creswell and Plano Clark (2018) support mixed methods research as a fundamental approach that combines quantitative breadth and qualitative depth. Simultaneously, researchers such as Bryman (2007) and Maxwell (2013) emphasize the value of flexibility and reflexivity in handling the conflicts that result from combining disparate approaches.

Examples from the fields of education (Mertens, 2015), digital humanities (Hill & Good, 2021), and health research (Greenhalgh & Papoutsi, 2018) show how interdisciplinary initiatives are organized around adaptability, context awareness, and participatory design. These methods improve the relevance and effect of research findings in addition to broadening the scope of investigation.

Epistemological and Ethical Considerations

Addressing complex epistemological issues is another aspect of reshaping techniques. Emerging paradigms—constructivist, transformative, and posthumanist—challenge positivist principles of objectivity and linearity, as Lincoln, Lynham, and Guba (2011) observe. The idea of "agential realism" put forth by Karen Barad in 2007 demands that the entanglements of subjects, instruments, and researchers in the process of knowledge creation be acknowledged.

Multidisciplinary research must ethically address concerns about inclusivity, representation, and power. Particularly in marginalized and Indigenous contexts, where Western-centric approaches may ignore or misrepresent lived realities, Mertens (2015) highlights the necessity of culturally sensitive methodology.

Digitalization and the Future of Research Methods

One of the main drivers of methodological evolution is technological innovation. New approaches to data gathering, analysis, and distribution are made possible by digital tools, such as digital ethnography and artificial intelligence. Big data analytics and AI-driven modeling enable intricate simulations and prediction insights in the natural sciences. Computational approaches are changing media studies, archival research, and textual analysis in the humanities (Barad, 2007; Sauer & Schüttpelz, 2020).

These advancements necessitate methodological reconfiguration in addition to technical proficiency. Research is moving toward "Mode 2" knowledge generation, which is transdisciplinary, application-oriented, and socially disseminated, as mentioned by Nowotny, Scott, and Gibbons (2001). Future researchers must be able to traverse this changing landscape.

Toward a Methodological Pluralism

Methodological pluralism—a deliberate, context-driven blending of techniques that respects variety in knowledge systems—is the way of the future for research in light of these shifts. This pluralism is about purposeful alignment with community needs, ethical commitments, and research aims rather than random mixing.

The following are important guidelines for promoting methodological pluralism:

- Reflectivity: Constantly challenging the presumptions and consequences of selected approaches.
- Transparency: Explaining in detail the process and rationale behind methodological decisions.
- Inclusivity: Respecting the opinions of participants and a variety of knowledge systems.
- Adaptability: Keeping the door open for methodological changes as the study progresses.

Conclusion:

Changing research methods across disciplines involves a paradigm shift in how we perceive, generate, and use information; it is not just a technical exercise. Navigating a world that is ever more interconnected and uncertain requires this change. As demonstrated in this chapter, the integration of methodologies—based on ethical reflection, technological innovation, and epistemological awareness—offers a way ahead for research that is both responsive and rigorous.

Future researchers must be taught to think beyond boundaries, complex research frameworks must be created, and institutional cultures that encourage methodological experimentation must be fostered. The only way academia can fulfill its role in tackling the complex challenges of the twenty-first century is by embracing such change.

References:

1. Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Duke University Press.
2. Bryman, A. (2007). Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods Research, 1*(1), 8–22. https://doi.org/10.1177/2345678906290531
3. Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.
4. Denzin, N. K., & Lincoln, Y. S. (Eds.). (2018). *The SAGE handbook of qualitative research* (5th ed.). SAGE Publications.
5. Frodeman, R., Klein, J. T., & Mitcham, C. (Eds.). (2010). *The Oxford handbook of interdisciplinarity*. Oxford University Press.
6. Greenhalgh, T., & Papoutsi, C. (2018). Studying complexity in health services research: Desperately seeking an overdue paradigm shift. *BMC Medicine, 16*, Article 95. https://doi.org/10.1186/s12916-018-1089-4
7. Hill, R. L., & Good, M. (2021). Collaborating in the digital humanities: Working together in theory, practice and pedagogy. In *Collaborative research in the digital humanities* (pp. 35–53). Routledge.
8. Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (4th ed., pp. 97–128). SAGE Publications.
9. Maxwell, J. A. (2013). *Qualitative research design: An interactive approach* (3rd ed.). SAGE Publications.
10. Mertens, D. M. (2015). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods* (4th ed.). SAGE Publications.
11. Nicolescu, B. (2002). *Manifesto of transdisciplinarity* (K. C. Voss, Trans.). SUNY Press.
12. Nowotny, H., Scott, P., & Gibbons, M. (2001). *Re-thinking science: Knowledge and the public in an age of uncertainty*. Polity Press.
13. Repko, A. F., Szostak, R., & Buchberger, M. P. (2017). *Introduction to interdisciplinary studies* (2nd ed.). SAGE Publications.
14. Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

PEACE, JUSTICE AND STRONG INSTITUTIONS: A SURVEY OF RURAL VILLAGES IN GREATER NOIDA

Shaurya Gogia, Nakul, Sumit Roy, Kartik Dhiman and Raheel Hassan

Department of Computer Science and Applications,

Sharda University, Greater Noida, Uttar Pradesh, India

Corresponding author E-mail**:** 2022307140.shaurya@ug.sharda.ac.in, 2022623414.nakul@ug.sharda.ac.in, 2022819948.sumit@ug.sharda.ac.in, 2022007224.kartik@ug.sharda.ac.in, Raheel.hassan@sharda.ac.in

Abstract:

A community survey that was carried out in Milak Lachchhi and Chirasi, Greater Noida, is presented in this chapter. The survey focused on issues with justice, governance, and institutional support in the pursuit of sustainable development. According to the findings, there are problems including poor awareness of civic duties and rights, restricted access to necessary services, and opaque municipal institutions. These disparities feed a vicious circle of inequality and vulnerability. The research suggests community-level measures include bolstering grassroots institutions, launching legal awareness campaigns, and setting up local grievance redressal procedures to address these issues. In rural areas, adaptive and participative methods are essential for fostering social cohesion, accountability, and trust—all of which help to achieve SDG 16.

Keywords: Community Empowerment, Transparency, Accountability, Institutional Support, Accountability, Grassroots Participation

Introduction:

Peace, justice, and institutional strength are all intimately related to social fairness and fundamental human rights. But there are still a lot of obstacles in India's rural areas, such Milak Lachchhi and Chirasi in Greater Noida, Uttar Pradesh. These towns serve as examples of how governance problems, infrastructure limitations, and socioeconomic disparities work together to obstruct the development of sustainable development and the building of robust institutions. Poor community involvement and a lack of institutional accountability have led to social instability in Milak Lachchhi and Chirasi, where there are few possibilities for civic engagement and limited access to justice. Weak local governance institutions and low civic awareness further impede the community's capacity to demand action and advocate for its rights, which eventually impacts the general peace and justice in these places.

This chapter highlights how institutional incompetence and a lack of public involvement have perpetuated environmental and health problems using data from a community connect survey. It examines public perceptions of governance and justice, evaluates the effectiveness of the services that are offered, and pinpoints significant gaps in service provision. To address these concerns within the framework of SDG 16, the chapter suggests community-led strategies such as legal literacy programs, participatory decision-making, the establishment of regional grievance redressal forums, and cooperation with grassroots organisations. In order to guarantee that every citizen has equal access to justice, peace, and robust institutions, these flexible approaches highlight the necessity of transparent, inclusive, and responsible governance.

By tying social justice and institutional strength to the availability of basic services, this study emphasises the value of peace, equity, and robust institutions in empowering rural populations and building resilient societies.

Survey Locations and Methodology

Panchayatan Inayatpur's Milak Lachchhi and Chirasi were specifically selected for this study because of their varied socioeconomic makeup and the significant governance and justice challenges they face. Deeper concerns about institutional neglect and social injustice are highlighted by systemic issues such as inadequate public services, poor sanitation, and the ongoing struggle for basic rights. Residents' ability to assert their rights to essential services is hindered by the absence of a responsive government and equitable resource distribution, contributing to continued social and public health disparities. Already disadvantaged by socioeconomic and infrastructure deficiencies, communities like Milak Lachchhi and Chirasi are often excluded from larger policy discussions, leaving them without justice and equal access to a high standard of living.

Methodology:

Survey Design:

Focus groups and in-depth interviews with important informants and community members were carried out in accordance with the concepts of inclusive decision-making and participatory government. Deeper understanding of the lived realities, perceived injustices, and structural obstacles preventing access to necessary services was made possible by these interactions.

Sample Population:

In order to promote inclusive participation and guarantee that all community perspectives were heard in accordance with the principles of justice and accountability, the questionnaire featured a stratified random household sample that was intended to assure equitable representation across socioeconomic status, gender, and age.

Data Collection:

Survey teams conducted door-to-door assessments with 1000–1500 families in each village to guarantee broad community participation. Together with quantitative data, qualitative observations on governance, institutional accountability, and public service delivery allowed for a comprehensive understanding of local realities and the role community-led solutions play in promoting sustainable access to justice and essential services.

Analysis Framework:

Data on service deficiencies, community views of cleanliness, and the efficacy of current initiatives served as the foundation for the study. The findings were then examined in light of the Sustainable Development Goals (SDGs), with a particular focus on assessing how well local practices matched global objectives for justice, institutional accountability, and fair access to services.

Visit 1: Milak Lachchhi Village

In Uttar Pradesh, India, near the rural hamlet of Milak Lachchhi, which borders Greater Noida, the baseline survey was conducted. There are roughly 1,500 people residing in the village, and agriculture is the main source of income. But because of inadequate institutional accountability, bad administration, and unequal access to basic services, the community suffers many difficulties. Inadequate public health measures and institutional neglect have made the population susceptible to ongoing health and social problems. Concerns among the locals have grown over the lack of access to essential services and the ongoing health and safety issues brought on by ineffective local government. based on conversations with 100 families in focus groups and house visits. According to the poll, they are not well-informed on important hygiene practices, which makes them even more susceptible to disease. Notwithstanding these obstacles, the community demonstrated a readiness to accept solutions such as enhanced public health facilities and more robust governance in the event that institutional changes and outside assistance were made available. These results highlight the necessity of community-led strategies, improved governance, and justice in order to overcome Milak Lachchhi's structural problems.

Visit 2: Chirasi, Panchayatan Inayatpur Village

Chirasi, Panchayatan Inayatpur, a rural village in Greater Noida, Uttar Pradesh, was the site of the second survey. With a population of roughly 1,800, the village has several difficulties because of poor institutional support and governance. The community's problems are made worse by inadequate institutional accountability and a lack of necessary infrastructure, which make it more difficult to provide basic services and fuel persistent social problems. Residents are unhappy with the absence of efficient governance systems and restricted access to public services, which they believe continue to keep them marginalised, according to focus group discussions. Concerns were raised by the community on the lack of platforms for people to communicate their needs and the local authorities' lack of responsiveness. The residents of Chirasi demonstrated a readiness to participate in initiatives to enhance governance and service delivery in spite of these obstacles, so long as there is outside assistance and institutional changes. In order to address the root causes of institutional neglect and unequal resource distribution in Chirasi, these findings highlight the critical need for improved governance frameworks, justice, and community-driven initiatives.

Contrasting Insights

The surveys carried out in Chirasi Panchayatan Inayatpur and Milak Lachchhi show both parallels and differences in the kinds of problems that the villages deal with, exposing the relationships between the communities as well as their particular difficulties. Both villages lacked efficient procedures to handle public services and basic needs, and institutional neglect and poor governance were major issues. Residents' problems were made worse by a lack of adequate infrastructure, a lack of institutional responsibility, and an insufficient allocation of resources. While Chirasi showed a somewhat greater level of interest in community-driven solutions and participatory decisionmaking, Milak Lachchhi showed a conspicuous absence of community engagement in governance processes. These results highlight the necessity of locally customised strategies to meet the problems of justice, governance, and fair access to services, emphasising that mitigating actions must be unique to the circumstances of each town. The two villages' differences highlight how complicated rural administration.

Discussion:

Chirasi Panchayatan Inayatpur and Milak Lachchhi have answered questionnaires about the primary issues of public services, institutional efficacy, and governance in rural areas. For the communities, inadequate infrastructure, a lack of institutional accountability, and subpar public service delivery have created serious problems. The lack of fair resource allocation and efficient government structures aggravates environmental and health problems. Even though civic knowledge and engagement are still lacking, there is a chance for improvement because of the community's readiness to embrace alternatives like better governance and increased community involvement. It is necessary to implement focused interventions in local governance, educational programs, and infrastructure development to address these systemic difficulties and guarantee that all communities have fair access to resources and services. Results show that in order to empower local communities and provide long-term solutions, institutions must be more robust and inclusive.

Impact of Peace, Justice & Strong Institutions

The general well-being and public health of Milak Lachchhi will be greatly enhanced by fortifying governance and establishing robust institutions. In addition to promoting openness and civic engagement, effective institutional frameworks can lessen problems brought on by bad governance. Strong institutions will address social and economic disparities, reduce healthcare costs, and facilitate access to essential services, all of which will promote community health. A healthy environment can also be promoted by the implementation of efficient governance systems, which can lessen the frequency of bad behaviours like disregard for public health programs. In addition to promoting a change in behaviour, increased civic awareness and institutional accountability will also result in better public health outcomes, lower absenteeism rates, and increased community involvement. In addition to improving people's quality of life, these upgrades will enable the community to advance towards economic growth and development.

Community Perspectives on Peace, Justice & Strong Institutions

The people of Chirasi, Panchayatan Inayatpur, have voiced a number of worries about the village's institutional efficacy and governance. The majority of families believe that social and economic difficulties have been exacerbated by inadequate local governance and a lack of accountability. Ineffective public health services and a lack of institutional assistance are blamed for the social difficulties and frequent diseases that many community members, especially parents, have observed. Ineffective governance systems and a lack of easily available public services are viewed as urgent problems impeding the growth of the community. During talks, villagers indicated that if given the required outside assistance, they would be open to participating in projects that would improve governance and build local institutions. This illustrates how the community recognising the necessity of more robust institutional changes, justice, and governance in order to raise their standard of living and guarantee long-term growth.

Diverse Challenges in Promoting Peace, Justice & Strong Institutions

There are several obstacles to implementing efficient governance and institutional reforms in Milak Lachchhi and Chirasi, Panchayatan Inayatpur, including poor waste management, social and economic limitations, and infrastructure deficiencies. Weak governance systems plague both communities, undermining initiatives to better serve the public and meet community needs. The problems are made worse by a lack of institutional accountability and low levels of civic engagement, which further reduce the efficiency of the resources that are available. Significant change is also made more difficult by a lack of knowledge about governance procedures and restricted access to resources and assistance. While local leadership is willing to put ideas into practice and enhance governance, removing these obstacles and guaranteeing sustained advancement towards fairness and sustainable development require outside help, training, and capacity building.

Broader Implications

Milak Lachchhi and Chirasi, Panchayatan Inayatpur, face governance and institutional challenges that are indicative of broader systemic problems that are prevalent in rural India. The absence of efficient public services, inadequate waste management, and infrastructure deficiencies are pervasive issues that lead to high rates of morbidity and mortality because of weak institutional frameworks. These issues highlight how urgently community-driven, context-specific interventions that encourage civic engagement, bolster local government, and put long-term solutions into action are needed. The results underscore the significance of coordinating local initiatives with national development objectives, namely in establishing robust, all-encompassing establishments that empower rural people, better living conditions, and promote public health.

Recommendations

Active public involvement, legal understanding, and transparent government are crucial for addressing the urgent issues in Milak Lachchhi and Chirasi, Panchayatan Inayatpur. Community empowerment and fair access to public services can be achieved by fortifying institutional frameworks through the establishment of inclusive grievance redressal procedures and participatory local governance. Programs that increase civic engagement, advance social justice, and hold institutions responsible are essential for creating societies that are resilient, equitable, and peaceful. These initiatives help achieve the more general objective of building robust institutions that provide inclusive services to all facets of society.

1. Reconnecting Communities to in Urbanized Areas

Access to fundamental services and rights is frequently unevenly distributed in cities due to the fast urbanisation and growing infrastructure. In these dynamic settings, encouraging community reintegration necessitates a multidisciplinary approach that blends inclusive government, technology innovation, and proactive community involvement. Building forums for community voices to impact decision-making, encouraging legal empowerment, guaranteeing fair access to justice, and enhancing institutional openness are important tactics. Fairness, accountability, and robust civic institutions serve as the foundation for the growth of peaceful communities.

2. Strengthening Local Governance Structures

Give local panchayats and gramme sabhas the power to make decisions. Make sure that villagelevel meetings are transparent and frequent in order to address grievances and ensure accountability.

3. Promoting Legal Awareness and Access to Justice

Organise community seminars about laws, rights, and entitlements (such as social programs and land rights). Establish mobile legal services and legal aid camps to reach underprivileged communities.

4. Strengthening Civic Institutions

Educate volunteers and local leaders on ethics, conflict resolution, and public administration. To monitor institutional performance, support the establishment of regional watchdog organisations.

5. Youth Engagement and Education

Include civic education in community initiatives and schools. Plan young leadership initiatives to develop future community champions.

6. Monitoring and Evaluation Systems

Utilise data to monitor how well programs pertaining to justice and governance are working. Promote social or third-party audits to increase trust.

7. Financial and Resource Support for Peace, Justice & Strong Institutions

Significant financial and resource commitments at the local, national, and international levels are necessary for the worldwide growth of justice, peace, and robust institutions. Important tactics for deploying these resources consist of:

- **Transparent Budget Allocation and Utilization:** Make sure that the finances and spending of the village government are made public. Inform the public about the allocation of funds through village meetings and community notice boards. Encourage community members to assist in determining expenditure priorities through participatory budgeting.
- **Strengthening Financial Literacy:** Organise seminars on managing government benefits, digital payments, banking, and saving. Provide specialised training to women and young people to empower them to make financial decisions.
- **Equitable Access to Government Schemes:** Encourage residents to take use of programs like MNREGA, pensions, and subsidies. Assign "Sahyog Mitras," or local help desks, to assist individuals with applications and paperwork.

8. Market Access and Awareness for Peace, Justice & Strong Institutions

Promoting peace, justice, and robust institutions at the local level requires bolstering community access to equitable institutions and raising public understanding of legal rights, civic duties, and democratic principles. Important tactics consist of:

- **Promoting legal literacy campaigns:** Making citizens aware of their legal rights, obligations, and available institutional processes is known as legal literacy. Citizens with more education are better able to spot injustices, confront corruption, and pursue justice. To make sure that everyone, particularly those in rural and marginalised communities, is aware of how to interact with justice systems, campaigns can be carried out through seminars, community gatherings, street plays, digital platforms, and printed materials.
- **Enhancing access to local grievance redressal systems and alternative dispute resolution mechanisms:** These processes give consumers quick, affordable, and easily accessible ways to settle disputes without having to fight protracted court fights. In order to guarantee that justice is a right for everyone and not simply a privilege for a select few, local grievance cells, mobile legal clinics, and advocacy programs like Lok Adalats or mediation centres are established. Public confidence in regional institutions is increased as a result.
- **Facilitating inclusive forums for marginalized voices:** Encouraging women, youth, minorities, and people with disabilities to speak up and have an impact on government decisions is essential for promoting justice and peace. Equal representation and the ability to voice opinions should be guaranteed by village assemblies, youth parliaments, and public discussions. In addition to fostering a sense of belonging and engagement in political processes, this lessens alienation.

9. Education and Training Programs

Fostering a culture of peace, advancing justice, and bolstering institutional responsibility at the community level all depend on realistic and long-lasting education and training initiatives. These initiatives strengthen local capacity for civic involvement and governance while also promoting long-term behavioural change. Important components of these initiatives consist of:

- **Civic Education:** People can better grasp their basic rights and obligations as citizens with the aid of civic education programs. In order for individuals to actively engage in civic life, they offer knowledge into how democratic institutions—such as the judiciary, legislature, and executive—function. This fosters an informed and engaged populace, which is necessary for a society that is just and peaceful.
- **Workshops on Ethical Leadership and Public Accountability:** Integrity, transparency, and ethical governance are the main topics of workshops for government officials and leaders. They uphold the notion that public accountability and the best interests of the community should guide leadership. Strong institutions that are regarded and trusted by the public are built on ethical leadership.

10. Policy Interventions and Support

The proactive engagement of governments and policymakers is necessary to address structural issues pertaining to justice, governance, and institutional efficacy. These problems frequently involve corruption, a lack of accountability, a lack of transparency, and restricted access to the judicial system for disadvantaged groups. Through the implementation of inclusive policies, the reinforcement of institutional frameworks, and the equitable representation of all social groups, the government may play a pivotal role in fostering peace, maintaining justice, and establishing robust, adaptable institutions like:

- **Government Leadership:** Governments and legislators must take the lead in addressing systemic issues that impede justice and efficient government, such as combating corruption, enhancing accountability systems, and bolstering transparency.
- **Inclusive Policy Making:** For social cohesiveness to be strengthened and inequality to be decreased, policies that guarantee the participation of marginalised groups and advance equal access to justice must be developed

11. Monitoring and Feedback Mechanisms

Provide mechanisms for regularly evaluating these strategies' efficacy:

- **Transparent Monitoring Systems:** Provide open mechanisms to keep an eye on how government, law enforcement, and judicial institutions are operating. This guarantees responsibility and makes it possible for the public to monitor how well public institutions are performing.
- **Citizen Feedback Mechanisms:** Provide forums where residents, particularly those from under-represented groups, can express their opinions about the services they receive from government agencies. To increase the responsiveness and accessibility of institutions, this may involve public consultations or grievance redressal procedures.

Conclusion:

In rural areas, especially in the villages of Milak Lachchhi and Chirasi Panchayatan Inayatpur, Greater Noida, Uttar Pradesh, the importance of peace, justice, and strong institutions has been underlined in the current chapter. The results underscore the significant obstacles that these groups encounter, such as insufficient access to legal representation, restricted institutional assistance, and low civic consciousness. Nonetheless, there is a marked desire for change in the communities, as well as a readiness to accept remedies like better governance procedures and more robust legal frameworks. This study highlights the significance of interventions based on the interplay of community integration, government policy, and sustainable institutional structures in supporting the effective construction of justice and the rule of law by offering examples. For success to be sustained, funding, education, and capacity building are all essential. These initiatives need to be closely watched, with feedback loops and flexible policies to accommodate these populations' changing demands, in order to propel this change. In the end, reducing the disparity in access to justice and robust institutions will enhance social stability, economic expansion, and the general standard of living for the communities concerned. To achieve long-term growth, funding, education, and capacity building are all essential. In order to propel this change, these initiatives need to be closely watched, with feedback loops and flexible policies to accommodate these populations' changing demands. Improving social stability, economic growth, and the general standard of living for the people affected will ultimately result from bridging the gap in access to justice and robust institutions.

References:

1. Abbott, K. W., & Snidal, D. (2000). Hard and soft law in international governance. *International Organization, 54*(3), 421–456. https://doi.org/10.1162/002081800551280
2. Anderson, C. A. (1989). Causal reasoning and belief perseverance. In D. W. Schumann (Ed.), *Proceedings of the Society for Consumer Psychology* (pp. [insert page range if available]).
3. Chayes, A., & Chayes, A. H. (1993). On compliance. *International Organization, 47*(2), 175–205. https://doi.org/10.1017/S0020818300027910
4. Chayes, A., & Chayes, A. H. (1998). *The new sovereignty: Compliance with international regulatory agreements*. Cambridge, MA: Harvard University Press.
5. Cole, W. M. (2005). Sovereignty relinquished? Explaining commitment to the international human rights covenants, 1966–1999. *American Sociological Review, 70*(3), 472–495. https://doi.org/10.1177/000312240507000308
6. Downs, G. W., Rocke, D. M., & Barsoom, P. N. (1996). Is the good news about compliance good news about cooperation? *International Organization, 50*(3), 379–406. https://doi.org/10.1017/S0020818300033327
7. Finnemore, M. (1996). Norms, culture, and world politics: Insights from sociology's institutionalism. *International Organization, 50*(2), 325–347. https://doi.org/10.1017/S0020818300028271
8. Finnemore, M., & Sikkink, K. (1998). International norm dynamics and political change. *International Organization, 52*(4), 887–917. https://doi.org/10.1162/002081898550789
9. Gastil, R. D. (1980). *Freedom in the world: Political rights and civil liberties, 1980*. New Brunswick, NJ: Transaction Books.
10. Gibney, M., & Dalton, M. (1996). The Political Terror Scale. In S. S. Nagel & D. L. Cingranelli (Eds.), *Human rights and developing countries* (pp. [insert page range if available]). Greenwood Press.

GOOD HEALTH AND HUMAN WELLBEING IN RURAL AREAS: A CASE STUDY OF MILAK LACHCHHI AND CHIRASI

Wagner Marques, Tashinga Bwanali,
Wendy Nicola Tomusoni, Fanta Jata and Raheel Hassan
Department of Computer Science,
Sharda School of Engineering & Technology, Sharda University, Greater Noida, U. P.
Corresponding author E-mail: 2022808783.wendy@ug.sharda.ac.in,
2022809445.tashinga@ug.sharda.ac.in, 2022811805.tashinga@ug.sharda.ac.in,
2022803173.fanta@ug.sharda.ac.in, raheel.hassan@sharda.ac.in

Abstract:

The health and health-related issues of the two villages of Greater Noida Milak Lachchhi and Chirasi were assessed in relation to SDG 3: Good Health and Wellbeing. The researchers undertook community health surveys and field visits which spaced including physical activity, nutrition, mental health, hygiene, social health, sleep and social support. The findings point out serious health care challenges such as lack of sanitation services, inadequate or poor nutrition, lack of mental support services, and inadequate medical care facilities, among the women and the elderly. The villagers in the two villages showed great willingness to make positive changes to their communities health and were very supportive of one another, especially women. The chapter ends with proposing the bridging the health gap initiatives including health care initiatives, better infrastructure and education and awareness campaigns aimed at rural areas in order to sustain efforts toward SDG 3 targets low.

Keywords: Health, Wellbeing, Rural India, SDG 3, Milak Lachchhi, Chirasi, Sanitation, Nutrition, Mental Health, Community Support

Introduction:

In the modern world, good health and well-being are prerequisites for an individual's productivity and their overall quality of life. "Ensure healthy lives and promote well-being for all at all ages" is the third Sustainable Development Goal (SDG), which requires equal opportunities and access to health services for all populations to achieve excellent health. Although much has been done to advance healthcare services on a global scale, rural populations still significantly lack the resources needed to achieve the ideal state of health.

The Indian rural regions of Uttar Pradesh face difficulties with accessing healthcare facilities, poor sanitary conditions, undernourishment, and a general absence of mental health support. They are also diagnosed with low income levels, poorly developed health literacy, social discrimination, or possess cultural beliefs that hinder timely medical attention. Women, children, and older individuals suffer from these challenges due to the neglect built within the system towards their unfulfilled demands for healthcare.

In efforts to analyze these matters within a specific context, this report includes results of community connect visits to two rural villages—Milak Lachchhi and Chirasi—set in the Greater Noida area. This survey captured several aspects of health and well-being including, but not limited to, physical activity, nutrition, emotional and mental health, hygiene, sanitation, sleep, and social support. The comprehensive questionnaire enabled collection of both factual information and personal reflections from residents of different ages, social and economic strata. In Milak Lachchhi, the overall survey response indicated a low level of physical activity arising from employment in family farming and household chores, but identified slower nutritional progress and greater deficits in the use of modern medical facilities. In Chirasi, the level of sanitation facilities was lower, and there was a greater gap in the awareness of healthcare services between men and women. There was also a gap in the provision of mental health services in both communities, despite the presence of stress and psychological strain.

The gaps involving infrastructure and behavior show an alarming need for health-specific initiatives, accessible toilets, clean water supplies, and raising mental healthy awareness to cultivate healthy diets and health education. Community approaches can fill rural health care gaps. We help reduce the urban-rural health gap by promoting self-care through education and verifiable effort from rural residents.

Rural health maintenance is not solely a health issue, but an essential issue of development. To attain SDG 3, cooperation from the government, NGOs, local authorities, and the community as a whole is vital. There's a need for multi-targeted strategic planning that integrates health care policies and proactive care programs to build resilient rural communities for appropriate sustainable development.

Literature Review

Without a doubt, health is one of the most fundamental aspects of human development and is directly tied to productivity, education, and quality of life. The World Health Organization (WHO, 2021) mentions that good health is much more than just the absence of a health condition. It also includes full physical, mental, and social well-being. Sustainable Development Goal 3 (SDG 3) seeks to ensure healthy lives and promote well-being for all people at all ages. It highlights the need for proper infrastructural development, access to healthcare, and awareness which are some of the challenges faced by rural communities.

Many studies draw attention to the gap in health services available between rural and urban areas, especially in developing nations like India. The National Rural Health Mission Report (NRHM, 2021) states that people living in rural areas are facing lack of access to health services, unsatisfactory hygiene, and greater rates of malnutrition. Furthermore, geographic seclusion and poverty coupled with low literacy rates increase the severity of these issues. Areas within Uttar Pradesh like Milak Lachchi and Chirasi exhibit socio-cultural and economic hurdle-subsidized infrastructure which dictate the health outcome trends of these regions.

Nutrition is a crucial factor for a person's health, specifically for one living in a rural area. The family health survey (NFHS-5, 2020)[3] shows that there is still rampant chronic malnourishment, especially with women and children. According to the study by Prasad and Sharma (2018)[4], in rural Indian context, food diversity is restricted to seasonal loaves and affordably priced items. In milak laccchi as well as in chirasi, people predominantly rely on carbohydrate laden food items that do not provide sufficient protein or vital vitamins and minerals.

Mental health, which is a critical element of well-being, has been receiving some more attention over the recent years. In the case of rural India, one of the biggest barriers in focusing on mental health is the stigma surrounding this issue coupled with the absence of trained personnel and community focus. Patel and Kumar (2020)[5] comment on this area. Although this lack of infrastructure is true for most people, in chirasi it is the social stigma that hinders people seeking help. Resorting to family members or intensive activities is a very common way to escape and cope with stress.

Sanitation and hygiene are still very important aspects when analyzing the health of rural areas. Many villages still lack basic toilet facilities as well as sources of clean water, even with attempts such as the Swatch Bharat Abhiyan. Sharma et al (2020)[6] also mention that infrastructure is not everything; there needs to be a shift in behavior and education needs to be provided. For example, in Milak Lachchhi, infrastructure remains a main barrier to health and hygiene awareness, which is at a moderate level.

Support systems that are informal in manner are important when looking at the health of rural areas. These have been documented by Das et al (2021)[7], who focused on social and familial relationships and their impact on assumption of caregiving roles and decision-making concerning health. Through these informal systems, health education and preventive care of hygiene can be established on a grassroots level. In order to achieve this, however, some capacity-building efforts need to be implemented.

Disparities based on gender in health across regions have been researched. As less care is given to women's health needs, in several parts of the country, women are found to be financially dependent and mark lower priority in decision making related to healthcare. In Chirasi, for instance, women reported lack of decision making authority to postpone medical consultations on out-of-the-court rest where they are required to tend to take care of children or skip meals altogether.

The more an individual is educated, the better the likely outcomes stemming from good health literacy. Gupta, Singh (2021)[8] stresses the fact that people with higher educational attainment tend to engage more in preventive measures related to health as well as accessing clinical services, visiting physicians in a timely manner. In Milak Lachchhi and many other villages, lack of health literacy nurtures several misconception about proper nutrition and aimed vaccination resulting in ill-equipped communities in illness prevention.

Such detailed health surveys, for instance the one in Milak Lachchhi and Chirasi, are integral for understanding the different unique health issues which are particular to rural areas. Not only do they show the gaps in infrastructure and services, but they also highlight important cultural attitudes and behavioral patterns. World Bank (2019) suggests that most rural areas need health care interventions that blend physical structure enhancement, education, and advocacy.

This study seeks to achieve the overarching aim of advancing good health and wellbeing in the rural areas that lack adequate resources by studying health indicators and the reception of local citizens in the selected villages. Solving these problems with multi-sector approaches on sanitation, nutrition, mental health, and health literacy could improve the quality of life in rural India and expedite the attainment of SDG 3.

Methodology

This study utilized a combination of approaches to analyze the health concerns and well being of the villagers of Milak Lachchhi and Chirasi, two remote villages located in the Greater Noida region of Uttar Pradesh, India. In accordance to the targets set under Sustainable Development goals, the research intended to explore the mental, nutritional, and hygiene considerations, along with the multifaceted challenges in health practices of the villagers.

Study Setting and Population

The research was done in two geographically disparate but socio-economically homogenous rural areas: Milak Lachchhi and Chirasi. The villages have Limited access to healthcare services and insufficient sanitary amenities along with an agricultural or informal labor workforce. The focus population consisted of men and woman over the age of eighteen of varying educational and employment levels.

Methodology in Milak Lachchhi

In Milak Lachchhi, a structured questionnaire was administered to 10 participants selected through convenience sampling. The interview guide inspected and placed an equal emphasis on six health and wellbeing domains: social support, mental health, sleep, hygiene, nutrition, and physical activity. Each of the respondents was a fluent Hindi speaker and the interviews were conducted in Hindi to enhance understanding and comfort.

The survey tool was tested for clarity and relevancy contentwise. Questions were formulated using both closed-ended (quantitative) and open-ended (qualitative) formats so statistical analysis, as well as thematic interpretation, would be possible. Percentages and frequency distributions were used for the descriptive quantitative data, while recurring themes and patterns in health behavior and perception were noted for qualitative responses.

Methodology in Chirasi

In Chirasi, a descriptive, cross-sectional research design was implemented. A modified version of the same structured questionnaire was given to 10 residents of the village. To extract important health indicator information including diet, mental and emotional health, personal hygiene, and medical care access, face-to-face interviews in Hindi were conducted.

Using convenience sampling, participants were selected while taking special consideration to gender and age balance. The responses were grouped and analyzed to determine health outcome trends and barriers in the village. Quantitative data was displayed in charts and tables, while qualitative data was evaluated with thematic analysis to underscore compelling community difficulties and potential solutions.

Ethical Considerations

During the collection and analysis of data, the study complied with ethical standards. Obtained consent was solicited from every participant before the interview process began. Participants were informed about confidentiality and assured that participation was voluntary. Participants' identifying information was not captured and data was only for research and evaluation purposes.

Limitations

This particular research, though providing useful information on the health status of some rural populations within Greater Noida, has some shortcomings. The limited number of participants is a constraint regarding generalization of the findings to other wider populations. The convenience sampling approach may pose some limitations for representativeness as responses do not capture the actual experiences of all the residents. However, the scope of the study is useful in informing future detailed studies and community-oriented activities aimed at those areas.

Visit 1 – Milak Lachchhi Village

Located about 25 kilometers from Noida in the Gautam Buddh Nagar district of Uttar Pradesh, Milak Lachchhi is a rural village. Agrarian makes up the socioeconomic base of the village, with most residents involved in farming, livestock rearing, and related agricultural activities. Although there is an economic advantage associated with the village's nearness to urban areas, there remain significant public health challenges.

The community visit involved the administration of a standardized health and well-being questionnaire to residents who are 18 years or older. The focus was to determine the community's state of health in relation to its physical, nutritional, mental, and hygiene aspects in the context of Sustainable Development Goal 3: Good Health and Wellbeing.

From Milak Lachchhi, the insights show that although people are physically active through farming and doing house chores, there seems to be no exposure to structured exercise or fitness activities. Also, their nutrition appeared to be inadequate for a balanced diet as it was mainly centered on staples such as rice and wheat with limited access to fruits, vegetables, and protein sources, which is less frequent among women because of caregiving responsibilities.

With regard to mental health, not much attention was paid to this aspect as most people were experiencing stress because of financial hardships, but a lack of counseling services meant that almost no support of any kind was available to them. Emotional support was mainly provided by family and neighbors informally. Sanitation-wise, there were households with functioning toilets and access to some clean water, but a good proportion of respondents still practiced open defecation and actively defecated into contaminated water sources.

The trip to Milak Lachchhi underscored the need for specific health program planning, particularly with respect to nutrition, mental health, sanitation, and primary health education at the community level.

Visit 2 – Chirasi Village

Chirasi is another rural village located approximately 20 km from Greater Noida. It has the same traits as Milak Lachchhi but with a higher population and a slightly more diversified economy, as it supports both farming and small-scale trading. Chirasi has a younger demographic compared to Milak Lachchhi; there are a number of school-aged children and teenagers studying in towns. The older population, however, predominantly those aged over 50 years, has a myriad of health concerns.

The survey administered during the community connect visit was aimed at exploring the health and well-being of residents from varying demographic groups, including specific focus on the sanitation and nutrition, mental health, and healthcare access dimensions.

Chirasi villagers reported some form of physical activity in the form of agricultural work and household chores. In contrast to Milak Lachchhi, the surgical sanitation facilities in Chirasi were slightly better maintained, although open defecation and low standards for hygiene continued. Some residents had access to clinics or mobile health units, but others were not informed about government health services and facilities which created inequitable access to healthcare.

Nutrition practises in Milak Lachchhi took on the same form as in Milak Lachchhi, where they relied on inexpensive foods and erratic consumption of protein or micronutrient-rich items. Food insecurity and inadequate dietary diversity affected older adults and women disproportionately. There was a lack of support for mental health and stress stemming from work, finances, and family were common.

Chirasi visit was particularly instructive in understanding the relationship between infrastructure, education, and socio-cultural factors in determining rural health and was useful in understanding how to go about constructing and providing rural-focused age-sensitive and gender-sensitive health programs.

Questionnaire

The "Good Health and Wellbeing Questionnaire" was designed to assess various dimensions of individual and community health. It includes key sections covering physical activity, nutrition, mental and emotional wellbeing, sleep, hygiene, and social support. The questionnaire gathers insights into participants' daily habits, health challenges, access to resources, and lifestyle practices. The responses help identify gaps and opportunities for promoting a healthier lifestyle and can guide future health initiatives and community-based interventions aimed at improving overall wellbeing.

Findings

Visit 1 – Milak Lachchhi Village

The holistic health and wellness assessment performed in Milak Lachchhi village brought to light a number of concerns pertaining to physical health, nutrition, mental health, hygiene, and the availability of medical facilities. Primary data obtained through interviews pointed out more or less the right issues and those to be addressed urgently in order to attain SDG 3 goals.

1. Physical Health and Activity

- **Active Daily**: 60% of adult respondents claimed to be physically active on regular basis which was mainly due to working in the fields and looking after the household.
- **Feminine Variant**: Women's activities were mostly frontier of the household and included fetching water, cooking, and cleaning."
- **Exercise Awareness**: Only 10% of respondents were aware of structured exercise routines, and none reported participating in activities such as yoga, walking clubs, or fitness programs.

2. Nutrition and Eating Habits

- **Meal Patterns**: 50% of households consumed two meals per day, with limited dietary diversity.
- **Staple Diet**: The diet primarily consisted of wheat, rice, and seasonal vegetables. Only 20% included fruits or dairy products regularly.
- **Nutrition Knowledge**: Awareness about balanced diets, portion control, or protein intake was low. Women often skipped meals due to household responsibilities or food scarcity.

3. Access to Healthcare

- **Healthcare Facilities**: 60% of participants had to travel more than 5 km to reach the nearest health center.
- **Utilization**: Only 30% of participants had visited a government clinic in the past six months.
- **Barriers**: Distance, cost of medication, and lack of knowledge about government schemes were the most cited obstacles to seeking care.

4. Mental Health and Emotional Wellbeing

- **Stress and Anxiety**: 45% of participants reported experiencing frequent stress, primarily due to financial concerns and family responsibilities.
- **Support Systems**: Family and neighbors were the primary sources of emotional support.
- **Awareness**: None of the participants had access to or knowledge of professional mental health services.

5. Sanitation and Hygiene

- **Toilet Access**: 70% of respondents had access to toilets, while 30% still practiced open defecation, especially in joint-family households.

- **Water Supply**: 55% relied on shared handpumps or tankers, with irregular access to clean drinking water.
- **Hygiene Practices**: 65% practiced handwashing before meals, but only 40% reported using soap consistently.

6. Sleep and Rest Patterns

- **Sleep Duration**: 50% of residents reported sleeping for less than 6 hours per night due to early rising for farm work and late-night chores.
- **Sleep Quality**: Poor sleep was linked to overcrowded sleeping arrangements and stressrelated insomnia.

7. Gender Disparities in Health and Well-being

- **Healthcare Access**: 75% of men had visited a healthcare provider in the last year, compared to only 40% of women.
- **Nutrition**: Women were more likely to skip meals or eat less nutritious food due to food allocation within households.
- **Mental Health**: Women reported higher levels of emotional stress but were less likely to speak about it or seek help.

8. Awareness of Health Schemes and Preventive Care

- **Immunization and Health Drives**: Only 30% were aware of recent government health initiatives, including vaccination programs and maternal care services.
- **Preventive Care**: Knowledge of regular checkups, anemia prevention, and disease screening was minimal across all age groups.

Visit 2 – Chirasi Village

The community health survey conducted in Chirasi village aided in understanding the status of physical health, nutrition, sanitation, mental health, and healthcare access. Along with opportunities for improving health and wellbeing, Chirasi posed particular problems, having slightly both larger and younger demographics compared to Milak Lachchhi.

1. Physical Health and Activity

- **Youth Engagement**: 85% of younger individuals and students reported staying physically active through farm labor or walking to nearby towns.
- **Older Adults**: Only 20% of older residents engaged in regular physical activity due to fatigue, joint pain, or lack of awareness about the importance of exercise.

2. Nutrition and Diet Diversity

- **Dietary Habits**: 75% of households consumed two to three meals daily, largely consisting of rice, chapati, and seasonal vegetables.
- **Protein Intake**: Limited access to protein-rich food (e.g., eggs, lentils) was observed, especially in low-income households.
- **Age Disparity**: Older adults were more likely to consume fewer meals or skip meals due to dental issues, fatigue, or household priorities.

3. Health Literacy and Preventive Practices

- **Basic Knowledge**: 70% of respondents were aware of hygiene practices like handwashing and safe drinking water.
- **Preventive Care Awareness**: Only 40% of residents knew about services such as vaccination drives or health check-up camps.
- **Challenges for Older Adults**: Many over 50 years old were unaware of government health schemes and continued to rely on traditional remedies.

4. Access to Healthcare Services

- **Mobile Access**: 75% of residents accessed basic health services via mobile health vans or community workers.
- **Formal Facilities**: 60% relied on nearby towns for doctor consultations, while 30% of older adults were unaware of where to seek formal care.
- **Barriers**: Lack of nearby health centers, travel distance, and financial limitations continued to be major challenges.

5. Mental and Emotional Well-being

- **Emotional Stress**: 45% of respondents, particularly women, reported emotional strain related to financial pressures, caregiving, and isolation.
- **Coping Mechanisms**: Most relied on religious practices or talking with family. Only 10% had heard of mental health counseling.
- **Generational Divide**: Younger individuals showed greater openness to discussing mental health, while older adults saw it as a private matter or taboo.

Advantages and Disadvantages

Visit 1 – Milak Lachchhi Village

Advantages

1. **Accessible Respondents:** The community included adults, older adults, and women, enabling a comprehensive view of health disparities across age and gender groups.
2. **Higher Male Participation:** Men were highly engaged in the health survey, particularly in discussing workrelated physical strain, diet patterns, and use of nearby clinics.
3. **Baseline for Gender Health Gap Analysis:** The contrast between male (75% access to health services) and female (40% access) highlighted areas requiring urgent gender-focused interventions.
4. **Prevalence of Physical Labor:** The reliance on agriculture offered an opportunity to assess both the benefits and physical toll of labor-intensive livelihoods on rural health.

Disadvantages

1. **Limited Female Representation in Healthcare Access:** Only 30% of women had independently visited a healthcare provider, limiting the depth of understanding of their health needs.
2. **Generational Gap:** Older adults (50+) were underrepresented in mental health discussions and preventive care, leaving a critical data gap.

3. **Low Awareness of Government Schemes:** A large portion (40%) of residents were unfamiliar with schemes like Ayushman Bharat or maternal health benefits.

4. Cultural Constraints: Social norms discouraged open conversations about mental health and reproductive health, particularly among women, affecting the completeness of the survey.

Visit 2 – Chirasi Village

Advantages

1. **Health Awareness Among Youth:** School-going children and working-age youth showed interest in health education and awareness about basic hygiene practices and nutrition, offering potential for school- and community-based health promotion initiatives.
2. **Improved Access to Health Services:** 75% of participants reported access to mobile health units or nearby clinics, enabling timely consultations for minor illnesses and maternal care.
3. **Community Participation:** Youth and women actively participated in the survey and shared personal experiences, which enriched the understanding of gender- and age-specific health issues.
4. **Sanitation Improvements:** A noticeable portion of households (approximately 70%) reported access to improved sanitation facilities, such as community toilets or in-home latrines, indicating progress under sanitation schemes like Swachh Bharat Abhiyan.

Disadvantages

1. **Limited Health Awareness Among Older Adults:** Only 20% of older adults reported knowledge of preventive health measures or access to formal health services, relying mostly on home remedies or family advice.
2. **Low Awareness of Government Health Schemes:** Despite moderate access to healthcare, few participants were aware of public health programs such as Ayushman Bharat, vaccination drives, or maternal health incentives.
3. **Gaps in Mental Health Literacy:** Very few residents, including youth, had any understanding of mental health concepts or available psychological support, highlighting a significant educational gap in emotional well-being.
4. **Dependency on Family for Health Decisions:** Older adults and women often depended on male family members for decisions related to medical visits or treatments, limiting autonomy in personal health care and reducing opportunities for direct engagement with healthcare systems.

Strategies for improving health and wellbeing in rural areas

To address the health challenges identified in Milak Lachchhi and Chirasi villages, the following strategies can be adopted to promote good health and well-being in alignment with Sustainable Development Goal 3 (SDG 3):

• Healthcare Infrastructure Development

Invest in building and upgrading rural healthcare infrastructure such as primary health centers, mobile clinics, and telemedicine units to improve access to essential medical services, especially for remote and underserved populations.

• Health Awareness and Education Campaigns

Implement regular health literacy programs focused on nutrition, hygiene, mental health, disease prevention, maternal care, and family planning. Use community meetings, school programs, and local media to spread awareness in local languages.

• Community Health Engagement

Encourage active participation of community members through local health committees, women's self-help groups, and youth clubs to promote wellness practices and support peer education initiatives.

• Partnerships and Collaborations

Collaborate with government agencies, NGOs, private healthcare providers, and academic institutions to implement health programs, conduct health camps, and provide technical and financial support to rural communities.

• Targeted Programs for Vulnerable Groups

Design and implement specialized interventions for women, children, the elderly, and persons with disabilities, ensuring equitable access to healthcare, nutrition support, and emotional well-being services.

• Sustainable Health Models

Develop community-led health initiatives, such as training local health volunteers or ASHA workers, and promote home-based care practices to build resilience and ensure continuity of care even in emergencies.

• Monitoring and Evaluation

Establish mechanisms to regularly assess health outcomes, service quality, and community satisfaction. Use data-driven approaches to identify gaps, track progress, and improve future interventions.

• Integration of Digital Health Tools

Introduce user-friendly mobile apps, SMS-based health reminders, and teleconsultation services to extend healthcare access and promote preventive care among rural populations with limited mobility.

Results and Discussion:

In Milak Lachchhi, 60% of adult residents considering themselves physically active due to their occupational exposure as most of them were working in agriculture or performing house chores. On the other hand, awareness about preventive healthcare measures such as routine check-ups, balanced diets, low-stress lifestyles, or even some form of stress management was known only to a fraction of the population—roughly 20%. There was a gap between the genders—men were more likely to have used some care services in the past year, seventy-five percent as compared to women, forty percent, who tended to fall sick and try homemade solutions due to sociocultural or economical barriers to care.

Nutritional intake also varied, with 55% of households reporting carbohydrate-heavy diets and limited access to fruits, proteins, and vegetables. Women frequently reported skipping meals or eating after the rest of the family, indicating food insecurity and gendered meal practices. Access to clean drinking water and sanitation was inconsistent, with 30% of households still practicing open defecation, especially in extended or lower-income families. Mental health issues, though rarely spoken about openly, were observed in both genders—often expressed as stress, fatigue, or emotional withdrawal.

In Chirasi, a village that has a relatively younger population, more residents had exposure due to local health workers and through schooling. 85% of the youth were physically active, which some further engaged in discussions or sessions on health in nearby towns. Older adults, especially women, reported feeling more socially isolated and did not have a sense of belonging or being included into such avenues. While 75% of households had access to mobile health units or clinics within their vicinity, only 20% of the older population used any formal health services. Awareness and use of preventative care was low amongst all age groups, as well as awareness of government health schemes like Ayushman Bharat.

Mental health remained an overlooked issues in both villages. No one was aware of any professional counseling services or relaxing techniques targeted for stress. Supports primarily relied on immediate family for emotional assistance, or turned to religious activity or physical labor. Regarding hygiene, although participants reported knowledge of basic handwashing, only 40% reliably did so using soap.

These results expose a complex gap in rural health care. Younger males tend to be better informed and more engaged with health practices, while older males and women remain neglected because of sociocultural factors, mobility restrictions, and very low health literacy. Both villages showed strong family and community support systems which might be leveraged for health education and preventive care programs.

In general, some positive changes have been noted, particularly the participation of youth and improvement in sanitation facilities; however, the problem of having nutritional of mental health awareness, lack of formal healthcare services, and unequal healthcare access based on gender persists.

Conclusion:

In conclusion, the evaluation revealed that the level of health and well being examined in the context of Milak Lachchhi and Chirasi is below expectations and hinders progress on achieving SDG 3. Furthermore, both villages showed a high degree of dysproportionate lack of health literacy relative to age, sex, and the availability of health care services.

The data suggests that Care is less accessible to older resident. There are proportionately fewer health service access restrictions, financially, culturally, and physically, for younger residents, particularly men. These gaps are especially prominent in areas such as nutrition, hygiene, mental health, and preventive care.

The women and youth in this community, amongst others, exhibit a strong willingness and motivation to improve their health status and the available wellbeing resources. This encourages action through community mobilization, educational services, gender responsive mobile health programs, and the strengthening of the healthcare system in the rural areas.

Involvement from government schemes, NGOs, local panchayats along with community participation will be crucial in attending to these health inequities. If all residents in Milak Lachchhi and in Chirasi are provided with sound knowledge of health, as well as essential health services and supportive policies, they can significantly work towards a more robust and sustainable rural society while enabling marginalized populations like women and the elderly.

References:

1. World Health Organization (WHO). (2021). *Primary Health Care and Rural Communities*. Retrieved from https://www.who.int
2. Ministry of Health and Family Welfare, Government of India. (2020). *National Family Health Survey-5 (NFHS-5)*. Retrieved from https://ruralhealthmission.gov.in
3. Prasad, R., & Sharma, V. (2020). *Nutrition Challenges in Rural India: A Health Perspective*. *Indian Journal of Community Health*, 32(1), 45–52.
4. UNICEF India. (2022). *Water, Sanitation and Hygiene (WASH) in Rural Areas*. Retrieved from https://www.unicef.org/india
5. Patel, M., & Kumar, A. (2020). *Mental Health Support in Rural India: Bridging the Gap*. *Journal of Rural Mental Health*, 44(3), 123–130.
6. World Bank. (2019). *Improving Health Systems in South Asia's Rural Communities*. Retrieved from https://www.worldbank.org
7. NITI Aayog. (2021). *Health Index Report for States and UTs*. Retrieved from https://niti.gov.in
8. Swachh Bharat Mission – Gramin. (2023). *Rural Sanitation Coverage and Impact*. Ministry of Jal Shakti. Retrieved from https://swachhbharatmission.gov.in

A STUDY ON ROLE OF LOCAL AUDIT BRANCH IN POST OFFICES: WITH SPECIAL REFERENCE TO SAVING BANK CONTROL ORGANISATION

Sanjay Kumar Panchal and Renu Yadav

Department of Commerce & Management,

Jayoti Vidyapeeth Women's University, Jaipur, Rajasthan, India

Corresponding author E-mail: skpanchal87@gmail.com, registrar@jvwu.ac.in

Abstract:

Auditing is a crucial process that verifies a business's financial position through financial statements, ensuring they provide an impartial assessment of the company's financial status and earnings. It involves assessing the accuracy, adequacy, and dependability of accounting data and statements. The importance of auditing is evident in the requirement for all commercial and non-commercial organizations to have their financial statements audited. The Savings Bank Control Organisation (SBCO) is a vital part of India's Post Office Savings Bank (POSB) system, responsible for maintaining control accounts and conducting daily checks to prevent fraud. Its key functions include maintaining accurate records of transactions, conducting daily checks, preventing fraud, and submitting returns to authorities. The SBCO is administratively controlled by Senior Superintendents/Superintendents of Post Offices or Gazetted Postmasters and consists of a Supervisor and Postal Assistants. The study aims to highlight the importance of the SBCO, local audit system in POSB, explain the main functions and responsibilities of SBCO officials, and provide insights into the consequences on the post office's overall performance in India. This system will speed up decision-making, increase financial efficiency, and eliminate misappropriation of public funds to be deposited in post offices.

Keywords- Post Office, SBCO, Auditing, Financial System, POSB

Introduction:

A local audit is a technique used to immediately examine the original financial records kept in certain government departments and entities. It includes a thorough test audit to confirm the completeness and accuracy of the accounting. It is impossible to establish universal guidelines and directives that could be relevant to every local audit due to the wide variety of account classes that local audits deal with. Presenting a clear financial picture is, nevertheless, the primary goal of any institution's financial statements. Without taking into account both the overall financial picture and the specifics of the transactions that resulted in the financial outcomes, an informed audit is impossible.

A Local Audit Officer (LAO) within the Indian Army is responsible for conducting audits of cash and stores accounts of units and formations at a local level. They ensure the accuracy and integrity of financial records within their area of responsibility, reporting their findings to the appropriate authorities. LAOs also play a role in reviewing the audit work of their staff and conducting surprise test checks. The Defence Accounts Department (DAD) is responsible for the internal audit of all expenditure and receipts within the Ministry of Defence. Their responsibilities include auditing cash and store accounts of units and formations, reviewing the audit work of their staff and conducting surprise checks, investigating the reasons for non-linking of vouchers selected for test linking, and ensuring the accounting system of the unit is not flawed.

The Director General of Audit, Finance & Communication (DGA F&C) is in charge of the Finance & Communication (F&C) Audit Organisation, which is one of IA&AD's oldest specialised wings. Directors, Dy. Directors, and Senior AO Incharges are in control of the 14 operational Branch Audit Offices (BAOs) spread across India. The "P&T Audit and Finance Department" refers to the Indian Post and Telecommunications Accounts and Finance Service (IPTAFS), which is a Group A service within the Indian government. Key functions of the IP&TAFS include managing finances, conducting internal audits, and maintaining accurate financial records and processes for the departments. The Saving Bank Control Organization (SBCO) branch operates in the Head Post Office under the Postmaster or Sr. Postmaster. Its main function is voucher checking, which involves receiving vouchers from both the Head Post Office and Sub Post Office. The branch is vigilant in monitoring POSB operations on the counter by checking vouchers and other techniques. If any irregularities are noticed, the SBCO supervisor raises an objection, which is then transferred to the respective office for early settlement after satisfactory documents are provided.

There are two types of documents required by the SBCO branch: MAP (Memo of Admission of Payment) for irregularities or alterations made by depositors or customers, and COP (Certificate of Payment/Credit) for irregularities or alterations made by counter clerks or supervisors. APM SB and SPM are responsible for settling these objections by providing relevant documents to the SBCO branch. After the implementation of CBS in Post Offices in 2013, the nature of SBCO's works changed, and its roles were revised and circulated. The supervisor's duties include supervising staff, distributing work among staff, ensuring proper performance of duties, sending periodic returns on time, maintaining Nominal Rolls (MS-12) in computerized form, examination of Long Book Consolidation Journals, checking vouchers with Common LOTs, Entries of Interest Adjustments in Finacle, maintenance of objection registers, upkeep and disposal of unused cheque foils, undelivered/spoiled passports, requisition of vouchers for inquiries, safe custody of keys, and preservation of records in safe custody. The postal assistant's duties include receiving vouchers, examination of long book consolidations, general checks of vouchers, maintaining objection registers, maintaining various registers, and performing other tasks assigned by the supervisor, divisional head, postmaster, or Accounts Officer (ICO). The supervisor prepares a Memo of Distribution of Work (MDW) among himself and Postal Assistants and sends it to the A.O. ICO (Sn), which will be followed rigidly by staff and kept in the supervisor's personal custody.

In nutshell, Local Audit is a crucial aspect of the Indian government's financial system, with various organizations and departments responsible for its auditing and review.

Review of the Literature

T Selvaraju, (2022) examines the functioning of the Comptroller and Auditor General of India (CAG) and if it needs reorganisation and strengthening. Conflict of interest in keeping state accounts and auditing them could negatively impact accounting and auditing quality. CAG's current audit coverage lacks assurance, and its susceptibility to political regime, low expenditure rate, and significant recovery of public money justify strengthening with more human resources.

Vani Ramesh, Ramanathan (2021), examines audit procedures and formats in India, the UK, and the USA, focusing on professional courses like CA, CPA, and ACCA. It finds that India's current state-run auditing is not acceptable compared to the UK and USA. Data was collected from audit professionals, financial experts, academicians, and stakeholders using questionnaires. The study suggests that stringent rules and regulations are necessary for India's audit profession to improve.

Daniela Petraşcu, Alexandra Tieanu (2014) discusses the role of internal audit in detecting frauds and preventing fraud in economic entities. It emphasizes the advantages internal audits can offer to management, partners, and society as a whole. Auditors are not adversaries, but rather assist the leadership in better managing activities, expressing judgments on decisions to ensure efficient functioning, and aiming to create added value. The article emphasizes that auditors are not adversaries but rather assist in the management of an entity.

Mishra, K., Azam, M. K., & Junare, D. S. O. (2021) examines the role of auditing in detecting financial irregularities, focusing on recent accounting scandals. Ten cases, including The Akasa Air, Bharat Pe, Vedanta, Amtek Auto, Nirav Modi, ABG Shipyard, DHFL-Yes Bank, IL&FS, DHFL accounting scandal, and Karvy Stock Broking, are selected as case studies. The study aims to identify vulnerabilities in financial reporting systems and emphasize the need for stringent auditing procedures to safeguard stakeholder interests.

Asare, T. (2009), investigates public sector managers focused on pre-payment audits, leading to a narrower understanding of internal auditing in the past. However, it has evolved into a strategic component of public sector governance and financial management reforms in developing countries. He argues that well-structured internal auditing improves performance and promotes good governance, while also addressing its importance and challenges

Research Gap

The review of literature revealed auditing, whatever the name of its internal or local, plays an important role in improving performance, in detecting financial irregularities and promoting good governance, aims to identify vulnerabilities in financial reporting systems and emphasize the need for stringent auditing procedures to safeguard stakeholder interests. After reviewing the past literature on this research topic, it is found that no such study on SBCO, the local audit system at divisional level to check financial regularities or frauds in post offices, has been done previously

Rationality of the Study

The study aims to highlight the importance of the Saving Bank Control Organisation, local audit system in POSB, explain the main functions and responsibilities of SBCO officials, and provide insights into the consequences on the post office's overall performance in India. This system will speed up decision-making, increase financial efficiency, and eliminate misappropriation of public funds to be deposited in post offices

Objective of Study

The study's goal is to find out how well post office staff and POSB clients understand and implement the Saving Bank Control Organization's processes. To determine the primary difficulties and opportunities of the local auditing system in government offices; to assess the operational performance of SBCO's Local Audit Branch in Post Offices at the Divisional Level; and to analyse the primary duties and/or responsibilities of SBCO in the Post Office.

Limitation of the Study

For a thorough examination, only quantitative secondary data and fundamental information gathered through postal employee interviews are included. Other auditing procedures for internal verification and control of financial discipline are disregarded in favour of the investigation of local auditing practices in this study. Only post offices run by the Department of India Post, Ministry of Communication & Information Technology, Government of India, were included in the study. Non-government offices and non-postal offices are not included. The stories, information, and statistics published on the INDIA POST website serve as the sole foundation for this study and its conclusions.

Scope of the Study

This study is limited to the post office saving bank's operation and how it may improve financial discipline, transparency, and public fund management. The deployment of local audit branches like SBCO at the initial stage, the postal divisional level, and its function in ultimately improving financial performance of post offices is the fundamental notion underlying this research. It examines the different SBCO’s functions as well as procedures and their combined effects.

Methodology

This study is descriptive as well as exploratory in character. Techniques for gathering primary and secondary data have both been used. At head offices, postal workers from the SBCO branch conduct in-person interviews to gather primary data. secondary data collected from numerous publications, references, seminar papers, journals, and publications. Tabulation, categorisation, and proportion are statistical tools used to analyse the data. Additionally, the diagrammatic presentation has been employed to effectively present the study's findings. Statistical tabulation, bar graphs, pie charts, and mathematical formulas like percentage are used to analyse the data.

Main functions/ Duties/Responsibilities of SBCO the local audit branch of post office

Prior to branch audit offices taking over Savings Bank's control job from Audit, each S.B. account had a duplicate ledger card, which resulted in anomalies and disparities in transactions. In 1960, the P&T Board made the decision to do away with duplicate ledger cards and establish departmental machinery locally to guarantee proper maintenance. After being tried in 1961 in five Head Offices, the initiative was gradually expanded to all Head Offices. In phases from 1966 to 1976, audit offices also provided the C.T.D. control job. A Pairing Organisation established in each Circle was given responsibility for pairing SB accounts on transfer, which was likewise transferred from the A.G. P&T in 1973.

The Head Post Office’s SB Branch keeps track of depositors’ Savings Bank accounts on ledger cards. Each time a deposit or withdrawal is made, the balance is calculated and recorded in the ledger cards. To keep control accounts and conduct daily checks of the SB Branch's activities, a Control Organisation is established in each Head Post Office. The organisation is made up of supervisors and postal assistants. Senior postal assistants are in charge of calculating interest, verifying vouchers, and handling cash and non-cash transactions. The only tasks performed by the junior postal assistants are posting and listing in the various control registers. Because of the potential for fraud, the organisation plays a vital role in Savings Bank operations.

It is the responsibility of the Control Organisation to maintain control accounts for all Savings Bank schemes, verify binder ledger balances, check annual interest calculations, prepare annual interest and silent accounts statements, submit periodic returns to various authorities, and perform percentage checks of vouchers and other items of work. The Control Organisation must provide the Postal Accounts Office with a monthly statement at the end of each month that includes statistics on the number of accounts, transactions, and balances after assuming control of the accounts from the audit and accounts offices. To determine the Circle's final closing balance at the end of each month, these figures are combined for each Head Office in the Circle.. In New Delhi, there is a Central Pairing Office and a Pairing Unit in every Circle. Supervisors and postal assistants make up the staff of these units, and their primary responsibility is to compare debit and credit items of transfers from one head office to another in order to detect frauds involving incorrectly opening accounts with larger balances at the transferee head office. In addition to regular weekly/monthly examinations, these units are inspected once a year by the Accounts Officer, ICO (SB). The S.B. Branch of the Head Post Offices and Control Organisation is effectively inspected by the Internal Check Organisation (SB). The Postmaster General of Postal Service has administrative authority over it, and it is established in every Postal Circle. For the Regional Director or Postmaster General, under whom they may be employed, the Accounts Officer serves as a technical counsellor on SB concerns. The primary duties of the Internal Check Organisation are to make sure that the employees of the Control Organisation and the Head Post Offices perform their duties in accordance with the rules and directives that are periodically issued, to conduct the required checks on the daily operations of the Head Office, to keep binder balance registers, and to periodically remove records that are no longer needed. The

Internal Check Organization's primary goal is to enhance the operations of the SBCO and SB Branch of the head office, not to identify flaws and produce elaborate reports.

Table 1: SBCO branches in Post offices, as on 31-03-2024

Sl. No.	Circle Name	Head Post Office	SBCO Branch
1	Andhra Pradesh Circle	57	57
2	Assam Circle	19	19
3	Bihar Circle	33	33
4	Chhattisgarh Circle	10	10
5	Delhi Circle	12	12
6	Gujarat Circle	32	32
7	Haryana Circle	16	16
8	Himachal Pradesh Circle	18	18
9	Jammu and Kashmir Circle	9	9
10	Jharkhand Circle	13	13
11	Karnataka Circle	58	58
12	Kerala Circle	52	52
13	Madhya Pradesh Circle	43	43
14	Maharashtra Circle	61	61
15	North Eastern Circle	9	9
16	Odisha Circle	35	35
17	Punjab Circle	22	22
18	Rajasthan Circle	47	47
19	Tamilnadu Circle	94	94
20	Uttar Pradesh Circle	73	73
21	Uttarakhand Circle	13	13
22	West Bengal Circle	48	48
23	Telangana Circle	36	36
	Total	**810**	**810**

Source - https://www.indiapost.gov.in/VAS/pages/pmodashboard/distributionofpostoffices.aspx

Because of the creation of Control Organisations in Head Post Offices and the removal of duplicate ledger cards from Branch Audit Offices, the Savings Bank Control Procedure has experienced substantial changes. The procedure has been simplified to ensure efficient business disposal and correct account maintenance. The Control Organisation is responsible for proper maintenance of the Head Office's accounts and follows the following procedure. The Control Organisation consists of an J.A.O./Supervisor and Postal Assistants, with the term "Supervisor" also including "J.A.O. and Postal Assistant In charge." The Senior and Junior Postal Assistants in the SBCO will be combined and divided among all Postal Assistants (SBCO) and UDCs, if any, in any office. This will be effective from 1.10.1993. A fresh Memo of distribution of work shall be approved by the A.O. ICO (SB). The Supervisor's duties include supervising the staff of the

Control Organisation, distributing work among the start, ensuring proper performance of duties, sending periodical returns on time, maintaining the Nominal Roll, and checking binder balances. The Postal Assistant's responsibilities include examining transactions, maintaining registers, creating binder balances, checking vouchers generally, verifying binder balances, checking non-cash transactions and register entries, checking H.O. and S.O. transactions, making entries in the consolidated journal, and checking daily and progressive totals of various columns. When an SBCO employs four or more postal assistants, the supervisor drafts a memo outlining the division of labour between himself and the assistants and submits it to the A.O. ICO (SB) for approval. The Accounts Office must also approve any further adjustments that are determined to be necessary.

1. SBCO role in Post Office run Core Banking Solution:

Table 2: Total Sanctioned strength of SBCO officials in Post offices

S. No.	Name of Circle	HSG-I	HSG-II	LSG	PA	Total
1	A. P. Circle	1	0	3	146	150
2	Assam Circle	1	2	9	78	90
3	Bihar Circle	11	7	18	157	193
4	Chhattisgarh Circle	0	3	4	37	44
5	Delhi Circle	4	6	5	60	75
6	Gujarat Circle	3	4	19	144	170
7	Haryana Circle	5	5	8	69	87
8	H. P. Circle	1	1	6	47	55
9	J & K Circle	1	2	2	23	28
10	Jharkhand Circle	3	3	8	68	82
11	Karnataka Circle	3	3	15	127	148
12	Kerala Circle	1	1	19	92	113
13	M. P. Circle	2	2	11	148	163
14	Maharashtra Circle	35	30	18	408	491
15	N E Circle	1	1	2	22	26
16	Odisha Circle	5	5	19	94	123
17	Punjab Circle	4	4	12	68	88
18	Rajasthan Circle	2	4	8	147	161
19	Tamilnadu Circle	5	18	43	376	442
20	Telangana Circle	0	1	3	67	71
21	Uttarakhand Circle	7	4	5	60	76
22	U. P. Circle	32	12	53	454	551
23	West Bengal Circle	10	9	27	239	285
TOTAL		137	127	317	3131	3712

Source-https://www.gconnect.in/news/sanctioned-strength-posts-cadres-department-01-08-2022-dop.html

In the CBS Office, the SBCO is essential to maintaining the safety of LOTs and vouchers. On the right side of the voucher, Post Office employees write the Scheme and TRAN ID in red ink. For the purpose of automatically crediting MIS/SCSS/TD to Savings and Savings to RD, deposit and withdrawal slips are generated. A consolidated list of commissions paid is used to support the preparation of a deposit slip that shows the total of each type of agent commission deposited into savings. All vouchers, including closed vouchers, are sealed with the printout of the scheme consolidation when it has been created and printed. A separate printed copy of the LOT is included with the voucher bundle. A letter to the SBCO In charge is sent once the Divisional head approves any necessary interest adjustments after the Postmaster or Sub Postmaster brings up the matter with them. The SBCO also keeps an eye on SBGRP's Freeze/Unfreeze Account report and files objections when there are any suspicions. If they have any suspicions, they will object and cross-check entries. A lot of office accounts will also be preserved, and they will complain if they suspect something. It is optional to perform these checks and raise issues, however SBCO tests can examine individual accounts using a variety of Finacle menus.

2. Common irregularities at SBCO unit of Head Post Offices:

The ICO (SB) inspection has identified several irregularities in the SBCO units of HOs. These irregularities include mandatory mobile numbers for all POSB accounts, the necessity that depositors provide their PAN and Aadhaar number while opening an account, as well as the fact that deposits obtained through intermediaries are treated as direct investments. A depositor's signature on the withdrawal form must be attested by two postal officials if the withdrawal exceeds Rs 5,000, with the exception of post offices having a single employee. In double-handed sub offices, the SPM will make an appropriate comment to prevent objections when the second official takes a leave of absence. Withdrawal allowed in respect of illiterate accounts, but the certificate must be produced on both sides duly attested by a witness with complete address. SPMs/BPMs/postal staff handling Savings Bank transactions should not fill Deposit/Withdrawal forms on behalf of the depositor's. Manual postings should not be made in SAP in post offices where GL integration is completed. NEFT/RTGS facility is available for POSB Account holders, and Users should send the POSB cheque or SB-7 form to SBCO together with the NEFT mandate form. The option for MIS/SCSS/TD accounts to have their interest and maturity value paid into the account holder's bank account on a monthly, quarterly, or annual basis has been implemented by CBS Post offices. Using the HACLINQ menu, Sub Post Offices should examine the ledger of the relevant office accounts on T+2 days to determine whether the cheque that was sent out for clearing has been cleared. Original SB-3 card/AOF should be attached with closure vouchers (SB-7A), but revised AOFs should be given along with KYC of the depositor with SPM attestation.

The text highlights several issues with the bank's system, including discrepancies in deposit and withdrawal dates, failure to process name change requests, and a lack of proper documentation. It also discusses the practice of splitting higher denomination accounts into multiple lower denomination accounts, which could lead to account closures due to non-availability of minimum balance. The number of counter PA roles and supervisor role users was found to be higher than required, and un-renewed agents were also found to be active at Finacle. The bank also failed to follow AML/KYC norms, processed name change requests, and maintained T-Recon reports during migration. The procedure for closing unclaimed accounts/certificates under SCWF Rules 2016 was not followed, and recommendations regarding "may be issued/not issued" in DPB applications were not recorded. The bank also failed to provide acknowledgement to customers on receipt of claim applications, and the original AOF was not transferred to the SBCO unit. The bank's cheque book stock register was not in the form SB-CQE-3, and the silent revival register was not maintained as prescribed in the manual. Notification to accounts marked as silent for 2023 was not carried out in the bank's offices.

3. Steps taken by SBCO to prevent frauds in CBS run Post Offices:

All SBCO employees undergo training from User Champions and Infosys prior to Infosys training in order to prevent scams in CBS Offices. Every employee receives a certificate of training completion, which is recorded in their service book. Divisional Heads make sure SBCO employees compare the LOT produced by the MIS server with the S0/I10 vouchers. The Divisional Head or Vigilance Branch of RO/CO swiftly investigates any objections received from SBCO. Account transfers between CBS POs can only be completed at the House of Ownership (HO). Any CBS SO that receives a transfer application will take new KYC documentation to confirm the customer's identity. The application is submitted with KYC papers to its HO for account transfer after being entered in a register kept in manuscript. The application and KYC documents are returned to the SO after transfer, properly recorded in the SO slip. After counting the LOT produced by the system, SBCO employees sign each voucher. If a value date that is more than three days from the LOT date is used, and the voucher is not accompanied by an error book entry confirming the responsible authority's consent, an objection is raised. HPO postmasters assign one PA to create a lot of office accounts for single and double-handed SOs and identify any transactions totalling more than Rs. 25.00. If a BO bag is received after 3:30 PM, all CBS Post Offices are advised not to enter it and to finish transactions no later than 5:00 PM. Regular transaction verification by supervisors ensures that EOD begins by 5 PM.

4. Challenges and Threats of SBCO:

The Comptroller and Auditor General of India (CAG) has reported irregularities at post offices in India, leading to the misappropriation of Rs 95.62 crore of public money between November 2002 and September 2021. The CAG found that the Savings Branch and the Saving Bank Control Organisation failed to implement internal checks and orders issued by the Department of Posts (DoP). The report also highlighted that Rs 14.39 crore (including a penalty/interest of Rs 40.85 lakh) was recovered, but balance recoveries were yet to be affected. The CAG recommends that the DoP ensures effective and strict internal checks are exercised by post offices and internal audits are implemented at various hierarchical levels to safeguard public money and the trust citizens place in post offices.

An alleged scam at the Simgarhi sub-post office under the Kameridevi post office cost more than 1,500 people in the Bageshwar district close to Rs 2 crore. When account customers examined their accounts after the postmaster vanished, the fraud was discovered. After finding inconsistencies in their reports, residents of neighbouring villages, such as Majhera, Simgarhi, Chipchipiya, and Pathkyuda, assembled at the Kameridevi post office. Postal officials have reassured communities that the situation is being carefully probed and asked them to remain calm. On November 29, the Enforcement Directorate's Ahmedabad Zonal Office searched 19 post offices in Gujarat in five cases involving suspected misappropriation of government funds in accordance with the Prevention of Money Laundering Act.

Conclusion:

The Savings Bank Control Office (SBCO) in post offices plays an important role in the improvement of Post Office Saving Bank Services by streamlining operations, improving technology, and enhancing customer service. This is achieved through clear procedures of POSB, objection management, equal work distribution, regular inspections, a centralized Core Banking Solution (CBS), user-friendly online platform Finacle, automated systems, comprehensive training for staff, a dedicated helpdesk, and regular customer feedback. Implementing a centralized CBS, enhancing training for staff, and establishing a dedicated helpdesk or support system improve POSB customer service. Regular customer feedback can identify areas for improvement and enhance satisfaction. A robust record-keeping system ensures accurate and secure storage of all SBCO-related documents and data. Regular audits and inspections ensure compliance with regulations and identify discrepancies. Establishing clear lines of accountability for SBCO staff prevents errors or irregularities. By implementing these measures, SBCO in post offices significantly improve the efficiency and effectiveness of their SBCO operations, leading to enhanced POSB customer service and improved financial performance. In net shell, the local audit branch, SBCO should be strengthen by delegating more authority and providing adequate man power timely. By checking daily transactions of POSB and raising objections in case of any financial or non financial discrepancies, SBCO is acting like internal auditor and watch dog for postal department and stakeholders. SBCO officials are well known with the financial character of each postal employee. which plays an important role to identify the possibilities of money misappropriation and financial frauds at initial stage, as a result volume of misappropriation or fraudulent money is reduced.

Suggestions:

On the basis of replies, received by respondents through personal interview and field survey, the following suggestions are being recommended to improve and strengthen the local auditing system in post offices.

- Frauds in Savings Bank Accounts/Certificates are typically discovered through complaints from depositors, discrepancies detected by SBCO/HO/SO, or during field verification of pass books or high value withdrawals. Each SDH should have an intelligence system to promptly detect fraud and prevent contributory negligence. When a complaint is received or discrepancies are detected, relevant documents should be collected and attested by the official or depositor. This procedure can help address genuineness questions raised by the CGS during departmental inquiries. Questions pointing to misconduct should be asked and replied to, with the officer writing the question and the official signing the reply.

- To make sure POSB operations run smoothly and stop post office fraud. It should be mandatory for account holders to link their mobile numbers when opening new or existing accounts, and the Circle should take the required actions to link the PANs and mobile numbers of all active accounts. A specific campaign ought to be started, and extensive advertising might be done with pamphlets, handbills, print and electronic media, etc. A person has six months from the date of account opening to provide their Permanent Account Number if they haven't already.
- To minimise the possibility of fraud or misappropriation, a number of actions could have been done to improve services and facilities, including GL Integration, Common Long Book, SMS warnings, eBanking/mBanking, IVR facility, and CBS-CTS integration. With immediate effect, the competent authority has published instructions to combat money laundering, improve control, and safeguard depositors' hard-earned money.
- Prior to starting a financial transaction, PANs and cellphone numbers must be verified and updated for all post offices. Counter PAs should use the CICD menu to see if the PANs and mobile numbers have been changed in the appropriate accounts.
- KYC documentation should be collected from the account holder or guardian if the account is not KYC compliant. Through the use of the CMRC menu and supervisor verification, counter PAs should additionally update the customer's PAN and mobile number in the CIF.
- The Savings Bank Control Office (SBCO) in post offices can be improved by streamlining operations, improving technology, and enhancing customer service. This can be achieved through clear procedures, queue management, equal work distribution, regular inspections, a centralized Core Banking Solution (CBS), user-friendly online platforms, automated systems, comprehensive training for staff, a dedicated helpdesk, and regular customer feedback.
- Implementing a centralized CBS, enhancing training for staff, and establishing a dedicated helpdesk or support system can improve customer service. Regular customer feedback can identify areas for improvement and enhance satisfaction. A robust record-keeping system can ensure accurate and secure storage of all SBCO-related documents and data. Regular audits and inspections can ensure compliance with regulations and identify discrepancies. Establishing clear lines of accountability for staff and management can prevent errors or irregularities. By implementing these measures, post offices can significantly improve the efficiency and effectiveness of their SBCO operations, leading to enhanced customer service and improved financial performance.
- So instead of declaration of SBCO cadre dying, postal department should be taken the initiatives to sustain in each POSB branch.

References:

1. Asare, T. (2009). Internal auditing in the public sector: Promoting good governance and performance improvement. *International Journal on Governmental Financial Management*, *9*(1), 15–28.
2. Kawaljeet Singh. (2022). *A compilation of Post Office Savings Bank Manual (Volume III) [Special edition]*.
3. Mishra, K., Azam, M. K., & Junare, D. S. O. (2021). Role of forensic audit in controlling financial statement fraud: A case study of Satyam Computers. *Psychology and Education*, *58*(2), 4016–4025.
4. Petraşcu, D., & Tieanu, A. (2014). The role of internal audit in fraud prevention and detection. *Procedia Economics and Finance, 16*, 489–497. https://doi.org/10.1016/S2212-5671(14)00829-6
5. Ramesh, V., & Ramanathan. (2021). Auditing the auditors: A comparative study about India, UK, and the USA. *Materials Today: Proceedings*, *37*(Part 2), 2495–2500. https://doi.org/10.1016/j.matpr.2020.08.304
6. **Web Sources:**
7. Comprehensive Guide to Post Office Savings Schemes (POSB). (2024, October 7). *Karnataka Postal Circle*. https://www.indiapost.gov.in/Financial/Pages/Content/Post-Office-Saving-Schemes.aspx
8. ScienceDirect. (n.d.). Article preview. https://www.sciencedirect.com/science/article/abs/pii/S2214785320361769#preview-section-cited-by
9. Google Scholar. (n.d.). https://scholar.google.com/
10. Indian Express. (n.d.). https://indianexpress.com/
11. Times of India. (n.d.). https://timesofindia.indiatimes.com/

A STUDY ON START UP INDIA POLICY WITH REFERENCE TO ODISHA

Partha Sarathi Senapati

NIIS Institute of Business Administration, Bhubaneswar, Odisha

Corresponding author E-mail: partha459@gmail.com

Abstract:

The startup ecosystem in India has witnessed significant growth over the past decade, largely due to the introduction of various policies and reforms aimed at fostering entrepreneurship, innovation, and job creation. Central to this effort is the Startup India Policy, launched in 2016, which lays the groundwork for establishing a conducive environment for startups across the country. At the same time, individual states, such as Odisha, have designed their own startup policies, aligning with national objectives while addressing region-specific needs. This literature review examines existing studies on the Startup India Policy and the Odisha Startup Policy, highlighting key developments, outcomes, and identifying gaps in the implementation and impact of these policies.

Keywords: Startup India Policy, Odisha Startup Policy, Entrepreneurship, Innovation

Introduction:

Startup India is a flagship initiative launched by the Government of India on January 16, 2016, intended to build a strong ecosystem for nurturing innovation and startups in the country. The initiative aims to drive sustainable economic growth and generate large-scale employment opportunities. It seeks to empower startups to grow through innovation and design. The campaign is based on an action plan focused on promoting bank financing for start-up ventures, boosting entrepreneurship, encouraging startups with job creation, restricting the role of states in the policy domain, and getting rid of "license raj" and hindrances like land permissions, foreign investment proposals, and environmental clearances. It also aims to promote entrepreneurship among women, as well as the Scheduled Castes and Tribes of India.

The Startup India action plan includes several key features and benefits:

Under the Startup India policy, an entity is considered a 'startup' if it is founded and headquartered in India, is up to five years from the date of its incorporation/registration, and its turnover for any of the financial years hasn't exceeded Rs. 25 crores (USD 3.7 million). Additionally, it must be working towards innovation, development, deployment or commercialization of new products, processes or services driven by technology or intellectual property. Entities formed by splitting up or reconstruction of a business already in existence are not considered startups. To obtain tax benefits, a recognized startup is required to obtain a certificate of an eligible business from the Inter-Ministerial Board of Certification. The process of recognition as a 'startup' is through the mobile app/portal of the Department of Industrial Policy and Promotion (DIPP), requiring a simple application with certain documents.

Funding support and Incentives:

- **Simple Compliance Regime based on Self-certification**: Startups are allowed to self-certify compliance with 9 labour and environment laws through the Startup mobile app. For labour laws, no inspections are conducted for 3 years unless there is a credible complaint. For environmental laws, 'white category' startups can self-certify with only random checks. CPCB has exempted white category industries from self-certifications under 3 environment Acts.
- **Launch of Mobile app and Portal:** An online platform was launched on April 1, 2016, for registration, compliance, information exchange, and providing updates and eligibility certificates.
- **Startup India Hub**: An all-India hub was operationalized on April 1, 2016, as a single contact point for interactions with the government, providing handholding support, resolving queries (over 12,290 resolved as of July 2016), and helping entrepreneurs exchange knowledge and access financial aid. Contact can be made via Toll-Free number 1800115565 or email dipp-startups@nic.in.
- **Legal support and fast-tracking patent examination at reduced costs**: A panel of facilitators assists in filing Intellectual Property (IP) applications (patents, trademarks, designs). The Central Government bears the entire fees of the facilitators, and startups bear only the statutory fees. Patent applications are fast-tracked for examination and disposal. Startups receive an 80% rebate in filing patents compared to other companies (Patent Amendment Rules 2016, May 2016).
- **Relaxed Norms of Public Procurement**: Startups in the manufacturing sector with their own facility in India are exempted from the criteria of "prior experience/ turnover" in government and PSU tenders, without relaxation in quality standards or technical parameters.
- **Faster exit for startups**: Provisions exist for fast track and/or voluntary closure of businesses under the Insolvency and Bankruptcy Bill 2015, allowing startups with simple debt structures to be wound up within 90 days from application.

Industry-Academia Partnership and Incubation:

- **Providing Funding Support through a Fund of Funds**: A fund with a total corpus of INR 10,000 crore over 4 years (INR 2,500 crore per year) has been established. This Fund of Funds does not invest directly into startups but participates in the capital of SEBI registered Venture Funds (Alternative Investment Funds - AIFs), acting as an enabler to attract private capital. Rs. 500 crore was released to SIDBI in FY2015-16 and Rs. 600 crore in FY2016-17.
- **Credit Guarantee Fund for Startups**: A credit guarantee mechanism through the National Credit Guarantee Trust Company (NCGTC)/ SIDBI is envisaged with a budgetary Corpus of INR 500 crore per year for four years to encourage Banks and other Lenders to provide Venture Debts to Startups.

- **Tax exemption on capital gains**: Long Term Capital Gains are exempt for investments made till March 31, 2019, in units of the notified fund focused on startups. Capital gains taxes are not levied on investments made in venture funds registered with SEBI.
- **Tax exemption to Startups for 3 years**: Eligible startups incorporated between April 1, 2016, and March 31, 2019, can get 100% income tax deduction for a period of 3 consecutive years out of the initial 5 years, provided their turnover does not exceed INR 250 Million in any financial year from April 1, 2016, to March 31, 2021. Minimum alternate tax (MAT) applies. This requires a Certificate of Eligibility from the Inter-Ministerial Board.
- **Tax exemption on Investments above Fair Market Value**: Exemption from Section 56(2)(viib) of The Income Tax Act, 1961, for investments made by venture capital funds and incubators in Startups.
- **Setting up incubators and building innovation centers**: A private-public partnership model is considered for 35 new incubators and 31 innovation centers at national institutes. Guidelines for harnessing private sector expertise for incubators have been formulated.
- **Research parks**: Seven new research parks are planned, including six in IIT campuses and one in the Indian Institute of Science campus, with an investment of Rs 100 crore each. These are modeled on the Research Park at IIT Madras and will be set up at IITs in Guwahati, Hyderabad, Kanpur, Kharagpur, Bangalore, Gandhinagar, and Delhi.
- **Entrepreneurship in biotechnology**: The government will establish 5 new biotech clusters, 50 new bio incubators, 150 technology transfer offices, and 20 bio-connect offices.
- **Building entrepreneurs/Dedicated programs in schools**: Innovation-related study plans are planned for students in over 5 lakh schools. There will also be an annual incubator grand challenge to develop world-class incubators and for innovative solutions.
- **Atal Innovation Mission (AIM):** Launched with the Self –Employment and Talent Utilization (SETU) Program of NITI Aayog, AIM includes initiatives for setting up incubators, research parks, innovation centers, and student programs.
- **Establishing hubs in educational institutions**: The Ministry of Human Resource Development in conjunction with the Department of Science and Technology is working to establish over 75 hubs for startup support in premier educational institutions.

The action plan intends to accelerate the spreading of the startup movement from the digital/technology sector to a wide array of sectors including agriculture, manufacturing, social sector, healthcare, education, etc., and from existing tier 1 cities to tier 2 and tier 3 cities including semi-urban and rural areas. Additional steps undertaken include requesting states/UTs to partner, requesting top companies for CSR contribution to incubation, augmenting the list of recognized incubators, recognizing industry bodies to assess innovation, and launching a module to recognize incubators.

Literature Review:

Literature review of startup policy of India and Odisha: Gaps and future directions

Startup India Policy: Key Literature

The Startup India Policy, launched by the Government of India in 2016, was a significant policy intervention aimed at fostering entrepreneurship and innovation. This policy covers multiple facets including financial support, ease of doing business, tax benefits, incubation and mentorship, and intellectual property rights (IPR). According to Chaudhary & Singh (2019), the initiative has led to substantial growth in India's startup ecosystem, with over 50,000 startups recognized by 2020. Niti Aayog (2021) claims that the policy has contributed to making India the third-largest startup ecosystem in the world, driven by favorable regulations, an influx of venture capital, and an increase in incubators and accelerators.

Key Features of the Policy

1. Ease of Doing Business: Startups benefit from self-certification for compliance with labor and environmental laws. Chaudhary & Singh (2019) note that simplification of regulatory requirements has reduced the burden on startups, particularly in early-stage growth.

2. Funding and Tax Incentives: The Fund of Funds for Startups (FFS), with a corpus of ₹10,000 crore, aims to address the financial challenges faced by startups. However, Bansal & Gupta (2020) highlight that despite the availability of funding, access to venture capital remains uneven, with early-stage startups in rural and semi-urban regions struggling to obtain funding.

3. Tax Benefits: Income tax exemptions for three years and exemption from capital gains tax have been crucial in incentivizing innovation and entrepreneurship. Gupta & Rani (2018) argue that the tax exemption policy has been effective, but it has not been widely utilized, especially by startups in non-urban areas.

4. Intellectual Property (IP) Rights: The Startup India Policy offers a 80% rebate on patent filing fees and support for trademark applications. Rathi (2021) mentions that the IP benefit is crucial for tech startups but points out that the complexity of patent laws continues to act as a deterrent for many startups.

Impact on India's Startup Ecosystem

The impact of Startup India has been substantial in terms of startup registrations and job creation. The Department for Promotion of Industry and Internal Trade (DPIIT, 2023) reports that by 2023, over 100,000 startups have been registered, contributing to over 1.5 million jobs. Srinivasan (2020) attributes this success to the policy’s facilitation of venture capital investment, increasing access to mentorship, and offering incubation centers. However, Sharma & Tiwari (2021) identify challenges such as slow disbursement of funds, high compliance costs, and a mismatch between the policy's objectives and actual implementation on the ground.

Gaps in the National Policy

Access to Funding: Although the Fund of Funds exists, access to early-stage capital remains limited, especially for startups outside tier 1 cities.

Regional Disparities: The policy is highly centralized, and while urban hubs such as Bengaluru, Delhi, and Hyderabad have flourished, startups in tier 2 and tier 3 cities still face infrastructural and regulatory challenges.

Awareness: There is a lack of awareness about the Startup India Scheme in rural areas, which results in low participation by potential entrepreneurs from these regions.

Complexity in IP Filing: Despite incentives for IP filing, the bureaucratic hurdles associated with patent and trademark registration remain a barrier for many startups.

Odisha Startup Policy: Key Literature

Overview of Odisha's Startup Policy

Odisha, one of the leading states in terms of policy formulation for startups, has adopted the Startup Odisha Policy to encourage entrepreneurship. The policy, launched in 2016, aligns closely with the Startup India initiative but focuses on the state's unique needs, such as agriculture, manufacturing, and IT. According to Das & Mohanty (2020), the state has positioned itself as a hub for agri-tech startups and renewable energy innovation.

Key Features of the Odisha Startup Policy

1. Incentives for Startups: Odisha offers financial incentives, including seed funding and subsidies for establishing new businesses. Das & Mohanty (2020) note that the state also offers tax holidays, and financial support for scaling up operations.

2. Startup Odisha Hub: The Odisha Startup Hub is designed as a one-stop platform to provide resources such as mentorship, networking opportunities, and funding access. Kumar (2021) claims that the hub has played a crucial role in connecting startups with investors and government support, though he also emphasizes the need for expansion and better reach to rural entrepreneurs.

3. Sector-Specific Focus: Odisha has a strong focus on agriculture, renewable energy, and manufacturing. Patnaik & Sahoo (2020) highlight the state's interest in agri-tech and clean energy startups, offering incentives to promote innovation in these sectors. However, Babu (2021) argues that the state's focus on select sectors may inadvertently exclude potential growth in other areas like fintech and education technology.

4. Skill Development and Capacity Building: Odisha has partnered with institutions like KIIT and NIT Rourkela to provide training programs and entrepreneurial education. Patnaik & Sahoo (2020) argue that these programs have successfully created an entrepreneurial mindset but that capacity building remains insufficient for a large proportion of rural youth.

Impact of the Odisha Startup Policy

While Odisha has made significant strides, the impact remains uneven across sectors. The state has seen the emergence of several IT startups and agri-tech ventures, but it lags behind other states in terms of overall startup registrations and venture funding. Panda (2021) reports that Bhubaneswar has become an emerging startup hub, but the growth potential of startups in tier-2 towns and rural areas has not been fully realized.

Gaps in the Odisha Startup Policy

Infrastructure Deficits: Despite the establishment of incubation centers and hubs, access to modern infrastructure remains a bottleneck in non-urban areas, hindering the scalability of many startups.

Lack of Access to Seed Capital: Seed funding in Odisha is still limited compared to major startup hubs like Bengaluru and Delhi, with many startups facing challenges in raising early-stage capital.

Awareness and Outreach: There is limited awareness of the policy benefits among potential entrepreneurs in rural and remote areas. The startup ecosystem in Odisha is still nascent, and many people, especially outside urban centers, remain unaware of the support available.

Identified Gaps and Areas for Improvement

Policy Implementation Gaps

1. Awareness Gap: Both the Startup India Policy and the Odisha Startup Policy face challenges in reaching the grassroots level. Many potential entrepreneurs, especially in rural regions, are unaware of the benefits and support available under these policies.

2. Access to Finance: Despite the Fund of Funds and other financial schemes, early-stage startups in both India and Odisha still face significant barriers to accessing seed funding and venture capital, especially in tier-2 and tier-3 cities.

3. Regional Disparities: While urban centers like Bengaluru, Hyderabad, and Bhubaneswar have seen growth in the startup ecosystem, rural and semi-urban areas remain underserved. There is a need for policies that specifically address the infrastructure needs and entrepreneurial education in non-urban areas.

4. Infrastructure: Startup hubs, while established, are mostly concentrated in major cities. Expansion of infrastructure to rural and semi-urban areas is needed for broader startup engagement.

5. Sector-Specific Support: The focus on specific sectors such as agriculture and renewable energy in Odisha may overlook the diversity of entrepreneurial opportunities in sectors like fintech, healthtech, and edtech.

India’s Startup India Policy and Odisha’s Startup Policy have been instrumental in promoting entrepreneurship and innovation, but several gaps remain. These include issues with funding access, awareness, regional disparities, and sector-specific focus. Future efforts should concentrate on addressing these gaps, particularly in enhancing grassroots.

Significance of studying the policy's impact in Odisha

The state of Odisha has significantly benefited from the Startup India Policy through various initiatives aimed at nurturing entrepreneurship, fostering innovation, and promoting sustainable economic growth. Below is a detailed analysis of how the state has utilized and leveraged the Startup India Policy for its own development.

Odisha's Engagement with the Startup India Policy

Odisha, located on the eastern coast of India, has been focusing on creating a conducive environment for startups, especially in sectors such as IT, agriculture, manufacturing, education, and renewable energy. The state government, through strategic planning and initiatives, has supported the growth of a robust entrepreneurial ecosystem by aligning with the broader goals of the Startup India initiative.

Key Benefits to Odisha from Startup India Policy

Policy Alignment and State Initiatives: The Startup Odisha initiative, launched by the Government of Odisha, complements the national Startup India Policy. The state government recognized the need for a thriving startup ecosystem to drive job creation, technological innovation, and sustainable economic growth. Key features of the Startup Odisha policy include:

Incentives for Startups: Odisha provides incentives such as financial assistance, tax exemptions, and subsidies for new businesses, which align with the incentives provided by the national Startup India scheme.

Policy Reforms: The state government has taken steps to simplify licensing, compliance requirements, and the registration process for startups, reducing bureaucratic red tape.

Startup Odisha Portal: The state has its own online platform for startups, providing resources, funding options, networking opportunities, and mentoring services.

Financial Support and Fund of Funds: Odisha has benefited from the Fund of Funds for Startups (FFS) under the Startup India initiative. The state has worked closely with various venture capital firms and angel investors to facilitate the flow of capital to early-stage startups. The state-run Odisha State Economic Development Corporation (OSEDC) and SIDBI have partnered with the central government's Fund of Funds, thereby enabling the creation of new ventures.

Impact of FFS: Odisha-based startups, particularly in technology, agriculture, and renewable energy, have received funding and expanded their operations. For example, Agri-tech startups have benefited from investments that help scale innovative solutions in agriculture, thereby improving productivity.

Incubators and Innovation Hubs: Several startup incubators and innovation hubs have been set up in the state, often in collaboration with national-level schemes such as the Atal Innovation Mission (AIM). These centers provide entrepreneurs with access to mentorship, funding, and networking opportunities.

Odisha Start-up Hub (OSH): Launched to support emerging startups in various sectors, OSH acts as a dedicated space for idea generation, incubation, and scaling up.

Incubation Centers at Universities: Key universities like KIIT University and NIT Rourkela have set up innovation and entrepreneurship cells, providing students and faculty with the resources to create and launch startups. These initiatives are aligned with the central government's focus on promoting innovation at the grassroots level.

Fostering Sector-Specific Startups: Odisha's engagement with the Startup India policy has been particularly focused on sectors with high growth potential in the state. Some of the prominent sectors that have benefitted include:

Agriculture and Agritech: Odisha has a strong agricultural base, and many agritech startups in the state have benefitted from the Startup India Action Plan. These startups have leveraged technology, data analytics, and IoT solutions to improve agricultural productivity, mitigate post-harvest losses, and streamline supply chains. Government support has included tax rebates, subsidies, and capital investment support.

IT and Software Development: The state has also focused on building a strong IT ecosystem by providing funding for startups in software development and digital services. Odisha's capital city, Bhubaneswar, has seen a surge in IT-based startups, with initiatives such as the Bhubaneswar Smart City project attracting tech startups focused on smart city solutions.

Renewable Energy: Odisha is positioning itself as a renewable energy hub. Startups in this sector have benefited from capital subsidies, patent filing support, and tax exemptions, encouraging the development of sustainable energy solutions.

Manufacturing and MSMEs: The Make in Odisha initiative, which is closely aligned with the Startup India policy, aims to attract investment and promote local manufacturing. Several manufacturing startups have received financial support and mentorship, contributing to the growth of local supply chains.

Capacity Building and Skill Development

The Startup India policy's emphasis on capacity building and skill development has been well utilized in Odisha. The state has seen an increase in entrepreneurial training programs and workshops, in collaboration with institutes like KIIT-TBI (Technology Business Incubator) and NIT Rourkela. These programs equip young entrepreneurs with the skills needed to turn innovative ideas into scalable businesses.

Job Creation and Economic Growth: The Startup India policy has led to the creation of thousands of jobs in Odisha, especially in IT, manufacturing, and agritech sectors. Startups are generating employment opportunities for the state's youth, thus contributing to reducing the unemployment rate, particularly in urban and semi-urban areas.

Job Creation Statistics: As per recent reports, more than 40,000 jobs have been created directly through the establishment of new startups in Odisha.

Entrepreneurial Ecosystem: The focus on job creation through startups has also stimulated other sectors, including logistics, marketing, and distribution.

Global Recognition and Investment: Odisha's startups, aided by the national policy, have gained recognition at global platforms. International investors have taken note of Odisha's growing innovation ecosystem, and the state has seen an increase in foreign direct investment (FDI) in startups, particularly in the renewable energy and IT sectors. This influx of investment has strengthened Odisha's position as a startup hub in India.

Challenges and Areas for Improvement: Despite these benefits, there are still some challenges that Odisha needs to address to fully capitalize on the Startup India policy:

Limited access to seed funding: While the Fund of Funds is a step in the right direction, access to seed funding remains a challenge, especially for early-stage startups.

Infrastructure challenges: Although progress has been made, more investment in digital infrastructure and startup-friendly physical spaces is necessary to keep up with the pace of innovation.

Awareness and Capacity Building: Although several startups have flourished, there is still a need for increased awareness and more widespread entrepreneurial education, particularly in rural areas.

Conclusion:

Odisha has made considerable strides in leveraging the Startup India Policy to create a thriving entrepreneurial ecosystem. By aligning its state-level policies with national initiatives, Odisha has been successful in fostering innovation, generating employment, and promoting economic development. However, for continued success, the state must focus on addressing the infrastructural gaps, improving access to funding, and building a more robust skilled workforce to support the growing startup landscape.

References:

1. Ahlawat & Associates. (n.d.). *Startup India*. [https://www.ahlawatassociates.com/blog/startup-india]↩
2. Globe Moving. (n.d.). *Startup India – A Guide to the New Startup India Policy*. [https://www.globemoving.net/startup-india-a-guide-to-the-new-startup-india-policy/]↩
3. Press Information Bureau. (2016, July 25). *Startup India*. [https://www.pib.gov.in/newsite/PrintRelease.aspx?relid=147661]↩
4. Department for Promotion of Industry and Internal Trade. (2024). *Startup India initiative*. Ministry of Commerce and Industry, Government of India. Retrieved from https://www.startupindia.gov.in/
5. NITI Aayog. (2022). *Annual report on entrepreneurship and startups in India*. Government of India. Retrieved from https://www.niti.gov.in/
6. Press Information Bureau. (2023, January 16). *Seven years of Startup India: Building a self-reliant startup ecosystem*. Government of India. Retrieved from https://pib.gov.in/
7. Small Industries Development Bank of India (SIDBI). (2023). *Fund of Funds for Startups – Annual Report*. Retrieved from https://sidbi.in/
8. Babu, R. (2021). Sectoral focus of state startup policies in India: A comparative study. Journal of Economic Policy and Research, 16(2), 112–126.
9. Bansal, V., & Gupta, M. (2020). Financing startups in India: The role of government policies and venture capital. International Journal of Business and Management Research, 10(1), 78–85.

10. Chaudhary, A., & Singh, R. (2019). Startup India: A policy analysis and impact assessment. Indian Journal of Public Policy and Administration, 5(2), 45–60.
11. Das, S., & Mohanty, B. (2020). Startup Odisha policy and entrepreneurial development: A state-level analysis. Odisha Economic Review, 14(1), 29–42.
12. Department for Promotion of Industry and Internal Trade (DPIIT). (2023). Startup India annual report 2022–2023. Ministry of Commerce and Industry, Government of India. Retrieved from https://www.startupindia.gov.in/
13. Gupta, R., & Rani, M. (2018). Tax incentives under the Startup India policy: Utilization and challenges. Journal of Taxation and Economic Reform, 6(3), 90–104.
14. Kumar, A. (2021). State-level startup hubs in India: Performance and policy impact. Journal of Innovation and Entrepreneurship, 10(4), 22–37.
15. NITI Aayog. (2021). India innovation index 2020. Government of India. Retrieved from https://www.niti.gov.in/
16. Panda, L. (2021). Emerging startup ecosystems in Eastern India: The case of Bhubaneswar. Journal of Regional Development and Planning, 9(2), 54–68.
17. Patnaik, S., & Sahoo, A. (2020). Entrepreneurship promotion through state startup policies: An evaluation of Odisha's strategy. South Asian Journal of Development Studies, 7(1), 41–55.
18. Press Information Bureau. (2023, January 16). Seven years of Startup India: Building a self-reliant startup ecosystem. Government of India. Retrieved from https://pib.gov.in/
19. Rathi, M. (2021). Intellectual property support for startups in India: A critical analysis of Startup India initiatives. Indian Journal of Intellectual Property Law, 13(1), 65–80.
20. Sharma, D., & Tiwari, N. (2021). Implementation challenges in Startup India policy: A ground-level perspective. Policy and Governance Review, 8(2), 88–103.
21. Srinivasan, S. (2020). Startup India: Evaluating the success of a flagship initiative. Economic and Political Weekly, 55(34), 25–31.
22. Government of Odisha. (2023). Startup Odisha policy and initiatives. Retrieved from https://www.startupodisha.gov.in/
23. Department for Promotion of Industry and Internal Trade. (2024). Startup India initiative. Ministry of Commerce and Industry, Government of India. Retrieved from https://www.startupindia.gov.in/
24. Press Information Bureau. (2023, January 16). Odisha's role in promoting startups through Startup India. Government of India. Retrieved from https://pib.gov.in/
25. Small Industries Development Bank of India (SIDBI). (2023). Fund of Funds for Startups – Annual Report. Retrieved from https://sidbi.in/

REIMAGINING SOCIAL INQUIRY: THE ROLE OF MACHINE LEARNING IN CONTEMPORARY SOCIAL SCIENCE

Shehanaz Alam* and Debabrata Basu

Department of Agricultural Extension, BCKV, WB, India

Corresponding author E-mail: alam.shehanaz@bckv.edu.in

Introduction:

The advent of machine learning (ML) has opened new frontiers in social science research, enabling scholars to extract insights from data in ways previously unimaginable. Traditionally grounded in theory-driven, often qualitative methodologies, the social sciences are now increasingly engaging with data-intensive approaches that complement and, in some cases, challenge conventional methods. Machine learning, as a subset of artificial intelligence, provides tools that can detect patterns, classify complex social phenomena, and generate predictions from vast and diverse datasets. These capabilities are particularly valuable in an era characterized by exponential growth in digital and administrative data, social media, and sensor-based information.

As social scientists grapple with questions of human behavior, institutional dynamics, policy outcomes, and social change, machine learning offers both opportunities and challenges. On one hand, it allows for more robust empirical testing, improved predictive accuracy, and the handling of high-dimensional data. On the other, it raises critical concerns around interpretability, bias, causality, and the ethical use of algorithms in socially sensitive domains.

This chapter explores the intersection of machine learning and social science research. It begins by outlining the foundational concepts of machine learning and situates them within the broader epistemological frameworks of the social sciences. The discussion then moves to key applications—ranging from text analysis and image classification to policy evaluation and social network analysis—highlighting how ML is transforming both the questions researchers ask and the tools they use to answer them. Finally, the chapter addresses the methodological, ethical, and practical implications of integrating machine learning into social science research, advocating for a critical yet constructive approach to this rapidly evolving field.

What is Machine Learning?

Machine learning is an emerging technology that enables computers to automatically learn and improve from past data without being explicitly programmed. It relies on a variety of algorithms to create mathematical models that can make predictions or decisions based on historical information. Today, machine learning is widely applied in areas such as image and speech recognition, email spam filtering, Facebook's automatic tagging, recommendation engines, and more.

As a branch of artificial intelligence, machine learning primarily focuses on developing algorithms that empower systems to learn from data and past experiences independently. The term "machine learning" was first introduced by Arthur Samuel in 1959. By using sample historical data—known as training data—these algorithms develop mathematical models that support prediction or decision-making processes.

Machine learning merges concepts from computer science and statistics to build predictive models. These models improve as more data is provided, meaning greater data volume often results in better performance.

A machine learning system operates by learning from previous data to build a model. When new data is introduced, the system uses this model to generate predictions. The accuracy of these predictions generally increases with the quantity and quality of the training data, as more information leads to more refined models.

For example, if we're faced with a complex task requiring predictions, rather than writing specific code to address the problem, we can input the relevant data into a general-purpose algorithm. The algorithm then analyzes the data, develops the logic, and produces the output accordingly. Machine learning has transformed our approach to problem-solving. The accompanying diagram illustrates how a machine learning algorithm functions.

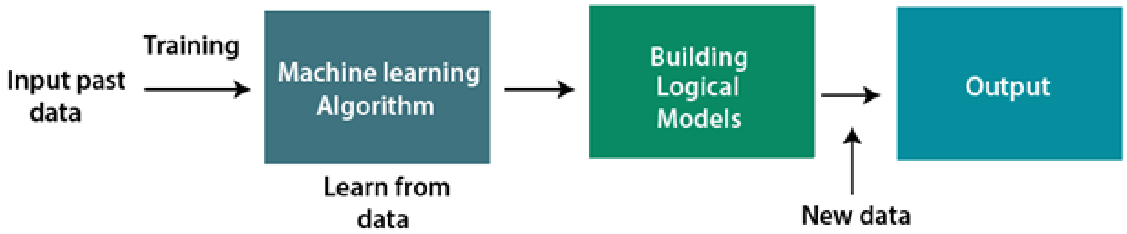


Figure 1: How Machine Learning Works

Evolution of Machine Learning

Year	Development
1950s	Small Logical task and General Problem Solver were developed, demonstrating basic problem-solving capabilities.
1960s-1970s	Symbolic AI and Expert Systems- Programs like MYCIN and DENDRAL were created to mimic human expertise in specific domains, such as medical diagnosis and chemical analysis.
1980s	The AI Winter-Limitations in computing power and the inability to handle complex problems hindered progress of AI in this phase.
1990s	Machine Learning- Algorithms began to focus on data-driven approaches, allowing machines to learn from experience.
2000s	Big Data and Deep Learning- Neural networks with multiple layers
2010- Present	AI Everywhere from virtual assistants to autonomous vehicles.

Need for Machine Learning

Machine learning closely resembles data mining, as both involve working with vast datasets. The demand for machine learning continues to grow rapidly due to its ability to perform tasks that are too intricate for humans to execute manually. Human capabilities are limited, especially when it comes to processing large volumes of data, which is where machine learning systems become essential.

By feeding large datasets into machine learning algorithms, we can train them to analyze information, build predictive models, and generate outputs automatically. The efficiency of these algorithms is heavily influenced by the volume of data and is often evaluated using a cost function. Machine learning offers significant advantages in terms of time and cost savings.

Its significance is evident in a wide range of applications. Presently, machine learning is employed in areas such as autonomous vehicles, cyber fraud detection, facial recognition, and Facebook's friend suggestion feature. Leading companies like Netflix and Amazon utilize machine learning models to process extensive user data, identify preferences, and recommend relevant products accordingly.

Salient Features of Machine Learning

1. Data-Driven Learning

- **Definition**: ML algorithms learn patterns directly from data without being explicitly programmed with domain-specific rules.
- **Relevance**: Enables discovery of relationships in complex social phenomena that may not be easily hypothesized.

2. Pattern Recognition

- **Definition**: ML models identify regularities or trends in data, such as correlations, clusters, or hidden structures.
- **Relevance**: Useful for detecting social behavior patterns, classifying populations, or discovering latent themes in text.

3. Predictive Modeling

- **Definition**: ML excels at forecasting outcomes based on learned relationships from historical data.
- **Relevance**: Applications include predicting voting behavior, unemployment risk, or public opinion shifts.

4. Automation and Scalability

- **Definition**: ML automates analysis on large-scale, high-dimensional datasets.
- **Relevance**: Vital for analyzing social media, digital trace data, or large administrative records.

5. Adaptability and Continuous Learning

- **Definition**: Many ML models can be updated with new data to improve performance over time (e.g., online learning).
- **Relevance**: Helps researchers adapt models to evolving social conditions or behaviors.

6. Handling High-Dimensional Data

- **Definition**: ML algorithms can manage data with a large number of variables (features), often using dimensionality reduction techniques.
- **Relevance**: Useful when working with survey data, socio-economic indicators, or genomic/social media datasets.

7. Nonlinear Modeling Capability

- **Definition**: Unlike many traditional statistical methods, ML can model complex, nonlinear relationships.
- **Relevance**: Captures subtle or interaction effects in social behavior or economic dynamics that linear models might miss.

8. Classification and Clustering

- **Definition**: ML allows both supervised classification (e.g., predicting political affiliation) and unsupervised clustering (e.g., grouping similar respondents).
- **Relevance**: Common in market segmentation, typology development, and community detection.

9. Feature Selection and Engineering

- **Definition**: ML can automatically identify the most relevant variables or create new ones from raw data.
- **Relevance**: Helps refine models and interpret which factors influence a given social outcome.

10. Flexibility Across Data Types

- **Definition**: ML can process structured (tables, numbers) and unstructured data (text, images, audio).
- **Relevance**: Enables mixed-method research, such as combining survey data with social media or image content.

Types of Machine Learning

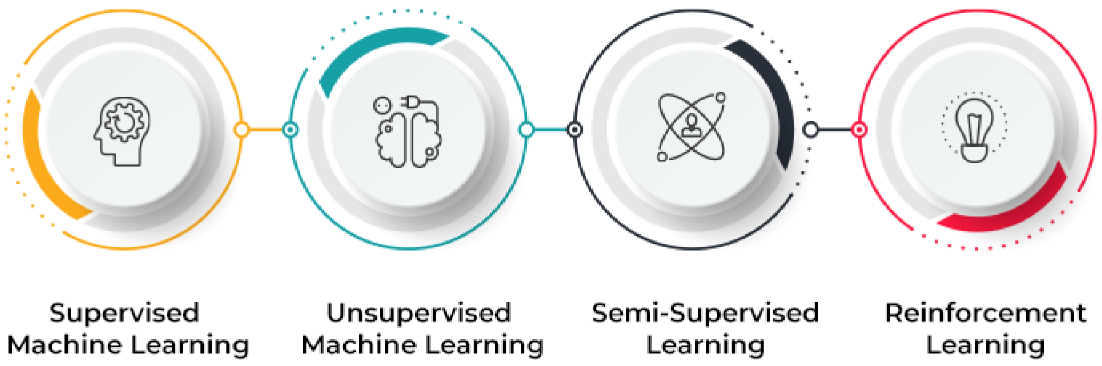


Figure 2: Types of Machine Learning

1. Supervised Machine Learning

This form of machine learning relies on supervision, where the model is trained using labeled datasets that include both input and corresponding output values. Since these data points are already paired, the machine learns the relationship between them. During later stages, it applies this learning to make predictions using new, unseen test data.

For instance, consider a dataset containing images of parrots and crows. The model is trained to recognize specific features such as color, eye shape, and size. Once trained, if it receives a new image of a parrot, it analyzes the visual traits and predicts the correct classification. This is how object recognition works in supervised learning.

2. Unsupervised Machine Learning

Unsupervised learning operates without labeled data. The model is trained on raw, unclassified inputs and must discover hidden patterns, similarities, or groupings on its own.

For example, take a collection of images showing various fruits in a container. The model hasn't been told what the fruits are. When given this dataset, it identifies recurring patterns—such as colors and shapes—to group similar items together. It then uses this categorization to make predictions when tested with new data.

3. Semi-Supervised Learning

Semi-supervised learning combines elements of both supervised and unsupervised learning. It leverages a mix of labeled and unlabeled data to enhance training and reduce the limitations of either method used alone.

An analogy can help clarify this concept: imagine a college student learning under a teacher's guidance—this is supervised learning. The same student studying independently at home represents unsupervised learning. When the student revises a topic at home after having first learned it from a teacher, that scenario mirrors semi-supervised learning.

4. Reinforcement Learning

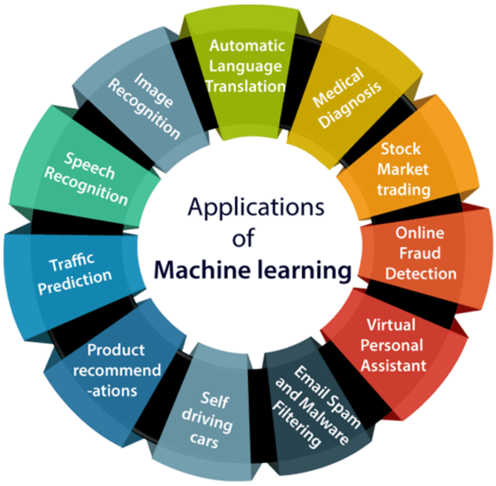
Reinforcement learning is driven by feedback and operates through a trial-and-error approach. The AI agent interacts with its environment, takes actions, and learns from the consequences. Positive actions earn rewards, while negative ones incur penalties. The goal is to maximize rewards by making better decisions over time.

Unlike supervised learning, reinforcement learning does not rely on labeled data. Instead, the agent learns from its own experiences. A good example is a video game, where the game defines the environment and each move changes the agent's state. Based on the outcome, the agent receives either a reward or punishment, impacting the overall score. The objective is to achieve the best possible score.

Reinforcement learning is widely used in areas like game theory, information theory, and systems involving multiple agents

Applications of Machine learning

Machine learning is a buzzword for today's technology, and it is growing very rapidly day by day. We are using machine learning in our daily life even without knowing it such as Google Maps, Google assistant, Alexa, etc. Below are some most trending real-world applications of Machine Learning:



Machine Learning in Social Science Research

The integration of machine learning (ML) into social science research represents both a methodological expansion and a paradigm shift. While social science has traditionally relied on theory-driven, often hypothesis-testing approaches, machine learning introduces a data-driven orientation that emphasizes pattern recognition, prediction, and model optimization. Rather than displacing conventional methods, ML can be accommodated as a complementary toolkit that enhances the scope, depth, and efficiency of social scientific inquiry.

1. Expanding the Analytical Toolkit

Machine learning offers techniques that go beyond the capabilities of traditional statistical models. Methods such as classification, clustering, and dimensionality reduction enable researchers to handle complex, high-dimensional datasets—including text, images, and network data—that are increasingly common in the digital age. For example, social scientists can use natural language processing (NLP) to analyze political speeches, social media posts, or interview transcripts at scale, extracting thematic patterns or sentiment trends that would be difficult to detect manually.

2. Enhancing Predictive Power

While social science has often prioritized explanation and causality, predictive modeling is gaining traction as a valuable complement. Machine learning excels in identifying patterns that can be used to forecast behaviors, attitudes, or policy outcomes. For instance, predictive models can help identify which individuals are most at risk of unemployment, dropping out of school, or engaging in protest, thus informing targeted interventions. These insights, while not inherently causal, can guide theory-building and policy design.

3. Working with Big and Unstructured Data

The rise of big data—such as administrative records, sensor data, and online digital traces—poses new opportunities and challenges. Machine learning is uniquely suited to processing such data, enabling social scientists to work with massive, unstructured, and heterogeneous sources. This shift expands the empirical base of research, allowing scholars to explore social dynamics in real-time or at unprecedented levels of granularity.

4. Supporting Theory Development

Contrary to the belief that ML is purely atheoretical, it can play a vital role in theory development. By uncovering unexpected patterns or associations, ML can generate hypotheses that prompt further qualitative or causal investigation. Moreover, ML techniques such as topic modeling or decision trees can provide interpretable outputs that support inductive reasoning and theory refinement.

5. Challenges and Considerations

Accommodating machine learning in social science also requires grappling with several challenges. These include:

- **Interpretability**: Many ML models, especially deep learning architectures, operate as "black boxes," making it difficult to derive theoretical insights.
- **Bias and Fairness**: ML models can reproduce and amplify social biases present in training data, raising ethical and validity concerns.
- **Causal Inference**: While ML is powerful in prediction, its capacity to establish causality is limited unless combined with experimental or quasi-experimental designs.
- **Epistemological Tensions**: The data-driven nature of ML may conflict with traditional normative or critical approaches in the social sciences.

To address these issues, social scientists must engage critically with ML methods, integrating them thoughtfully within the broader aims and values of their disciplines.

6. Towards a Hybrid Methodology

The future of social science research lies not in choosing between traditional methods and machine learning but in combining them intelligently. Hybrid approaches—such as using ML for data preprocessing before regression analysis, or integrating ML predictions into causal frameworks—can harness the strengths of both paradigms. Interdisciplinary collaboration between social scientists, computer scientists, and data ethicists will be key to realizing the full potential of this integration.

Common Machine Learning Tools in Social Science Research

1. Scikit-learn (Python)

- **Use**: General-purpose machine learning library offering tools for classification, regression, clustering, dimensionality reduction, and model evaluation.
- **Applications**: Predicting voting behavior, classifying survey responses, or clustering socioeconomic profiles.
- **Why it's useful**: Easy-to-use, interpretable, and integrates well with pandas and NumPy.

2. R (with packages like caret, mlr3, randomForest, glmnet)

- **Use**: Widely used in social sciences for both traditional and machine learning methods.
- **Applications**: Elastic net regression for high-dimensional social datasets, classification of text or behavioral outcomes.
- **Why it's useful**: Strong statistical underpinnings, accessible for researchers already familiar with R.

3. TensorFlow / Keras (Python)

- **Use**: Deep learning frameworks for building neural networks.
- **Applications**: Sentiment analysis on social media, image classification in urban studies, or modeling complex behavioral interactions.
- **Why it's useful**: Scalable for large datasets and deep learning tasks, with high flexibility.

4. Stata (with lassopack, randomforest, mlogit)

- **Use**: Familiar to many social scientists; now includes ML capabilities.
- **Applications**: Variable selection (e.g., LASSO) in survey data, classification in policy research.
- **Why it's useful**: Integrates ML into familiar workflows for econometrics and survey analysis.

5. WEKA (GUI-based, Java)

- **Use**: User-friendly interface for applying ML algorithms without extensive programming.
- **Applications**: Educational settings, exploratory analysis in sociology or education research.
- **Why it's useful**: Ideal for beginners and quick model prototyping.

6. Orange (GUI, Python backend)

- **Use**: Visual programming tool for data mining and ML.
- **Applications**: Interactive exploration of survey or behavioral data.
- **Why it's useful**: No coding required; useful for teaching and prototyping.

7. NLTK / spaCy / Gensim (Python)

- **Use**: Natural language processing (NLP) libraries.
- **Applications**: Text classification, topic modeling, content analysis of interviews, documents, or social media posts.
- **Why it's useful**: Tailored for textual data, increasingly relevant in qualitative-to-quantitative research.

8. Topic Modeling Tools (e.g., LDA via Gensim, STM in R)

- **Use**: Unsupervised learning to identify latent themes in text.
- **Applications**: Analyzing political discourse, policy documents, open-ended survey responses.
- **Why it's useful**: Reveals patterns in large text corpora with minimal prior assumptions.

9. XGBoost / LightGBM

- **Use**: High-performance gradient boosting algorithms.

- **Applications**: Predicting social outcomes (e.g., poverty, health access) from large administrative or survey datasets.
- **Why it's useful**: High accuracy, handles missing data and variable interactions well.

10. Gephi / NetworkX (Python)

- **Use**: Tools for network analysis.
- **Applications**: Analyzing social networks, collaboration patterns, diffusion of information or innovation.
- **Why it's useful**: Supports network visualization and algorithmic analysis (e.g., centrality, modularity).

Limitations of Machine Learning in Social Science Research

1. Lack of Interpretability

- **Issue**: Many machine learning models, especially complex ones like neural networks or ensemble methods, operate as "black boxes," making it difficult to understand how decisions are made.
- **Implication**: This challenges a core aim of social science—to explain *why* and *how* phenomena occur—not just to predict outcomes.

2. Limited Capacity for Causal Inference

- **Issue**: ML is primarily designed for prediction, not causal analysis.
- **Implication**: Social scientists seeking to identify causal relationships (e.g., the effect of education on income) must combine ML with robust designs like experiments or quasi-experimental methods. ML alone cannot establish causality.

3. Data Bias and Representation Issues

- **Issue**: ML models are highly sensitive to the quality and representativeness of training data.
- **Implication**: If the data reflect historical biases (e.g., in hiring, policing, or lending), ML models may perpetuate or even amplify these inequities—leading to unethical or misleading conclusions.

4. Overfitting and Generalizability Concerns

- **Issue**: ML models can overfit training data, capturing noise rather than true signal.
- **Implication**: Such models may perform well on the data they were trained on but fail to generalize to new or different social contexts, limiting their external validity.

5. Overemphasis on Prediction

- **Issue**: The predictive orientation of ML may sideline theory-driven inquiry and ignore contextual understanding.
- **Implication**: This can result in findings that are statistically impressive but sociologically shallow, reducing the explanatory power of social research.

6. Ethical and Privacy Concerns

- **Issue**: ML applications often involve personal or sensitive data (e.g., social media, health records).

- **Implication**: This raises serious ethical issues related to consent, privacy, data security, and the potential misuse of information.

7. High Technical Barrier

- **Issue**: Effective use of ML requires significant technical expertise in programming, statistics, and data science.
- **Implication**: Many social scientists may lack the necessary training or resources, which can lead to misuse or superficial application of ML methods.

8. Difficulty Handling Small or Qualitative Datasets

- **Issue**: ML thrives on large, structured datasets but is less effective with small-N studies or rich qualitative data.
- **Implication**: Fields such as anthropology or political theory may find limited applicability unless techniques are adapted or hybrid methods developed.

9. Algorithmic Opacity in Decision-Making

- **Issue**: Policymakers or stakeholders may adopt ML-driven tools (e.g., risk assessments or recommender systems) without fully understanding them.
- **Implication**: This can erode transparency and accountability in decision-making processes, especially in governance and public policy.

10. Risk of "Data-Determinism"

- **Issue**: The convenience and appeal of ML might encourage researchers to prioritize questions that fit available data.
- **Implication**: This can skew research agendas, sidelining important social questions that are harder to quantify or model computationally

While machine learning offers powerful capabilities, it should be treated as a *complement* to—not a replacement for—traditional social science methods. Critical reflection, ethical awareness, and methodological pluralism are essential to responsibly and effectively harness ML in social research.

Conclusion:

The integration of machine learning into social science research marks a significant methodological and epistemological evolution. Far from being a passing trend, machine learning represents a powerful set of tools and approaches that can enhance the capacity of researchers to engage with increasingly complex, large-scale, and dynamic forms of data. Whether through the classification of social phenomena, prediction of human behavior, analysis of text and images, or the detection of hidden patterns in networks and datasets, machine learning is reshaping the landscape of empirical inquiry in the social sciences.

This chapter has explored how machine learning can be thoughtfully accommodated within the social science tradition. It has demonstrated that while machine learning excels at pattern recognition and prediction, its real power lies in its synergy with theory-driven, interpretive, and critical approaches. Rather than replacing established methodologies, machine learning complements and extends them, offering new lenses through which to observe and understand society.

However, this integration is not without challenges. Issues of algorithmic bias, data representativeness, interpretability, and ethical accountability are particularly salient when dealing with social data and human subjects. These concerns underscore the need for social scientists to approach machine learning not merely as a technical toolkit, but as a socio-technical system embedded with assumptions, values, and consequences.

To fully realize the potential of machine learning in social research, interdisciplinary collaboration is essential. Social scientists must engage actively with data scientists, ethicists, and technologists to ensure that machine learning applications are methodologically sound, ethically responsible, and socially meaningful. Equally important is the cultivation of critical literacy among researchers, so they can both leverage and scrutinize machine learning methods within the broader goals of social inquiry.

In conclusion, machine learning offers transformative possibilities for social science research, but its success depends on thoughtful integration, reflexivity, and a commitment to the core values of the discipline—rigor, relevance, and responsibility. As the data revolution continues to unfold, the most fruitful outcomes will emerge not from replacing traditional approaches, but from reimagining them in light of new technological capabilities

References:

1. Acharya, M. S., Armaan, A., & Antony, A. S. (2019). A comparison of regression models for prediction of graduate admissions. In *2019 International Conference on Computational Intelligence in Data Science (ICCIDS)* (pp. 1–5). IEEE.
2. Baldassarri, D., & Goldberg, A. (2014). Neither ideologues nor agnostics: Alternative voters' belief system in an age of partisan politics. *American Journal of Sociology, 120*(1), 45–95.
3. Bekesiene, S., & Hoskova-Mayerova, S. (2018). Decision tree-based classification model for identification of effective leadership indicators. *Journal of Mathematical and Fundamental Sciences, 50*(2), 121–141.
4. Benjamin, A. J. (2006). The relationship between right-wing authoritarianism and attitudes toward violence: Further validation of the Attitudes toward Violence Scale. *Social Behavior and Personality: An International Journal, 34*(8), 923–926.
5. Best, K. B., Gilligan, J. M., Baroud, H., *et al.* (2021). Random forest analysis of two household surveys can identify important predictors of migration in Bangladesh. *Journal of Computational Social Science, 4*, 77–100.
6. Brewer, S. L., Meckley-Brewer, H., & Stinson, P. M. (2017). Fearful and distracted in school: Predicting bullying among youths. *Children and Schools, 39*(4), 219–226.
7. Gopalakrishnan, T., Choudhary, R., & Prasad, S. (2018). Prediction of sales value in online shopping using linear regression. In *2018 4th International Conference on Computing Communication and Automation (ICCCA)* (pp. 1–6).

8. Harimurti, R., Yamasari, Y., & Asto, B. (2018). Predicting student's psychomotor domain in vocational senior high school using linear regression. In *2018 International Conference on Information and Communications Technology (ICOIACT)* (pp. 448–453).
9. Jakariya, Md., Ahmed, M., & Sikder, Md. (2016). Vulnerability analysis of the Cyclone Aila affected community in the South-West belt of Bangladesh. *Journal of Health and Environmental Research*.
10. Miller, B., Linder, F., & Mebane, W. R. (2020). Active learning approaches for labeling text: Review and assessment of the performance of active learning approaches. *Political Analysis, 28*(4), 532–551.
11. Saha, C., Acharya, S. K., Chatterjee, R., & Mandal, A. (2021). Attributes of farm income operating on conservation agriculture: The multivariate and ANN analytics. *Indian Journal of Extension Education, 58*(1), 44–48.
12. Sreehari, E., & Srivastava, S. (2018). Prediction of climate variable using multiple linear regression. In *2018 4th International Conference on Computing Communication and Automation (ICCCA)* (pp. 1–4).
13. Thakur, S. (2021). *Evaluation of management functions of farmer producer companies in West Bengal* (Unpublished master’s thesis). Bidhan Chandra Krishi Viswavidyalaya, West Bengal.
14. Why Change. (2021, November 13). *How to create decision trees for business rules analysis*. https://why-change.com/2021/11/13/how-to-create-decision-trees-for-business-rules-analysis/
15. Zhao, X., Yu, B., Liu, Y., Chen, Z., Li, Q., Wang, C., & Wu, J. (2019). Estimation of poverty using random forest regression with multi-source data: A case study in Bangladesh. *Remote Sensing, 11*(4), 375.

SYNERGISTIC MANAGEMENT FRAMEWORKS FOR ENSURING ORGANIC FOOD INTEGRITY AND TRUST

Koyel Mukherjee

Department of Rural Development and Management and Department of Social Work,

Seacom Skills University, Santiniketan, Bolpur, Birbhum-731236, West Bengal, India

Corresponding author E-mail: koyelmukherjee987@gmail.com

Abstract:

There is no doubt that application of integrated management strategies is vital for safeguarding the authenticity and consumer trust in organic food products. This chapter emphasizes a holistic approach focusing on pest and disease control measures adhered to organic standards including sanitation protocols, biological controls and employee training and awareness generation for prevention of contamination without any chemical intervention. The topic explores the immense importance of each component including selection of rigorous ingredient, regulation of natural additives and application of non-synthetic processing aids for maintaining prolonged product integrity. Besides, some sustainable processing techniques i.e minimal processing, fermentation and natural preservation methods have been discussed to describe the process of upholding nutritional quality. Eco-friendly materials and meticulous handling practices are highlighted through describing critical aspects of packaging, labeling, storage and transportation in respect to analyze the safe preservation of organic authenticity from farm to market. We should remember that integration of those management approaches has a crucial impact on encouraging a resilient organic food supply chain development for fulfillment of regulatory standards, enhanced consumer satisfaction and environmental sustainability. Overall, this script discusses on an essential, comprehensive, multidisciplinary framework for addressing numerous challenges in organic food safety management. Risk management is highly recommended to ensure prolonged growth and credibility of the organic industry in this competitive global market.

Keywords: Organic Food Safety, Integrated Management, Sustainable Processing, Contamination Prevention, Supply Chain Integrity.

Introduction:

It's a positive sign for sustainable development that consumer awareness of health, environmental resilience and ethical farming practices has been growing day by day. So worldwide demand for organic food is being escalated. Organic food industry emphasizes natural integrity and ecological balance. Organic production system strictly monitors each stage to exclude applications of synthetic pesticides, fertilizers and Genetically Modified Organisms or artificial additives from production process. Safety and authenticity of organic products are the ultimate objectives to maintain consumer trust and upholding industry standards. The complexities of supply chains, processing methods and handling practices are increasing too with the global expansion of organic food markets. So, a comprehensive, integrated management approach is highly recommended not only for safeguarding product quality but to reinforce consumer confidence. Meticulous pest and disease control strategies are involved in organic food management practices for preserving organic integrity through avoiding restoration to chemical interventions. Some unique sanitation protocols, biological controls and employee training are initiated for prevention of contamination and microbial risks. The processing techniques should be purely aligned with organic principles. So minimal processing methods are applied to retain nutritional value. Proper packaging, labeling, storage and transportation are seriously looked after for ensuring freshness and food safety throughout the supply chain. Such integrated multifaceted approach leads to a resilient organic food system promoting prolonged viability of the organic industry. Emerging challenges could be addressed through implementation of such comprehensive frameworks increasing the credibility of organic food products in highly competitive global markets.

Pest and Disease Control in Organic Food Processing

Quality, safety and compliance of organic food products should be maintained as per organic standards. So strict pest and disease control measures must be followed in organic food processing and handling. Some pest and disease control practices are discussed as follows:

1. Sanitation Protocols: Rigorous sanitation practices are applied for prevention of infestations and spread of pests and diseases in organic food processing and handling. Equipments, surfaces and storage areas are regularly washed and sanitized. It helps in minimizing microbial contamination risks.

2. Integrated Pest Management (IPM): A combination of biological, cultural and mechanical controls is put into practice in IPM strategies for prevention of harmful pest and disease issues. IPM includes concrete monitoring of pest activities along with employing physical barriers. Besides natural predators or traps are used for managing pest populations.

3. Proper Storage and Handling: Organic ingredients and products are stored in sealed containers or packaging for preventing the infestations by different pests such as insects or rodents. Microbial growth and spoilage are also curtailed in storage areas through proper temperature and humidity control mechanisms.

4. Quality Control Measures: Identifying and mitigating potential pest or disease issues could be practicable through the implementation of exact quality control procedures at each stage of processing and handling of organic foods. Only high quality, pest free ingredients are used or not are ensured through regular inspections and monitoring in the processing units.

5. Non-Chemical Treatments: Non-chemical treatments are utilized by organic food processors for regulating pest and disease attacks without compromising organic coherence. Several physical methods are included such as cold storage, heat treatment or controlled atmosphere storage for eliminating destructive pests and pathogens.

6. Allergen Management: Allergenic ingredients are properly segregated and labeled in organic food processing methods. It is severely necessary for prevention of cross-contamination and allergic reactions. Organic product safety and compliance with labeling regulations are ensured by strict allergen control measures.

7. Employee Training and Education: Comprehensive training is provided to food processing staffs on pest and disease control protocols and organic handling practices. Such training are vital to make the employees aware and understand the worthiness of maintaining hygienic cleanliness and pest prevention measures in the processing units.

8. Documentation and Record-Keeping: Accurate records of pest control, pest monitoring and sanitation activities followed throughout the process are highly needed for authentic organic certification compliance. Detailed documentation can reveal that the organic standard is purely maintained or not. It helps in traceability if any further issue would arise regarding quality and originality.

9. Audits and Inspections: Compliance with pest and disease control requirements is verified by regular internal audits and external inspections by organic certification bodies. Highest standards of cleanliness and product integrity are truly maintained or not are assessed by those inspections.

10. Continuous Improvement: We notice continuous review and updates of pest and disease control procedures from organic food processors. Those updates are based on customer feedback, monitoring data and changes in regulations or industry best practices. Consistent effort for improvement is majorly required for enhancement of food safety and upholding consumer trust in organic food products.

In summary it may be said that pest and disease control in organic food processing is mandatorily essential for prevention of economic losses along with public health protection. Besides it can preserve resources and facilitates community nutrition in large extents.

Overview of Organic Food Industry in India: Production, Market, Certification, and Challenges (2022-2023)

Parameter	Statistical / Data	Source / Year
Organic Farming Area (2022-2023)	Approximately 2.78 million hectares	NPOP, Ministry of Agriculture, Govt. of India, 2023
Number of Organic Producers (2022-2023)	Over 2.5 million farmers across India	APEDA, 2023
Organic Food Market Size (2022)	Estimated at USD 1.5 billion (~₹11,000 crore)	FICCI & Nielsen India, 2022
Projected CAGR (2022-2027)	20-25% growth per annum	India Organic & Industry Reports, 2022
Major Organic Producing States	Madhya Pradesh, Rajasthan, Uttar Pradesh, Tamil Nadu, Maharashtra	NPOP Annual Report, 2022

Certified Organic Export Value (2022)	USD 350 million (~₹2,600 crore)	APEDA, 2023
Consumer Trust & Certification	75-80% of Indian organic products are certified under NPOP	APEDA & Certification Agencies, 2023
Main Organic Product Types	Spices, pulses, cereals, tea, fruits, vegetables	APEDA, 2022
Challenges Faced	Lack of awareness, certification costs, supply chain issues, adulteration	Industry Surveys, 2022
Organic Market Penetration (Urban Areas)	Approx. 10-15% of organic products sold in urban retail outlets	Nielsen India, 2022
Government Initiatives and Support	Organic Farming Mission, Organic Value Chain Development Scheme (OVCDS)	Ministry of Agriculture, 2023

Ingredients, Additives and Processing Aids

If organic food producers want to maintain integrity and authenticity of organic food products, they must give careful emphasis on ingredients, additives and processing aids. A comprehensive overview of each component could be discussed and analyzed as follows:

1. Ingredients: Organic ingredients are considered as the foundation of organic food products. These food products are obtained from organic farms and are yielded without using synthetic or chemical fertilizers, pesticides or Genetically Modified Organisms (GMOs). According to the dictation of organic standards, it is must be followed that the ingredients should be grown and processed according to strict regulations for ensuring their organic integrity. Health benefits, environmental sustainability and adherence to organic principles are the factors for which the organic ingredients are preferred by everyone.

2. Additives: Stringent regulations are employed for applications of additives in organic food processing. Usages are limited to the organic additives approved for use in specific organic products. It is known that organic- certified additives are extracted from natural sources. These are used in minimal quantities for enhancing texture, flavor or shelf life of organic food products. There should not be compromise in organic integrity. Common organic additives are sourced from either organic plant or particular mineral-based sources. These include natural colors, flavors, preservatives and thickeners. The use of synthetic or chemical additives, artificial colors, flavors or preservatives are strictly prohibited in organic food processing methods because maintenance of organic authenticity and purity is prime necessity for customer's demands.

3. Processing Aids: Processing aids are the particular substances those are used in facilitating organic food product manufacturing process such as cleaning, sorting or filtering. It is to be noted that the processing aids must be applied without directly affecting the final product.

Organic food processing aids should meet organic standards and they are carefully selected for ensuring that they never compromise organic integrity. Organic certified processing aids include different enzymes, filtration or cleaning agents those are derived from multiple natural sources. Those aids are processed without the use of chemicals or irradiation. Maintaining organic certification is compellingly required along with proper verification of organic compliance. Transparent documentation and exact traceability are prime requisites.

In summary it can be said that ingredients, additives and processing aids contribute a lot in maintaining product quality, safety and authenticity. They have major roles in organic food processing and handling. According to organic standards and principles it should be confirmed that only organic certified additives, ingredients and processing aids are used for preservation of integrity and originality in the market place. It is to be mentioned here that proper transparency, sustainability and consumer confidence must be prioritized by organic processors for upholding the values of organic farming along with fulfilling the expectations of sagacious organic consumers.

Food Processing Methods

Organic food processing methods mainly emphasize on maintenance of integrity of natural ingredients. These prioritize the minimization of synthetic or chemical additives and processing aids. Let's delve into a broader aspect of some common organic food processing methods:

1. Minimal Processing: If we go for a comparison study, we'll find that organic foods are often processed to a limited extent than common conventional counterparts. The preservation of nutritional content and flavor of organic foods requires minimal heat processing.

2. Non-Synthetic Preservation Techniques: Organic food processing units use natural preservatives such as sugar, salt, vinegar and some spices and herbs instead of chemical preservatives. Such natural preservatives are used to extend the shelf life of organic food products.

3. Cold Pressing: We know that cold pressing is a common method in case of oil extraction. Oils are extracted from organic seeds or nuts at low temperatures for retaining their own flavor, aroma and nutritional values.

4. Fermentation: A natural process called fermentation is practiced for enhancing the texture, flavor and nutritional value of organic foods. There are multiple organic foods those are produced through fermentation. Yogurt, kimchi, sauerkraut and kombucha etc. can be mentioned as examples of organic foods produced by fermentation process.

5. Drying/Dehydration: Dehydration removes moisture from foods. Moisture must be taken out from organic foods for extending their shelf life through inhibition of microbial growth. This method focuses on preservation of organic fruits, vegetables and herbs without using synthetic preservatives. So drying method is applied with proper care.

6. Freezing: Flash freezing technique is a popular method in maintaining the good quality of organic foods. This is applied for preservation of freshness and nutrients of organic produce without applying artificial additives.

7. Milling and Grinding: Milling and grinding methods are used for retaining integrity of organic grains. We may notice this method in case of organic wheat flour, oatmeal, burley, millet flour etc.

8. Juicing and Pureeing: There is a large scale demand of juices and purees extracted or processed from organic fruits and vegetables. Retaining of natural flavors and nutrients with maintaining required concentration is truly needed. So juicing and grinding methods are considered to be more moderated and tech-based to uphold the optimum quality of organic produce.

9. Natural Sweeteners: Commonly natural sweeteners such as honey, maple syrup, fruit juices are utilized instead of artificial sweeteners or refined sugars.

10. Packaging: Recyclable or biodegradable materials are often used for packaging of organic foods. Such initiative could minimize hazardous environmental impacts.

Overall it is to be said that the preservation of authenticity, nutritional value and health benefits of natural constituents is primly focused through organic food processing methods. Processing units are aware to fulfill the required quality needs as per organic standards and preferences of customers. Sustainable and environmental friendly practices are applied to obtain premium quality organic food products.

Organic Food Processing Methods

Packaging, Labeling, Storage and Transport

Proper maintenance of the integrity and quality of organic foods requires consummate packaging, labeling, storage and transport along with ensuring compliance with organic standards and regulations. An overview of each aspect may be discussed as follows:

1. Packaging:

- Sustainable Materials: Different sustainable materials (e.g. biodegradable plastics, compostable materials, recycled paper or glass) are often used for packaging of organic foods. It is kept in mind that the packaging materials must align with the principles of organic farming and should minimize environmental impact.
- Protective Design: Packaging of organic foods are designed specifically considering multiple factors. The packaging design should protect organic foods from physical damage, microbial contamination and exposure to light and moisture. It is to be mentioned that freshness and quality of organic food products could be retained through resealable pouches, vacuum-sealed packaging and airtight containers.
- Minimalist Approach: Organic consumers often find minimalist approach in packages carrying organic food products. The packaging contains clear labeling and simple graphics portraying the natural and organic qualities of the products.

2. Labeling:

- Certification Logos: Certification logos are used in labeling of organic foods. Particular logo indicates that the food products meet original organic certification standards. We may notice different logos such as USDA Organic (in the United States) or EU Organic (in the European Union) etc.
- Ingredient List: An ingredient list specifying the organic ingredients used in particular organic food product is displayed in labels of organic food packages. One point to be noted that organic ingredients are marked with an asterisk (*) or a similar symbol.
- Country of origin: The country or region of origin of the ingredients used in organic food products could be identified from the labels. So it provides required transparency to organic consumers.
- Nutritional Information: Labels contain nutritional information too. Those include serving size, calories and nutrient contents. It helps consumers in making informed choices.
- Allergen Statements: Labels include allergen statements too. So it would be easier to identify common allergens (e.g. nuts, soy, dairy or gluten) present in the organic food products.

3. Storage:

- Temperature Control: Refrigerated units, cold storage facilities or temperature-controlled environments are imperatively required for large scale preservation of organic food products. Prolonged freshness and quality safety could be sustained through these.
- Clean and Dry Conditions: Prevention of mold growth, pest infestations and contamination have special concern for organic food storage. So the storage units are kept clean, dry and well-ventilated to inhibit any repository damage.
- Proper Handling: Minimization of damage and maintenance of quality throughout the storage period of organic food products are highly required by food processors. So they handle these with proper care. Proper handling includes accurate stacking, rotation and labeling of organic products for ensuring FIFO (First In First Out) inventory management.

4. Transport:

- Clean Vehicles: Hygienic sanitary vehicles equipped with temperature control systems are used for transportation of organic foods. The prime intentions are prevention of spoilage and maintenance of product quality during transport.
- Secure Packaging: Shrink-wrapping, palletization and strapping are frequently used techniques for secure packaging of organic foods. Sturdy containers or pallets are utilized for prevention of damage and microbial contamination during transportation.
- Efficient Routes: Minimizing transportation time and fuel consumption is extremely needed. It could lower carbon emissions too. So transportation routes are efficiently planned. GPS tracking systems are used for monitoring vehicle location. On-time market delivery of organic products could be ensured through this effort.

In summary, it is to be said that meeting consumer expectations for fresh quality organic foods is only possible if there's maintenance of proper integrity, quality and safety of organic food products. So packaging, labeling, storage and transport of organic foods must adhere to stringent standards and practices.

Comprehensive Overview of Government Initiatives and Support Programs for the Organic Food Industry in India

This overview accentuates Government of India's strategic efforts and innovative support programs aimed at transforming the organic food sector into a sustainable and globally competitive industry.

Category	Initiatives / Support Programs	Year
Government Initiatives	- **National Program for Organic Production (NPOP):** Certification and promotion of organic farming across India	2000 onwards (ongoing, updated regularly)
	- **Paramparagat Krishi Vikas Yojana (PKVY):** Promotes organic farming through cluster-based approaches in various states	2015-2024
	- **Mission Organic Value Chain Development for North Eastern Region (MOVCDNER):** Focus on organic value chains in NE states	2015-2024
	- **National Organic Food Policy:** Draft policy to standardize and promote organic foods nationwide	2022 (draft stage)
	- **FSSAI Organic Standards and Labeling Regulations:** Establishing standards for organic food certification and labeling	2017 onwards
	- **State-specific Organic Farming Policies:** Several states like Sikkim, Himachal Pradesh, and Uttarakhand have their own policies	2010-2024
Support Initiatives	- **Subsidies and Financial Incentives:** Subsidies for organic inputs, certification costs, and equipment for farmers	2015-2024
	- **Training, Workshops, and Capacity Building:** Organized by government agencies and NGOs to educate farmers and entrepreneurs	2015-2024
	- **Market Development & Promotion:** Support for organic product fairs, exhibitions, and e-commerce platforms like APEDA and PM-FME schemes	2018-2024

	- **Research & Development:** Funding for organic farming research, development of bio-inputs, and sustainable practices	2010-2024
	- **Awareness Campaigns:** "Organic India" and other government-led campaigns to promote consumer awareness	2015-2024
	- **Export Promotion:** Assistance for organic exporters through schemes by APEDA and export incentives	2004 onwards (ongoing)
	- **E-NAM (National Agriculture Market):** Digital platform to connect organic producers with buyers nationwide	2016 onwards
	- **State Organic Certification Units:** Support for establishing and strengthening certification bodies at the state level	2010-2024

Challenges faced in implementing synergistic management frameworks for ensuring organic food integrity and trust

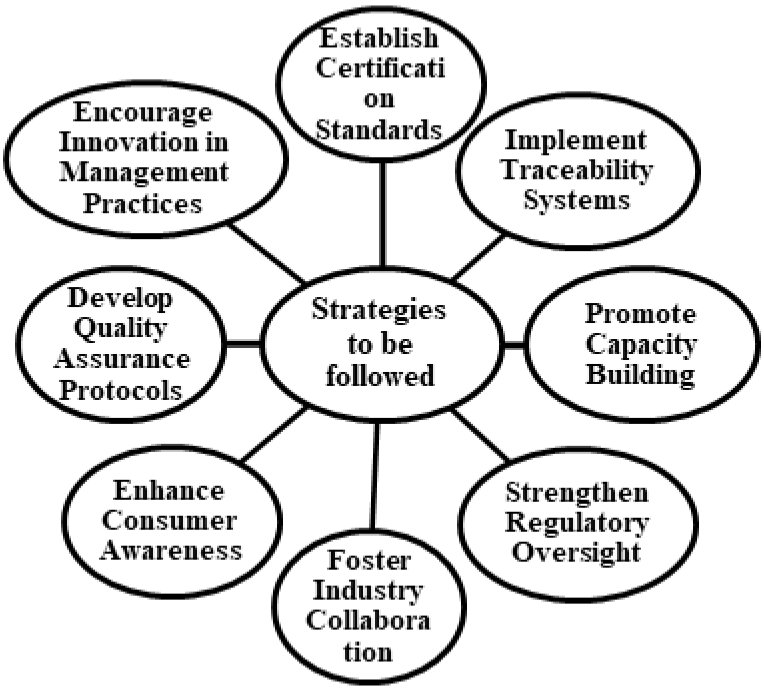
Implementing synergistic management frameworks for organic food integrity faces several challenges such as regulatory inconsistencies, resource limitations, and widespread fraud. Additionally, lack of awareness and technological barriers hinder effective monitoring and enforcement across different regions.

Challenge	Description
Inconsistent Standards	Variability in organic certification and standards across regions complicates uniform enforcement and consumer trust.
Limited Traceability	Difficulties in tracking products throughout the supply chain hinder transparency and verification efforts.
Insufficient Regulatory Oversight	Lack of dedicated agencies or weak enforcement mechanisms can lead to violations and fraud.
Farmer and Stakeholder Awareness	Limited knowledge among farmers and stakeholders about organic practices and compliance requirements.
Resource Constraints	Limited financial and technical resources for monitoring, testing, and certification activities.
Fraudulent Practices	Adulteration, mislabeling, and counterfeit organic products undermine trust and integrity.

Consumer Awareness Gaps	Lack of sufficient consumer education reduces awareness of organic standards and the significance of trust.
Technological Barriers	Challenges in adopting advanced tracking and certification technologies, especially in small-scale operations.
Market Access and Fair Pricing	Farmers may face difficulties accessing markets or receiving fair compensation, impacting organic integrity.
Cultural and Regional Differences	Diverse practices and perceptions across regions may hinder the implementation of standardized frameworks.

Recommendations

Several effective recommendations can be suggested based on the critical analysis of synergistic management frameworks for organic food integrity and trust. A clear and uniform certification standard should be established across all regions. It would be definitely helpful in maintaining consistency and credibility through which consumers can trust labeled organic products.



Implementation of advanced traceability systems including block chain technology is truly essential to enhance transparency. It would reduce the risk of adulteration as the stakeholders may track products throughout the supply chain. Another important part is regular capacity building and training programs for farmers, inspectors and processors. They should be equipped with latest knowledge on organic farm practices and compliance requirements.

Dedicated agencies should be created for strengthening regulatory oversight. The agencies have to ensure strict monitoring and quick action against any type of violation. Because safeguarding of organic standards is primly needed. Industry collaboration must be promoted among Government agencies, certifiers, farmers and retailers. Knowledge sharing, streamlining certification and inspection may be facilitated through this. Targeted campaigns may help in consumer awareness generation through educating them about organic standards, labels and the importance of trust in organic food products. Standardized quality assurance protocols should be developed. Mislabeling and adulteration of products may be prevented through routine testing and audits. Moreover innovation in organic food processing and management practices should be encouraged through multiple technology driven solutions.

Conclusion:

Safety, authenticity and consumer trust in organic food production process could be practically achieved through proper implementation of a comprehensive and integrated management approach. Stringent pest and disease control methods are encompassed in such framework to prevent harmful contamination without compromising organic standards. Because public health and economic viability have major importance. Product integrity and transparency could be well maintained through careful selection and regulation of ingredients, additives and processing aids. Organic product quality should have it's uniqueness as it aims at minimizing hazardous environmental impacts and promotion of sustainable development. Synergy of these diverse organic food system management strategies is supported by regular documentation, audits and continuous improvement efforts. This approach helps in enhancement of market credibility. Growing organic industries have to face several emerging challenges including supply chain complexities, climate change impacts and large scale customer demands. So modern innovation and timely adaptation of management practices are highly required. Ultimately, a unique management system focused on safety, sustainability and transparency would promote the integrity of organic foods and encourage environmental stewardship. It would surely ensure prolonged prosperity of organic agriculture and its allied industries.

References:

1. Allen, P., & Kovach, M. (2018). Organic food standards and certification: Ensuring authenticity and consumer trust. *Journal of Food Quality and Safety*, 2(3), 145-154. https://doi.org/10.1093/jfqs/xyz123
2. Bell, J., & Hough, G. (2017). Sustainable packaging solutions for organic foods. *International Journal of Food Science & Technology*, 52(4), 927-935. https://doi.org/10.1111/ijfs.13345
3. Choudhury, S., & Dutta, S. (2019). Organic pest management strategies: A comprehensive review. *Agricultural Sciences*, 10(2), 123-132. https://doi.org/10.4236/as.2019.102010
5. FAO. (2019). Organic agriculture: Sustainability and certification standards. Food and Agriculture Organization of the United Nations. https://www.fao.org/organicag/overview/en/

6. Gomez, M., & Sanchez, L. (2016). Natural preservatives and their role in organic food processing. *Food Preservation Journal*, 8(2), 89-97. https://doi.org/10.1016/j.fpj.2016.01.005
7. ISO. (2018). ISO 22000: Food safety management systems — Requirements for any organization in the food chain. International Organization for Standardization. https://www.iso.org/standard/65464.html
8. Kumar, S., & Singh, R. (2020). Advances in organic processing techniques: Fermentation, dehydration, and minimal processing. *Journal of Food Processing & Preservation*, 44(6), e14641. https://doi.org/10.1111/jfpp.14641
9. Lee, H., & Kim, J. (2017). Organic food labeling and consumer perception: A systematic review. *Food Policy*, 68, 12-21. https://doi.org/10.1016/j.foodpol.2016.11.003
10. Sharma, P., & Sharma, R. (2018). Innovations in organic food packaging for sustainability. *Packaging Technology and Scienc*e, 31(5), 237-250. https://doi.org/10.1002/pts.2414
11. United Nations Environment Programme. (2020). Sustainable food systems and environmental impacts. UNEP Reports. https://www.unep.org/resources/report/sustainable-food-systems
12. Williams, R., & Thompson, S. (2019). Traceability and record-keeping in organic food supply chains. *Food Control*, 104, 41-49. https://doi.org/10.1016/j.foodcont.2019.04.011
13. World Organic Trade Association. (2021). Global organic market report: Trends and challenges. WOTA Publications. https://worldorganictrade.org/market-report-2021

DIGITAL TRANSFORMATION AND ECONOMIC PARTICIPATION: ANALYZING THE IMPACT OF FINANCIAL TECHNOLOGY (FINTECH) ON INCLUSIVE GROWTH IN INDIA

G. Hannah Jebamalar

Department of Economics, Lady Doak College, Madurai

Corresponding author E-mail: hannahjebamalar@ldc.edu.in

Introduction:

In the 21st century, the global economy has undergone a significant transformation marked by the fusion of digital technology with financial services. This evolution has given rise to the Financial Technology (FinTech) sector, which has emerged as a key driver of change across both developed and developing nations. In India, FinTech has played a central role in reshaping the traditional banking and commerce ecosystems, providing new avenues for economic inclusion, especially for marginalized communities.

The Indian economy, characterized by its vast demographic diversity, uneven development, and high dependence on informal financial systems, has long grappled with the challenge of financial exclusion. A large section of the population—particularly those in rural areas, women, and informal workers—has historically been outside the ambit of formal financial services. However, with the advent of digital financial platforms, a new paradigm has emerged that promises to bridge the gap between formal financial institutions and the underbanked population.

Initiatives like the Pradhan Mantri Jan Dhan Yojana (PMJDY), Aadhaar-enabled payment systems, and the rise of Unified Payments Interface (UPI) have democratized access to financial services. These developments have not only modernized India's payment infrastructure but also created a platform for inclusive economic participation. The convergence of government policy, digital infrastructure, and mobile technology has laid the foundation for what can be termed a “FinTech revolution.”

Relevance to Humanities, Commerce, and Management Research:

While FinTech is rooted in technological and economic advancement, its implications extend deeply into the social, cultural, and commercial spheres. From a humanities perspective, it influences behavioral shifts in savings and consumption patterns, digital literacy, and trust in digital systems. In commerce and management, it has redefined how businesses interact with customers, created new entrepreneurial models, and introduced new forms of value creation and delivery.

Significance of the Study

Despite the rapid growth of digital finance in India, there remains a need for a comprehensive analysis of its actual impact on inclusive growth and economic participation.

While high transaction volumes and user statistics paint a promising picture, they do not fully reveal whether the benefits of FinTech are equitably distributed across all social and economic strata. Questions about regional disparities, gender-based exclusion, technological literacy, and data privacy remain underexplored.

The focus will be on how digital finance has impacted access to credit, savings, payments, and insurance among disadvantaged groups, and how these changes contribute to long-term economic empowerment.

Research Objectives

To guide the analysis, the following objectives have been identified:

1. To examine the trends in FinTech adoption in India from 2015 to 2024 using secondary data from key national and international sources.
2. To assess the impact of FinTech services on financial inclusion, with a focus on rural populations, low-income households, and women.
3. To evaluate the challenges and barriers associated with the equitable adoption of digital financial services, including infrastructure gaps, digital literacy, and cybersecurity risks.
4. To provide policy recommendations aimed at enhancing the role of FinTech in promoting inclusive and sustainable economic participation.

Scope

This study is based entirely on secondary data analysis. The key data sources include the Reserve Bank of India (RBI), National Payments Corporation of India (NPCI), Global Findex Database (World Bank), National Sample Survey Office (NSSO), and Centre for Monitoring Indian Economy (CMIE). The time period for the analysis broadly covers the decade from 2015 to 2024, aligning with the rise of UPI and key government digital initiatives.

The scope of the chapter includes both macro-level trends (e.g., total number of digital transactions, growth in mobile banking) and micro-level indicators (e.g., demographic access to formal credit and insurance). The analysis will use a descriptive approach, supplemented by visual representations (graphs and tables) to highlight trends and disparities.

While the study will not include primary data, it aims to offer a robust and evidence-based narrative that can inform future policy, academic research, and practical interventions in the FinTech space.

Literature Review

Conceptual Understanding of FinTech and Financial Inclusion

Financial Technology (FinTech) refers to the integration of technology into financial services to enhance delivery, efficiency, and accessibility. It includes services such as mobile banking, peer-to-peer lending, e-wallets, robo-advisors, and blockchain-based financial platforms. FinTech operates at the intersection of finance, technology, and innovation, aiming to disrupt traditional financial systems through cost reduction, speed, and enhanced consumer experience (Gomber *et al.*, 2017).

Financial inclusion, a closely linked concept, involves ensuring that individuals and businesses have access to affordable and appropriate financial products and services, including payments, savings, credit, and insurance. According to the World Bank (2021), financial inclusion is a key enabler of reducing poverty and boosting shared prosperity. The rise of FinTech is increasingly viewed as a powerful tool to achieve this goal, especially in countries with large unbanked populations like India.

FinTech and Inclusive Growth: Global Perspectives

Globally, scholars have emphasized the transformative role of FinTech in democratizing financial services. Beck *et al.* (2016) argue that digital financial innovations have lowered entry barriers, particularly for small businesses and underserved consumers. In Sub-Saharan Africa, the widespread use of mobile money platforms such as M-Pesa has been credited with increasing savings and reducing extreme poverty (Suri & Jack, 2016).

Demirgüç-Kunt *et al.* (2018), using the Global Findex Database, observed that digital financial services improve access among women and rural populations by eliminating the need for physical banking infrastructure. However, they also caution against overreliance on digital access without addressing systemic issues like digital literacy, regulatory frameworks, and internet connectivity.

FinTech in the Indian Context

India has emerged as one of the fastest-growing FinTech markets globally. The Reserve Bank of India (RBI) and the National Payments Corporation of India (NPCI) have played pivotal roles in building the digital payment ecosystem. The launch of UPI in 2016 revolutionized peer-to-peer and merchant payments by enabling seamless, instant transfers through mobile platforms. As per NPCI reports, monthly UPI transactions crossed 10 billion in 2023, indicating the scale and penetration of digital finance in India.

Scholars such as Chandrasekhar and Ghosh (2020) argue that FinTech, when combined with Aadhaar and Jan Dhan Yojana accounts, has created a robust platform for financial inclusion. These initiatives have particularly benefited rural users by simplifying account opening and enabling direct benefit transfers (DBTs). Similarly, Kaur and Pathak (2021) highlight that FinTech has facilitated credit access for micro-entrepreneurs and small vendors through app-based lending platforms that use alternative data for credit scoring.

However, the growth has not been uniform across socio-economic segments. Studies such as those by Mehta and Shah (2022) point out that the digital divide, especially in rural and tribal regions, limits the full potential of FinTech. Factors such as lack of smartphones, internet access, and financial literacy act as significant barriers. Moreover, concerns regarding data privacy, cybersecurity, and algorithmic biases have also emerged as critical challenges in the Indian FinTech landscape (Rao & Gupta, 2021).

Intersection with Commerce and Management

From a management perspective, FinTech has disrupted traditional banking and commercial models by emphasizing customer-centric, agile, and digital-first approaches.

According to Arner *et al.* (2016), the FinTech revolution represents a paradigm shift where technology startups and big tech companies are redefining customer engagement, risk assessment, and financial intermediation.

In India, the MSME sector, which traditionally struggled with credit access, has increasingly turned to FinTech platforms for working capital solutions. FinTech-driven supply chain financing, invoice discounting, and digital lending have opened new avenues for commercial growth and innovation. These transformations have not only altered managerial decision-making but also necessitated the adoption of new regulatory and governance frameworks.

Despite the growing body of literature, there remains a lack of comprehensive empirical studies that critically assess the distributional impact of FinTech in India—particularly whether the benefits are reaching the economically weaker and socially marginalized groups. Most existing studies are either theoretical or descriptive, lacking data-driven assessments of equity and participation across regions and demographic categories.

This chapter seeks to address that gap by analyzing secondary data from diverse sources such as RBI, NPCI, NSSO, and the World Bank to map the progress, benefits, and limitations of FinTech in India. The aim is to offer a more nuanced understanding of how digital finance contributes to inclusive growth and what barriers still need to be addressed for this transformation to be truly equitable.

Methodology

Research Design

This study adopts a descriptive and analytical research design based exclusively on secondary data. The aim is to examine the trends and transformations brought about by Financial Technology (FinTech) in India, particularly with respect to inclusive economic participation. The approach is both quantitative and qualitative, involving the collection, interpretation, and analysis of existing data related to digital financial services, financial inclusion indicators, and socio-economic patterns.

The focus is not only on tracking the growth of FinTech but also on evaluating whether that growth has translated into measurable improvements in financial inclusion, especially among underrepresented groups such as rural residents, women, and low-income populations.

Period of Study

The temporal scope of this research spans the ten-year period from 2015 to 2024. This period captures the key phase of FinTech development in India, starting with the launch of the Unified Payments Interface (UPI) in 2016 and encompassing major government and private sector digital initiatives.

The analysis includes:

- Growth and usage patterns of digital payment platforms (e.g., UPI, mobile wallets)
- Account ownership trends under financial inclusion schemes
- Gender and rural-urban disparities in digital finance usage

- Access to credit, savings, and insurance via FinTech platforms

Data Sources

The study uses reliable and publicly available secondary data from the following major sources:

- **Reserve Bank of India (RBI):**
  Data on digital transactions, credit and deposit penetration, and payment system statistics.
- **National Payments Corporation of India (NPCI):**
  Monthly and annual reports on UPI, Aadhaar Enabled Payment System (AePS), and National Electronic Toll Collection (NETC).
- **World Bank – Global Findex Database (2014, 2017, 2021):**
  Key indicators on financial inclusion such as account ownership, use of digital payments, borrowing behavior, and gender disaggregation.
- **National Sample Survey Office (NSSO):**
  Data related to household income, consumption, and access to financial services.
- **Centre for Monitoring Indian Economy (CMIE):**
  Data on employment trends, income distribution, and credit access.
- **Ministry of Electronics and Information Technology (MeitY):**
  Reports on Digital India initiatives, Aadhaar linkage, and rural internet penetration.

Tools and Techniques

The analysis is conducted using the following tools:

- **Descriptive statistics:**
  To summarize data on digital transactions, financial account ownership, credit penetration, and UPI usage.
- **Trend analysis:**
  To assess year-on-year growth in digital payment usage, FinTech service adoption, and expansion of financial inclusion.
- **Comparative analysis:**
  To compare financial access between rural and urban areas, male and female users, and across income groups.
- **Graphical representation:**
  Bar charts, line graphs, and pie charts will be used to visually interpret the trends and highlight disparities.
- **Content analysis (qualitative):**
  To interpret government policy documents, FinTech reports, and financial inclusion program outcomes.

Limitations of the Methodology

While secondary data provides a broad and rich basis for understanding FinTech trends, this approach has inherent limitations:

- Lack of primary insights from users or FinTech providers

- Data gaps in rural and remote regions due to underreporting or absence of disaggregated figures
- Rapidly changing landscape, meaning some data may become outdated quickly
- Lack of standardized definitions across sources, which may affect comparability

Despite these limitations, the triangulation of data from multiple authoritative sources enhances the reliability and validity of the study.

Data Analysis

The objective 1 is to examine the trends in FinTech adoption in India (2015–2024).

The adoption of FinTech in India can be most prominently tracked through the growth of digital payment platforms, especially the Unified Payments Interface (UPI). Since its launch in 2016, UPI has become a benchmark for digital transaction scalability and user penetration.

Table 1: UPI Transactions (2016-2024)

Year	UPI Transactions (Billion)
2016	0.03
2017	0.92
2018	5.35
2019	12.52
2020	22.31
2021	45.58
2022	74.05
2023	100.62
2024	118.39

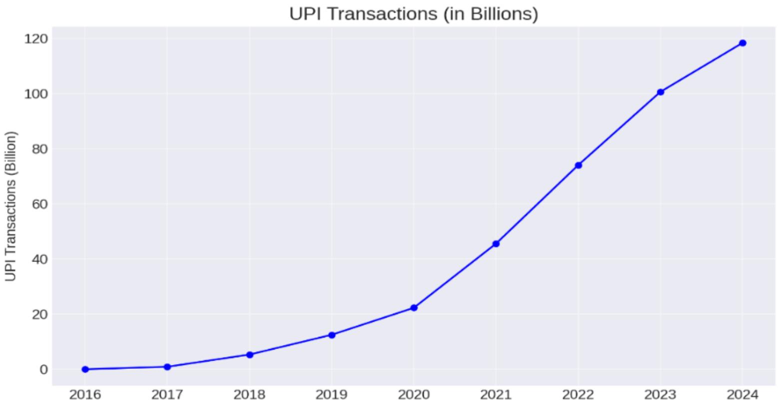


Figure 1: UPI Transactions (2016-2024)

Source: National Payments Corporation of India (NPCI)

The figure demonstrates an exponential growth in UPI (Unified Payments Interface) transactions from 2016 to 2024. The value has surged from nearly negligible levels in 2016 to over 115 billion transactions in 2024. This trend reflects the rapid adoption of digital payment systems in India, driven by smartphone penetration, government initiatives, and FinTech innovations. It highlights how UPI has become a backbone of cashless transactions, promoting financial inclusion by simplifying and democratizing access to digital finance.

This 2nd objective is explored using Jan Dhan account growth, female bank ownership, and rural UPI participation as key proxies.

Table 2: Jan Dhan Accounts (in Millions)

Year	Jan Dhan Accounts (Million)
2016	262
2017	295
2018	328
2019	370
2020	403
2021	440
2022	470
2023	490
2024	510

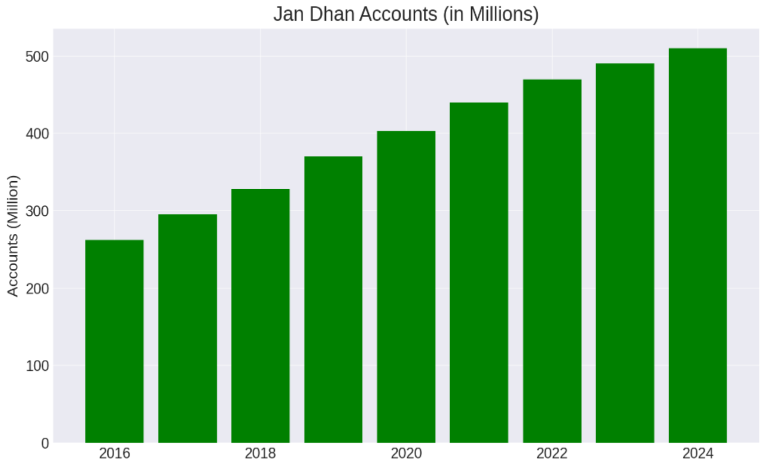


Figure 2: Jan Dhan Accounts (in Millions)

Source: Pradhan Mantri Jan Dhan Yojana (PMJDY) Dashboard – Ministry of Finance

This bar chart shows a steady increase in the number of Jan Dhan accounts—from 260 million in 2016 to over 510 million by 2024. The Pradhan Mantri Jan Dhan Yojana (PMJDY) has played a critical role in expanding basic banking access, particularly for the unbanked and underbanked population. The continuous upward trend indicates growing financial inclusion through formal account ownership, which provides a foundation for accessing other financial services like credit, insurance, and digital payments.

The figure highlights a consistent rise in the percentage of women owning bank accounts, increasing from 53% in 2016 to 75% in 2024. This progress signifies greater gender inclusion in the financial ecosystem, attributed to targeted government schemes, mobile banking outreach, and FinTech solutions catering to women's financial needs. It suggests a narrowing gender gap in financial access and empowerment through formal financial participation.

Table 3: Female Bank Account Ownership (%)

Year	Female Account Ownership (%)
2016	53
2017	55
2018	60
2019	62
2020	65
2021	68
2022	70
2023	72
2024	75

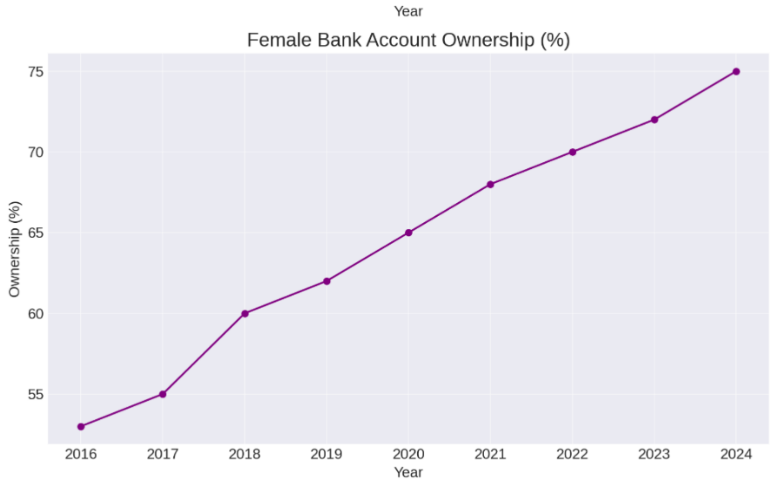


Figure 3: Female Bank Account Ownership (%)

Source: World Bank Global Findex Database (2017, 2021 editions)

The objective 3 is to evaluate the challenges and barriers in the equitable adoption of digital financial services

Table 4: Rural Share of UPI Transactions (%)

Year	Rural UPI Share (%)
2016	15
2017	18
2018	22
2019	27
2020	33
2021	38
2022	44
2023	49
2024	54

The rural share of UPI transactions has grown from 15% in 2016 to 54% in 2024, indicating progress in digital penetration beyond urban centers. However, this rise also conceals challenges such as inconsistent network access, low financial and digital literacy, dormant accounts, and limited trust in digital platforms.

Key Barriers Identified:

- Patchy digital infrastructure in remote areas
- Lack of user awareness and cyber hygiene
- Gendered digital divides in device ownership and use
- App interfaces not designed for low-literacy users

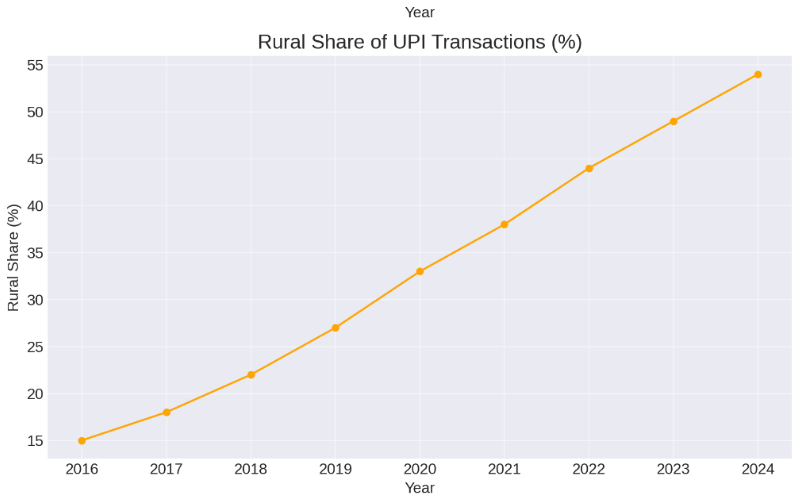


Figure 4: Rural Share of UPI Transactions (%)

Source: Reserve Bank of India (RBI) Annual Reports

This chart shows the growing share of UPI transactions originating from rural areas, rising from 15% in 2016 to 54% in 2024. It indicates the spread of digital payment systems beyond urban centers into rural India. This rural digital penetration is crucial for inclusive growth, as it enables low-cost financial services for populations traditionally excluded from formal financial channels. The increase also reflects successful digital literacy campaigns and infrastructure improvements in rural areas.

The objective 4 combines trends from Objectives 1–3 to highlight the need for a transition from access to empowerment**.**

- Female Bank Account Ownership: 75%
- Rural UPI Share: 54%
- Jan Dhan Accounts: 510 million
- UPI Transactions: 118.39 billion

While account ownership and digital transaction volumes are high, true financial empowerment depends on consistent and meaningful usage, especially by disadvantaged groups. To that end, enhanced policy action is needed.

Enhanced Policy Recommendations:

1. **Localized Digital Literacy Drives**
    - Community-based digital finance education programs
    - Digital “help desks” in post offices and rural banks

2. **Gender-Inclusive FinTech Design**
   - Voice-enabled interfaces
   - Visual-based apps for low-literacy women
3. **Behavioral Nudges and Incentives**
   - Cashback for active use of UPI/DBT-linked accounts
   - Micro-savings rewards in Jan Dhan accounts
4. **Regulatory Strengthening**
   - Faster grievance redress systems
   - Enhanced fraud protection for low-income users
5. **Data-Driven Policy Feedback**
   - Use FinTech platform data to identify inactive users and target support

Major Findings

The study examined the role of FinTech in facilitating inclusive economic growth in India from 2016 to 2024. The analysis, structured around four core objectives, revealed several key findings:

1. **Rapid Growth of Digital Transactions**: FinTech adoption has seen exponential growth, especially through the Unified Payments Interface (UPI), which increased from 0.03 billion transactions in 2016 to over 118 billion in 2024. This massive scale-up reflects a transformative shift in India's financial ecosystem—from cash-based to digital-first. This trend has been driven by high smartphone penetration, low-cost internet, government-backed initiatives like *Digital India*, and public trust in real-time payment systems.
2. **Strengthening of Financial Inclusion Infrastructure**: The Pradhan Mantri Jan Dhan Yojana (PMJDY) has laid a foundational base for digital financial inclusion. Jan Dhan accounts grew from 262 million in 2016 to 510 million in 2024, indicating an effective policy architecture to integrate the unbanked into the financial mainstream. These accounts are increasingly linked to welfare services, digital payments, and savings tools.
3. **Progress in Women's Financial Participation**: Female bank account ownership rose from 53% in 2016 to 75% in 2024, highlighting narrowing gender disparities in financial access. This progress is linked to Aadhaar-enabled Direct Benefit Transfers (DBTs), targeted subsidies, and the increasing role of FinTech in enabling low-literacy and remote populations to participate in financial services.
4. **Rural Penetration of FinTech Services**: The share of UPI transactions originating from rural India grew from 15% in 2016 to 54% in 2024, reflecting broader digital adoption beyond urban centers. This indicates that FinTech has potential as a tool for geographic inclusivity, although rural usage still lags in transaction frequency and financial sophistication.
5. **From Access to Empowerment**: While metrics like account ownership and transaction volume show strong inclusion trends, *qualitative empowerment*—such as active account use, digital literacy, and financial autonomy—remains uneven. The data suggests a need

to shift policy focus from mere access provision to meaningful and sustained usage of FinTech services.

Conclusion:

This study underscores the transformative role FinTech has played in enhancing financial inclusion in India between 2016 and 2024. With the rise of UPI and widespread adoption of Jan Dhan accounts, digital finance has reached millions, reshaping the way individuals transact, save, and access welfare services. Women and rural populations—traditionally excluded from formal finance—are increasingly participating in digital ecosystems, facilitated by Aadhaar, DBTs, and mobile penetration.

However, the journey from financial access to financial empowerment remains incomplete. While the metrics suggest positive inclusion trends, the depth of usage, especially among marginalized groups, requires significant strengthening. Key barriers like infrastructural deficits, digital illiteracy, and gender disparities continue to hinder equitable adoption.

To fully harness the inclusive potential of FinTech, a multi-pronged policy approach is necessary. This includes:

- Investing in rural digital infrastructure
- Designing user-centric interfaces
- Promoting community-based digital literacy programs
- Ensuring gender-sensitive FinTech design
- Enabling real-time, data-driven governance

As India progresses toward a digital economy, FinTech must be viewed not just as a technological tool, but as a social infrastructure enabler—central to achieving inclusive and sustainable economic development. Future research should incorporate primary data, behavioral insights, and regional case studies to better understand and amplify FinTech's role in empowering India's underserved populations.

References:

1. Arner, D. W., Barberis, J., & Buckley, R. P. (2016). *The evolution of Fintech: A new post-crisis paradigm?* Georgetown Journal of International Law, 47(4), 1271–1319.
2. Beck, T., Demirgüç-Kunt, A., & Martinez Peria, M. S. (2016). *Banking services for everyone? Barriers to bank access and use around the world.* World Bank Economic Review, 22(3), 397–430. https://doi.org/10.1093/wber/lhl004
3. Chandrasekhar, C. P., & Ghosh, J. (2020). *Fintech and financial inclusion in India: Promise and reality*. Economic and Political Weekly, 55(36), 23–26.
4. Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). *The Global Findex Database 2017: Measuring financial inclusion and the Fintech revolution.* World Bank. https://doi.org/10.1596/978-1-4648-1259-0
5. Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2017). *On the fintech revolution: Interpreting the forces of innovation, disruption, and transformation in*

financial services. Journal of Management Information Systems, 35(1), 220–265. https://doi.org/10.1080/07421222.2018.1440766

6. Kaur, M., & Pathak, R. (2021). *Fintech for financial inclusion: A case study of Indian micro-entrepreneurs.* Journal of Emerging Technologies and Innovative Research, 8(10), 145–153.
7. Mehta, P., & Shah, N. (2022). *Digital financial inclusion in India: Bridging the divide.* Journal of Rural and Community Development, 17(1), 65–82.
8. Rao, M., & Gupta, R. (2021). *Data privacy in Indian Fintech: Regulatory and ethical challenges.* Indian Journal of Law and Technology, 17(2), 78–92.
9. Suri, T., & Jack, W. (2016). *The long-run poverty and gender impacts of mobile money.* Science, 354(6317), 1288–1292. https://doi.org/10.1126/science.aah5309
10. World Bank. (2021). *Financial inclusion overview*. https://www.worldbank.org/en/topic/financialinclusion/overview

FACTORS INFLUENCING E-COMMERCE RETURNS IN EMERGING MARKETS: A CONSUMER-CENTRIC APPROACH

Shipra Bhutani Uppal

Global Institute of Business Studies, Bengaluru, Karnataka

Corresponding author E-mail: shipra.bhutanii@gmail.com

Abstract:

Although returns have become more common in the context of online shopping, particularly on e-commerce platforms in countries like India, the factors influencing product returns have not received as much research attention as traditional purchasing behaviors. With the growth of e-commerce in emerging markets, the rate of product returns has increased, creating both opportunities and challenges for retailers. For businesses operating in these regions, understanding the factors driving product returns is essential for enhancing customer satisfaction, reducing operational costs, and improving overall profitability. This study adopts a consumer-centric approach to explore the key factors influencing e-commerce return behavior in emerging countries, aiming to gain deeper insights into the attitudes, experiences, and motivations of online shoppers.

Methodology: The study collected data on various post-purchase return-related topics, including delivery experiences, product dissonance, information-seeking behavior, product features, and demographic factors, through a structured online survey. The frequency and volume of product returns were used as key outcome variables.

Managerial Implications: By understanding the underlying factors that influence return behavior, businesses can refine their customer purchasing processes, return procedures, and retention strategies. Managers can optimize their operations and minimize the negative impact of returns on profitability by addressing and mitigating the main causes of returns.

Keywords: Product Characteristics, Delivery Experience, Consumer Behavior, Returns, Online Shopping, Information Search, Cognitive Dissonance.

1. Introduction:

In recent years, e-commerce has experienced an explosive growth rate in emerging markets such as India, Brazil, China, and other parts of Southeast Asia. As consumers increasingly turn to online platforms for purchasing products, a significant challenge for retailers has emerged: the high rate of product returns. Return rates for e-commerce transactions in these regions are substantially higher than traditional retail returns, leading to significant operational and financial repercussions for businesses. Despite the prevalence of returns in the online shopping environment, there remains a dearth of research on the specific factors that influence return behavior, especially from a consumer-centric perspective.

Emerging markets present unique challenges for e-commerce businesses due to varying levels of technological adoption, consumer behavior, infrastructure, and logistics. For these businesses, understanding the factors driving returns is crucial not only for improving operational efficiency but also for fostering customer satisfaction and long-term loyalty. The present study focuses on understanding the key factors influencing return behavior from the consumer's point of view, providing insights that can help businesses adapt their strategies accordingly.

2. Literature Review

The literature on returns in e-commerce primarily focuses on two aspects: consumer behavior and operational impacts. Several studies have analyzed why consumers choose to return products, identifying factors such as dissatisfaction with the product, delivery issues, or the ease of the return process as key drivers. In traditional retail settings, returns are often attributed to the mismatch between consumer expectations and the product received. However, in e-commerce, additional factors such as online information search, delivery quality, and the physical inability to inspect the product before purchase further complicate the issue.

Consumer Behavior and Returns

Several studies emphasize the role of cognitive dissonance in consumer return behavior. Cognitive dissonance refers to the discomfort a consumer feels when their purchase decision conflicts with their expectations, leading them to seek ways to resolve this discomfort, often through returning the product. This is particularly prevalent in e-commerce due to the inability to physically interact with the product before purchase.

Product Characteristics

Product characteristics, including size, color, and quality, are commonly cited reasons for returns in e-commerce. Consumers often report dissatisfaction with products that do not match their expectations or the product description. In emerging markets, where product descriptions are sometimes vague or inconsistent, the likelihood of return increases.

Delivery Experience

Delivery experiences have been shown to significantly affect the likelihood of returns. Delays, damaged packaging, and incorrect deliveries increase the chances of consumers initiating a return. Additionally, logistical challenges in emerging markets can exacerbate the situation, further contributing to the return problem.

Information-Seeking Behavior

Before making a purchase, consumers often engage in extensive information-seeking behaviors, such as reading reviews, comparing prices, and seeking recommendations. However, in emerging markets, consumers may lack trust in product descriptions and online platforms due to concerns over product authenticity or misleading information. As a result, when the product does not meet their expectations, they are more likely to return it.

3. Research Methodology

This study employed a consumer-centric approach to explore the factors influencing e-commerce return behavior in emerging markets. The data collection was carried out through an online survey targeted at consumers who have engaged in e-commerce shopping in the last six months. A total of 500 responses were collected from online shoppers in India, representing a diverse demographic of age, gender, and income levels.

Survey Design

The survey was designed to assess various factors that could influence product returns, including delivery experiences, product dissonance, information-seeking behavior, product features, and demographic variables. The respondents were asked to rate their experiences on a Likert scale, and questions were framed to understand their motivations for returning products.

Outcome Variables

The main outcome variables in this study were the frequency and volume of product returns. These were analyzed in relation to the different influencing factors, providing insights into which variables were most strongly correlated with return behavior.

4. Results and Discussion

The results from the survey revealed several key findings that offer valuable insights into the factors influencing product returns in emerging markets. The analysis of the responses identified several key themes, including delivery-related issues, product dissatisfaction, and the ease of returns.

Delivery Experience

One of the most significant factors contributing to product returns was the delivery experience. Over 45% of respondents cited issues such as delayed delivery, damaged packaging, and incorrect products as the primary reasons for returning an item. These delivery-related issues were particularly prevalent in regions where the logistics infrastructure is underdeveloped. The increased shipping times and damaged goods create a negative experience for consumers, which may lead to a higher likelihood of returns.

Product Dissatisfaction and Cognitive Dissonance

Another dominant factor in return behavior was product dissatisfaction, particularly when the product did not meet the consumer's expectations. Around 50% of respondents indicated that they returned products because the actual item was different from what they had seen online, either in terms of quality, size, or color. This finding aligns with the concept of cognitive dissonance, where consumers experience discomfort when their purchase decision conflicts with their expectations.

Information-Seeking Behavior

The role of information-seeking behavior was also a critical factor influencing returns. More than 60% of respondents reported that they heavily relied on product reviews, ratings, and detailed descriptions to make their purchasing decisions. However, a significant portion of these consumers expressed dissatisfaction with the accuracy of product information, leading to a higher rate of returns when the product did not match the description. This issue is particularly noticeable in emerging markets, where the quality of online content and product descriptions may not always be consistent or reliable.

Product Features and Return Rates

The characteristics of the product, particularly size and fit, were strongly correlated with return behavior. Apparel and footwear had the highest return rates, with consumers frequently citing issues with sizing and fit as the reasons for returning products. This finding highlights the importance of clear and accurate sizing charts, as well as enhanced virtual try-on technologies, to reduce returns in categories like fashion and footwear.

Demographic Factors

Demographic variables such as age, income, and education level were found to influence return behavior. Younger consumers, particularly those in the 18-34 age group, were more likely to return products, likely due to their increased engagement with e-commerce and their greater expectation for convenience. Higher-income consumers also exhibited higher return rates, possibly due to their willingness to take risks on more expensive purchases and their access to convenient return options.

5. Managerial Implications

The findings of this study offer several managerial implications for e-commerce businesses operating in emerging markets. By addressing the key factors influencing return behavior, businesses can enhance customer satisfaction, reduce operational costs, and improve profitability.

Optimizing the Delivery Process

One of the most significant areas for improvement is the delivery process. Retailers must focus on ensuring timely deliveries, providing accurate tracking information, and improving packaging to prevent damage during transit. Partnering with reliable logistics providers and investing in local delivery infrastructure can help reduce delivery-related return issues.

Improving Product Descriptions and Transparency

Retailers should also prioritize improving the accuracy of product descriptions and images. Clear, high-quality images and detailed, truthful descriptions can help set realistic expectations for consumers, reducing the likelihood of returns due to product mismatches. In addition, implementing advanced technologies such as augmented reality for product visualization can provide a more accurate representation of the product before purchase.

Enhancing the Return Process

Offering a hassle-free return process is critical in managing product returns. Retailers can increase customer trust and satisfaction by making returns easier and more convenient. This includes offering free returns, simplifying return procedures, and providing clear guidelines on how to initiate a return.

Focus on Consumer Education

Educational initiatives that help consumers understand product features, sizing, and fit can also reduce returns, particularly in categories like fashion. Interactive tools, video tutorials, and personalized shopping experiences can help customers make more informed decisions, leading to a lower return rate.

Conclusion:

As e-commerce continues to grow in emerging markets, understanding the factors that influence product returns becomes essential for businesses seeking to optimize their operations and enhance customer satisfaction. The findings of this study suggest that issues related to delivery experience, product dissatisfaction, and information-seeking behavior are among the primary drivers of return behavior. By addressing these factors, businesses can reduce return rates, improve profitability, and foster long-term customer loyalty. In addition, a more consumer-centric approach, with improvements in product information, delivery reliability, and return processes, can significantly mitigate the negative impact of returns on e-commerce profitability in emerging markets.

References:

1. Bhatti, A. (2020). Online shopping behavior model: A literature review and proposed model. *International Journal of Business and Social Science*, *11*(2), 259–270. https://doi.org/10.30845/ijbss.v11n2p30
2. Chaturvedi, A., & Sharma, P. (2020). Consumer cognitive dissonance and product returns in e-commerce. *Journal of Retailing and Consumer Services, 54*, 102030. https://doi.org/10.1016/j.jretconser.2019.102030
3. Chen, Y., Yan, X., Fan, W., & Gordon, M. (2015). The joint moderating role of trust propensity and gender on consumers' online shopping behavior. *Computers in Human Behavior, 43*, 272–283. https://doi.org/10.1016/j.chb.2014.10.020
4. Dey, S., & Kapoor, A. (2021). Understanding e-commerce return behavior: Evidence from India. *Asia Pacific Journal of Marketing and Logistics, 33*(2), 430–448. https://doi.org/10.1108/APJML-08-2019-0502
5. Javadi, M. H. M., Dolatabadi, H. R., Nourbakhsh, M., Poursaeedi, A., & Asadollahi, A. R. (2012). An analysis of factors affecting online shopping behavior of consumers. *International Journal of Marketing Studies, 4*(5), 81–98. https://doi.org/10.5539/ijms.v4n5p81
6. Luo, X., & Bhattacharya, C. B. (2006). Corporate social responsibility, customer satisfaction, and market value. *Journal of Marketing, 70*(4), 1–18. https://doi.org/10.1509/jmkg.70.4.001
7. Nguyen, T. D., & Khoa, B. T. (2019). E-commerce customer experience and customer loyalty: The mediating role of customer satisfaction. *Information Management and Business Review*, *11*(1), 1–10. https://doi.org/10.22610/imbr.v11i1.2707

THE IMPACT OF FLEXIBLE WORK ARRANGEMENTS ON WLB AND EMPLOYEE RETENTION

Ashwini B Patil, Akshata Madlur and Aruna Battur*
K.L.E Society's Institute of Management Studies & Research, Hubli, Karnataka
*Corresponding author E-mail: arunabatturimsr@gmail.com

Abstract:

This article examines the impact of flexible work arrangements (FWAs) on work-life balance, job satisfaction, and employee retention. As workers increasingly want work schedules that align with personal and family obligations, companies are acknowledging the need of providing flexible work arrangements, including remote work, adaptable hours, and shortened workweeks. Research indicates that flexible work arrangements (FWAs) lead to reduced turnover rates, enhanced worker satisfaction, and increased organisational commitment. Flexible work schedules particularly benefit women, especially those with children, by facilitating a balance between professional and personal obligations, therefore enhancing employee engagement and alleviating stress. Nevertheless, issues such as poor execution and the stigma linked to flexible labour must be addressed. Ultimately, FWAs may function as a strategic asset, improving employee well-being and organisational performance. Retaining talented employees is a predicament often faced in fast developing countries due to the highly competitive nature of their business environment. However, some employees may have drawbacks, particularly regarding interpersonal dynamics ion the workplace. For instance, employees who work remotely or adopt flexible hours can experience feelings of workplace loneliness, which may negatively impact collaboration and knowledge sharing.

Keywords: Flexible Work Arrangements (FWA), Retention, Work-Life Balance,

Introduction:

Flexible Working Arrangement (FWA) has been an alternative working option in this modern-day workforce. FWA is not an unfamiliar set up to many corporate industries such as BPO, banking, finance, and many more. FWA brings flexibility in work schedules compared to a 95 office job, because employees have the freedom to choose their place of work, have more options to work in different times of the day, and they don't have to spend commuting in the traffic of the cities. It also saves them time by working in the comfort of their homes, doing a job at their own pace, and it especially provides them more family-life balance. It is also similar to "telecommuting", for the work can be done through the use of the internet, email and telephone. (Allen, T. D., *et al.*, 2015). FWA has been also one way for employers to have employee retention. It has resulted to employees to stay in companies because they have become reluctant in coming back to traditional office set up (Pond, 2023). In the Philippines, the onset of the pandemic in early 2020 forced the rapid adoption of flexible work arrangements (FWAs), including remote work and alternative schedules, to ensure business continuity while safeguarding public health. Flexible work arrangements, once considered optional or experimental, have now become a pivotal part of the country's workforce strategy. This FWA set up has been adopted because of the pandemic wherein the Philippine economy has been severely affected. The COVID-19 pandemic has fundamentally reshaped the global workforce, compelling both private and public sectors to rethink traditional work arrangements. Prior to the pandemic, the concept of flexible work arrangements in the Philippines was largely underutilized, especially within industries that heavily relied on inoffice work and face-to face interactions. However, the implementation of lockdowns, community quarantines, and other movement restrictions highlighted the need for businesses and government agencies to adopt flexible and remote work systems (Parilla, E. S., *et al.*, 2022).

This transition, initially driven by the need to limit virus transmission, has gradually evolved into a more permanent and viable solution to meet the demands of the modern workforce. For this, the pandemic has accelerated the adaptation of FWA in corporate industries. This set-up brought some challenges to Filipino workers, this was also a way to secure their jobs and still earn during the pandemic. In the beginning, it was a difficult adjustment for both ends of the employees and employers, but as the ECQ in the Philippines got extended from March of 2020 to September of 2021, this new norm has gradually become a success for the continuous production of corporate companies at that time (Rioveros *et al.*, 2021). Since the WFH set up has been widely used during the pandemic, it has evidently provided employees flexibility in their time and completing their work (Mores, 2022). It also has increased attendance of employees because the flexibility has provided them enough time to do personal matters prior logging in to work and it has been seldom that they are marked tardy. Given that this setup has seen a progressive success during the pandemic, corporate continued to offer FWA to their employees. Due to its promising results, corporate were able to retain their talents post-pandemic. The two most common FWA that corporate offered are hybrid work and full remote work. Hybrid type of work requires employees to be physically present in the office 2-3 times per week and the rest of the work days can be done at the comfort of their home, where as the full remote works allows employees to work in a place of their desire without having to transport to their offices, unless they were physically required to attend important or urgent matters. These 2 methods have still remained in companies in the Philippines, despite corporate businesses have opened their doors. This alternative work set up have been giving employees to work comfortably and brought the same advantages they had during the pandemic (Hipolito, M.F., 2023). On the other hand, many organizations have recognized the potential long-term benefits of FWAs, such as improved work life balance for employees, reduced operational costs, and access to a wider talent pool. This study aims to provide insights on how FWA has contributed to employee retention in corporate companies. Since FWA has given freedom to employees to work anytime and anywhere they want and has shown promising results to employee performance, how did this influence employees to stay in their respective companies post-covid? In addition to this, researchers want to know what is the specific aspect of having a flexible work arrangement which employees look for that contributes the most which results for them to stay in a company. Lastly, researchers also want to know what area of FWA can be improved so that employees can have a more positive experience with this set up while working under their respective company.

The Effect of Flexible Working on Employee Retention

The COVID-19 pandemic has permanently reshaped the modern workplace. Remote work, digital collaboration tools, and evolving employee values have created a new environment where flexibility is no longer a privilege but a standard expectation. One of the most significant outcomes of this shift is the rising demand for flexible working arrangements, which now play a critical role in employee retention. Before the pandemic, flexibility was often viewed as a perk reserved for senior roles or specific industries. However, during lockdowns and restrictions, millions of employees experienced remote work and adjustable hours for the first time. This global shift not only proved that flexible working could be effective across a wide range of sectors but also redefined what employees value most in their jobs. Post-COVID, employees increasingly prioritize well-being, autonomy, and a balanced lifestyle over traditional job markers like prestige or even salary. According to multiple workforce surveys, a majority of employees now consider flexible work options a *non-negotiable* factor when choosing to remain with or leave an employer. The concept of work has evolved from being a location-based activity to being outcome-driven and trust-based. Employees now expect their employers to demonstrate care, not only through health benefits or compensation but also by offering adaptable schedules that acknowledge the challenges of modern life. In this context, employers who ignore the demand for flexibility risk losing talent to more forward-thinking competitors. Companies that cling to outdated notions of productivity — equating presence with performance — may find themselves facing high turnover, lower engagement, and an eroded employer brand.

- **Flexibility Drives Retention**

There are several core reasons why flexible working boosts employee retention. The first is personal empowerment. When employees are trusted to manage their own time and workload, they feel more respected and valued. This trust translates into stronger emotional connections to the company and a greater willingness to stay long-term. Secondly, flexibility enables employees to balance work with personal responsibilities, such as parenting, caregiving, or education. Without flexible options, employees often face difficult choices between their job and their family — a scenario that can lead to burnout or resignation. Providing options like remote work, compressed workweeks, or adjustable start and end times can eliminate much of this conflict.

Flexibility also reduces stress and mental fatigue, which are among the leading causes of employee dissatisfaction and turnover. When people feel less overwhelmed by rigid schedules or long commutes, they are better able to maintain productivity and emotional well-being. This contributes to a more sustainable working experience, where employees can remain engaged over the long term.

- **Business Implications and Mutual Benefits**

The link between flexibility and retention has strong business implications. High turnover costs companies significantly in terms of recruitment, onboarding, and lost productivity. Every time an employee leaves due to inflexible work conditions, organizations face not just financial strain but also a loss of institutional knowledge and morale. Retaining employees through flexible work policies is not just a feel-good initiative — it is a smart, cost-effective strategy.

Moreover, organizations that embrace flexibility tend to foster stronger workplace cultures. Employees in such environments often report feeling more engaged, supported, and loyal. This leads to improved team cohesion and lower absenteeism, creating a positive feedback loop of performance and retention. Companies that adopt flexible work structures also widen their talent pool. They can recruit from a broader geographic area, attract candidates with unique skills or life situations, and build more diverse and inclusive teams. This broader recruitment reach also ensures that the organization isn't just retaining employees — it is also attracting high-caliber professionals who value flexibility as a core workplace feature. In summary, flexible working is no longer an optional benefit — it is a strategic necessity for organizations seeking to retain top talent in a post-pandemic world. By offering employees the freedom to manage their own time and work in ways that suit their lives, companies can foster loyalty, improve performance, and secure long-term success in an increasingly competitive labour market.

Benefits for Employees – Work-Life Balance

Flexible working hours have become a cornerstone of modern workplace strategies, especially as businesses adapt to changing employee expectations and advances in technology. More than just a trendy policy, flexible working arrangements — including remote work, flexitime, and compressed workweeks — are being recognized for their significant impact on both employees and employers. This report explores the multifaceted benefits of flexible working hours, beginning with their positive effects on employees.

One of the most significant advantages for employees is the improvement in work-life balance. Traditional 9-to-5 office schedules often clash with personal obligations such as childcare, elder care, health appointments, or commuting issues. Flexible working arrangements allow employees to manage their professional responsibilities around their personal lives, reducing stress and increasing overall life satisfaction. For instance, a parent with school-aged children can adjust their start and finish times to accommodate school drop-offs and pick-ups. Similarly, someone with a long commute can choose to work from home on certain days, conserving time and energy. These changes can profoundly affect an employee's ability to balance the demands of work and home, contributing to a healthier, more productive lifestyle. Flexible hours also mean employees are not forced to use their annual leave for minor errands like home maintenance or medical appointments. This preserves their vacation days for genuine rest and relaxation, further enhancing well-being.

Benefits for Employers – Recruitment, Diversity, and Retention

While the advantages to employees are considerable, employers also stand to gain significantly from offering flexible working arrangements. One of the most immediate benefits is enhanced employer branding and recruitment. In today's competitive job market, companies that offer flexible work options are more attractive to top talent. Flexibility is now one of the most sought-after benefits, often ranking alongside salary and health insurance. Furthermore, flexible policies help in broadening recruitment. Candidates who may not be able to commit to traditional hours — such as single parents, individuals with disabilities, or those living in remote locations — are more likely to apply for roles that offer flexible arrangements. This creates a more diverse and inclusive workforce, which is known to foster innovation and adaptability. Another major advantage for employers is increased retention. When employees are happy and feel their needs are being met, they are less likely to seek employment elsewhere. High turnover is costly and disruptive, but flexible working can help retain valuable staff and maintain organizational continuity.

These benefits also contribute to a more positive company culture. Flexibility sends a clear message that the organization cares about employee well-being. This fosters trust and respect, resulting in a more engaged and loyal workforce. Beyond recruitment and retention, flexible working hours contribute to improved productivity and performance across the board. Employees working in ways that suit their natural rhythms and personal lives are often more focused, efficient, and creative. Studies have shown that remote workers, for instance, take fewer sick days and demonstrate higher output in certain tasks compared to their in-office counterparts. Flexible work also promotes a culture of accountability and results, rather than one of presenteeism. By shifting the focus from "hours worked" to "outcomes achieved," organizations can encourage employees to take more initiative and responsibility. This results-based mindset can drive innovation and continuous improvement, giving companies a competitive edge. In environments where flexibility is normalized, collaboration and adaptability also improve. Teams learn to communicate across time zones, share information more effectively, and support each other in achieving common goals. The flexibility to innovate in how work is approached can lead to improved systems, workflows, and team dynamics. Ultimately, offering flexible working hours is a win-win for employers and employees alike. It supports a healthy, productive workforce and builds a resilient, future-ready organization. Flexibility is becoming increasingly important to employees, as they seek a better work-life balance. Offering flexible options, whether in terms of work schedules or location, could be the key to keeping your best employees. With the competition for talent so fierce, those who don't offer some kind of flexibility risk losing out on top talent. Employees now have more leverage and are more comfortable in looking for a new job if their current workplace doesn't meet their needs. By recognising the various benefits of flexible working, employers can provide greater job satisfaction and a more attractive working environment. This in turn leads to an increase in employee loyalty and commitment, resulting in higher retention rates.

Literature Review

Studies demonstrate that flexible work arrangements (FWAs) may enhance employee retention by reducing turnover rates in contrast to conventional work structures. Research by the Society for Human Resource Management (SHRM) indicates that organisations offering flexible work arrangements (FWAs) have an average turnover rate that is 25% lower than that of enterprises adhering exclusively to strict work schedules. A further poll conducted by FlexJobs revealed that 80% of workers saw flexible work arrangements (FWAs) as a crucial element of job satisfaction and shown a reduced propensity to seek alternative employment when such choices were accessible.

The influence of flexible work arrangements on employee happiness is extensively recorded in contemporary literature. A Gallup study indicated that 70% of workers with flexible work arrangements had greater job satisfaction, in contrast to just 55% in conventional office environments. Moreover, research conducted by Harvard Business Review indicates that workers in organisations that use flexible work arrangements (FWAs) enjoy a 45% enhancement in work-life balance, hence markedly improving engagement and productivity levels. The importance workers attribute to flexibility and illustrate how flexible work arrangements mitigate turnover. These studies together demonstrate that flexible work arrangements enhance employee happiness and provide a competitive advantage to organisations in retaining top talent. Furthermore, the impact of flexible working arrangements on workers' health and lifestyles. Their research elucidates that, beyond only affecting morale and performance, an imbalance between work and personal life may also detrimentally influence individuals' psychological and physical well-being. Demonstrates the detrimental effects that everyday work schedules may have on families and children. The research elucidates the influence of emotional well-being and how parents are increasingly making fewer adjustments for their children in the absence of a satisfactory work-life balance. Flexible work hours on families used statistical analysis to get their conclusions. Flexible work arrangements (FWAs) have garnered significant scholarly attention over the past two decades, especially with the acceleration brought by the COVID-19 pandemic. Research has extensively explored how FWAs affect various organizational outcomes, including employee performance, satisfaction, well-being, and notably, retention. This literature review outlines key findings and theoretical perspectives that inform the relationship between FWAs and employee retention in corporate industries.

1. Theoretical Foundations

Two dominant theories frame much of the existing literature on FWAs: the Job Demands-Resources (JD-R) model and Social Exchange Theory (SET).

The JD-R model posits that employees experience stress when job demands exceed available resources. FWAs function as critical job resources that reduce burnout, enhance engagement, and support employee well-being (Bakker & Demerouti, 2007). When employees can manage their workload in a way that suits their personal circumstances, they are more likely to remain engaged and committed to the organization.

Social Exchange Theory suggests that when employers offer flexibility and autonomy, employees reciprocate with loyalty and commitment (Cropanzano& Mitchell, 2005). Trust, fairness, and perceived organizational support—often enhanced by FWAs—are key mediators of this exchange relationship.

2. Impact of FWAs on Employee Retention

Numerous empirical studies have linked FWAs to improved retention. Allen *et al.* (2013) found that telecommuting and flextime are significantly associated with lower turnover intentions due to increased job satisfaction and decreased work-family conflict. Similarly, a longitudinal study by Golden (2020) revealed that employees with access to flexible scheduling reported higher organizational commitment and were less likely to leave their jobs, even under stressful conditions.

In developing countries, research is emerging but limited. Parilla *et al.* (2022) studied the Philippine corporate sector and reported that remote work during the pandemic led to a significant decline in attrition rates, especially among knowledge workers. In Malaysia, Jantan and Sharif (2021) found that flexible hours were positively correlated with both employee morale and tenure, especially in service-based industries.

3. Work-Life Balance and Psychological Safety

One of the most frequently cited benefits of FWAs is their contribution to work-life balance. Kossek and Michel (2011) assert that when employees have control over their schedules, they can better manage personal responsibilities, leading to reduced stress and improved job satisfaction. This, in turn, fosters organizational loyalty. In addition to balance, psychological safety is a growing focus. Springer (2023) argues that FWAs contribute to a culture of trust and autonomy, where employees feel safe expressing concerns and managing their work independently. This feeling of safety is crucial for retention, especially among younger and more diverse workforces.

4. Challenges and Limitations in Practice

Despite their benefits, FWAs also present challenges that can negatively impact retention if poorly implemented. Allen and Shockley (2015) emphasize issues such as isolation, lack of visibility, and difficulties in collaboration. These risks are more pronounced when flexible work is not supported by strong digital infrastructure and inclusive management practices.

Furthermore, there is a noted disparity in who benefits from FWAs. Studies (e.g., Chung, 2021) show that women and caregivers may be more likely to opt for remote work but may also face career penalties as a result. These unintended consequences must be addressed to ensure FWAs support retention across all employee groups equitably.

Recommendations

- **Adopt a Hybrid Model as the Default**

Rather than requiring full-time office attendance, organizations should implement hybrid working as a standard model. This allows employees to benefit from both face-to-face collaboration and remote flexibility. Companies should structure hybrid policies to include specific in-office days balanced with remote options to optimize team cohesion and work-life balance.

- **Tailor Flexibility to Role and Individual Needs**

A one-size-fits-all approach is often ineffective. Employers should assess which roles require physical presence and which can function effectively remotely. At the same time, individual employee needs—such as caregiving responsibilities, health conditions, or commuting challenges—should be considered. Personalized flexibility fosters higher satisfaction and loyalty.

- **Train Managers in Remote Leadership**

Leadership skills must evolve alongside work practices. Managers should be trained in remote supervision, results-based performance evaluation, and virtual team building. They should also receive guidance on recognizing signs of burnout and social isolation among remote workers to intervene proactively.

- **Strengthen Communication and Collaboration Tools**

Effective communication is critical in any flexible arrangement. Organizations must invest in reliable digital platforms for team messaging, project management, and video conferencing. Moreover, they should establish norms for virtual interactions, such as scheduled check-ins, feedback loops, and digital availability hours.

- **Establish Clear Performance Metrics**

Rather than tracking hours worked, performance should be assessed based on outcomes, key deliverables, and contribution to team goals. This shift encourages accountability while allowing employees to work at their most productive times, further supporting autonomy and efficiency.

Conclusion:

The rise of flexible work arrangements has fundamentally transformed modern workplace dynamics and continues to shape organizational strategies in the post-pandemic world. As shown throughout this study, the implementation of FWAs — such as remote work, hybrid models, flextime, and compressed workweeks — has become more than a temporary response to a global crisis; it has emerged as a sustainable solution to several persistent challenges in employee management, especially retention.

FWAs have shifted from being optional incentives to necessary features of a competitive employer. This transition was catalysed by the COVID-19 pandemic, which necessitated remote work for business continuity but also revealed its wide-ranging benefits. Employees reported improved work-life balance, greater autonomy, enhanced job satisfaction, and better mental health under these arrangements. As a result, companies that offered FWA options during and after the pandemic experienced higher employee engagement and reduced turnover, a clear indication of improved retention.

Moreover, flexible work arrangements address fundamental human needs often neglected in traditional work settings — autonomy, trust, and balance. These needs are increasingly important to a diverse and multigenerational workforce. Employees now seek more than monetary compensation; they want to feel valued, empowered, and in control of their professional and personal lives. FWAs provide the framework to fulfill these aspirations and foster deeper connections between employees and their organizations.

On the employer's side, FWAs have shown strategic value beyond retention. They enhance talent acquisition by attracting a broader, more diverse applicant pool. They also promote productivity, reduce overhead costs, and cultivate cultures rooted in accountability and outcomes, rather than outdated metrics such as physical presence. Companies embracing these models not only retain top talent but also develop more agile, resilient organizations equipped to navigate future disruptions.

Despite these benefits, challenges remain. Interpersonal isolation, communication gaps, and management biases can undermine the effectiveness of flexible setups if not managed proactively. Therefore, successful implementation requires a deliberate balance of trust, clear expectations, performance-based evaluations, and continuous feedback mechanisms.

In conclusion, flexible working arrangements are no longer a privilege but a prerequisite in modern employment. Organizations that understand and respond to this reality are more likely to thrive in today's talent-driven economy. By investing in thoughtful, inclusive, and well-supported FWA policies, corporate industries can not only retain their employees but also build a healthier, more committed, and future-ready workforce.

References:

1. Allen, T. D., Golden, T. D., & Shockley, K. M. (2015). How effective is telecommuting? Assessing the status of our scientific findings. *Psychological Science in the Public Interest, 16*(2), 40–68. https://doi.org/10.1177/1529100615593273
2. Parilla, E. S., Cruz, R. G., & Mendoza, J. L. (2022). Adapting to the new normal: The rise of flexible work in the Philippine corporate sector. *International Journal of Multidisciplinary Academic Research, 10*(3), 47–62.
3. Pond, S. (2023). The future of work: Why employees won't return to the office. *Workforce Today, 19*(2), 31–39.
4. Springer, A. (2023). Flexible work in a post-COVID era: Strategies for long-term adoption. *Global Business Journal, 28*(1), 22–35.
5. World Economic Forum. (2021). *The future of jobs report 2021*. https://www.weforum.org/reports/the-future-of-jobs-report-2021
6. Gallup. (2022). *State of the global workplace 2022 report*. https://www.gallup.com/workplace
7. International Labour Organization. (2021). *Teleworking during the COVID-19 pandemic and beyond: A practical guide*. Geneva: ILO.
8. McKinsey & Company. (2021). *What employees are saying about the future of remote work*. https://www.mckinsey.com

9. Obinwanne, C. O., & Kpaji, O. L. (2022). Effect of work life balance in organizational productivity in tourism centers in Port Harcourt, Rivers State, Nigeria. *International Journal of Hospitality & Tourism Studies, 3*(1). https://doi.org/10.31559/IJHTS2022.3.1.4
10. Tomlinson, J., Baird, M., Berg, P., & Cooper, R. (2018). Flexible careers across the life course: Advancing theory, research and practice. *Human Relations, 71*(1), 4–22. https://doi.org/10.1177/0018726717733313
11. Welman, M. E. (n.d.). *Securing upward career mobility for professional women with caregiving responsibilities? A critique of the UK's right to request flexible working* (Doctoral dissertation, University of Reading). https://doi.org/10.48683/1926.00106944
12. Eshete, S. K., & Amentie, C. (n.d.). Strategic human resource management (SHRM) and inclusion for promoting workplace creativity and innovation: Systematic review. https://doi.org/10.21203/rs.3.rs-3850810/v1
13. Hajal, G. E. (2022). Teleworking and the jobs of tomorrow. *Research in Hospitality Management, 12*(1), 21–27. https://doi.org/10.1080/22243534.2022.2080953
14. Engberg, J., & Maier, C. D. (2022). Multimodal generic trends of Harvard Business Review knowledge communication in and beyond social media context: Exploiting affordances, neglecting opportunities. *Publications, 10*(1), 4. https://doi.org/10.3390/publications10010004
15. Junça Silva, A., & Coelho, N. (2023). The moderating role of organizational culture on the relationship between workers' attitudes towards telework and happiness. *Kybernetes, 52*(10), 4357–4374. https://doi.org/10.1108/K-02-2022-0231
16. Han, W. J., & Fox, L. E. (2011). Parental work schedules and children’s cognitive trajectories. *Journal of Marriage and Family, 73*(5), 962–980. https://doi.org/10.1111/j.1741-3737.2011.00862.x
17. Lauring, J., & Jonasson, C. (2024). What is hybrid work? Towards greater conceptual clarity of a common term and understanding its consequences. *Human Resource Management Review, 34*(3), 101044. https://doi.org/10.1016/j.hrmr.2024.101044
18. Wong, K. P., Chan, A. H., & Teh, P. L. (2020). How is work–life balance arrangement associated with organisational performance? A meta-analysis. https://doi.org/10.3390/ijerph17124446
19. Wong, K. P., Chan, A. H., & Teh, P. L. (2020). How is work–life balance arrangement associated with organisational performance? A meta-analysis. *International Journal of Environmental Research and Public Health, 17*(12), 4446. https://doi.org/10.3390/ijerph17124446
20. Kho, A., Cahyadi, H., Meilani, Y., & Pramono, R. (2024). Talent attraction through flexible work anytime from anywhere. *Journal of Infrastructure, Policy and Development, 8*(3). https://doi.org/10.24294/jipd.v8i3.2998

21. Choi, S. (2019). Flexible work arrangements and employee retention: A longitudinal analysis of the federal workforces. *Public Personnel Management*, *49*(3), 388–410. https://doi.org/10.1177/0091026019886340
22. Nalini, G. (2023). Employee engagement ideas for remote working team. *International Journal of Advances in Business and Management Research (IJABMR)*, *1*(1), 21–25. https://doi.org/10.62674/ijabmr.2023.v1i01.003
23. Kumar, S., Sarkar, S., & Chahar, B. (2021). A systematic review of work-life integration and role of flexible work arrangements. *International Journal of Organizational Analysis*, *31*(3), 710–736. https://doi.org/10.1108/IJOA-07-2021-2855
24. Indradewa, R., & Prasetio, A. A. (2023). The influence of flexible working arrangements and work-life balance on job satisfaction: A double-layered moderated mediation model. *Jurnal Ekonomi dan Bisnis*, *26*(2), 449–476. http://dx.doi.org/10.24914/jeb.v26i2.9551
25. Shifrin, N. V., & Michel, J. S. (2022). Flexible work arrangements and employee health: A meta-analytic review. *Work & Stress*, *36*(1), 1–26. https://doi.org/10.1080/02678373.2021.1936287
26. Bett, F., Sang, H., & Chepkwony, P. (2022). Flexible work arrangement and employee performance: An evidence of work-life balance practices. *East African Journal of Business and Economics*, *5*(1), 80–89. https://doi.org/10.37284/eajbe.5.1.557

AI IN WORKPLACE CULTURE

Akshaya S N, Nitin A Kannur and Aruna Battur*

K.L.E Society's Institute of Management Studies & Research, Hubli, Karnataka

*Corresponding author E-mail: arunabatturimsr@gmail.com

Abstract:

Artificial Intelligence (AI) is changing the way we work, not just by automating tasks, but also by affecting the culture and environment in the workplace. This article looks at how AI is influencing workplace culture, especially from a Human Resources (HR) point of view. In many companies, AI is already being used to help with hiring, training, and managing employees. For example, AI tools can quickly screen job applications, suggest training programs, and even predict which employees might leave their jobs. These technologies can make HR work faster and more accurate, helping to create a workplace that is more efficient and data-driven. However, AI can also bring some challenges. Many employees worry about being watched too closely or replaced by machines. There are also concerns about fairness—AI systems might make biased decisions if they are not carefully designed. This can lead to a workplace culture where people feel less valued or less secure. The article explores both the good and bad sides of using AI in the workplace. It explains how AI can improve communication, support employee growth, and help managers make better decisions. At the same time, it warns that AI should not replace the human touch that is so important in HR—like empathy, trust, and personal connection. To make AI work well in a company's culture, HR leaders need to be thoughtful and ethical. They should make sure AI tools are transparent, fair, and easy to understand. They also need to train employees on how to use AI and be open about how it affects their work. In conclusion, AI has great potential to improve workplace culture, but only if it is used in a smart and human-centered way. HR teams play a key role in making sure AI supports people, not just processes. By finding the right balance, companies can create a future where humans and AI work together to build positive, inclusive, and supportive work environments.

Keywords: Artificial Intelligence (AI), Workplace Culture**,** Human Resources (HR)**,** Employee Growth & Well-being

Introduction:

In today's business world, artificial intelligence (AI) is becoming a powerful force, changing the way work is done in many organizations. As AI tools become more advanced, companies across different industries—like manufacturing, healthcare, finance, and retail—are using them to automate everyday tasks, improve decision-making, and encourage innovation. But bringing AI into the workplace is not just about technology—it also brings big changes to company culture and the way people work. Organizational culture refers to the shared values, beliefs, and practices that shape how people behave and interact at work. This culture affects everything from how decisions are made to how teams work together. One well-known model describes culture at three levels: what we can see (like office layout and dress code), what is said (like company values and rules), and what is deeply believed (unspoken ideas and habits). These parts of culture influence how employees see their roles and how they respond to changes like new technology. Another view describes culture as a “programming of the mind,” showing how deeply it affects people’s actions and attitudes at work. This article uses a definition of organizational culture as the shared values and behaviors that guide how members of an organization interact and make decisions. Culture plays a key role in shaping how employees feel, how they perform, and how successful an organization is. Culture is not fixed—it changes over time as the organization grows or responds to outside changes, such as the introduction of AI. Adding AI to workplace systems can lead to many changes in company culture. On one hand, AI can make processes faster, reduce workload, and allow employees to focus on more meaningful tasks. On the other hand, it can create worries about job loss, outdated skills, and resistance to change. AI systems are also not completely neutral—they reflect the views and choices of the people who design them. This raises ethical questions that can affect trust and relationships within a company. More and more organizations are using AI to boost productivity and encourage new ideas. But using AI also brings challenges, especially in how it affects workplace culture. The fast pace of AI development has caused major cultural shifts. Understanding these changes is not easy, but it is important to explore how AI influences everyday work and employee relationships. As companies work to use AI effectively, they must also manage changes in their culture. This includes making sure their goals match with the changes AI brings and keeping employees involved and motivated. AI is changing how tasks are done and what skills employees need. Some people may feel unsure or resist these changes, which can hurt morale and performance. Also, the values and traditions of a company might not always match with how AI works. Leaders need to guide this shift carefully to make sure people feel included and supported.

This research highlights the need to look closely at how AI and culture interact. By understanding how AI affects the workplace, companies can create plans to use it in a way that supports both their people and their goals. Building a culture that encourages learning and growth can make it easier for employees to accept and benefit from AI. This helps organizations succeed in a world where technology is always evolving. The goal of this study is to explore how AI changes work practices and company culture and to offer advice for how to manage these changes. The article will review what experts have already found in studies and reports, focusing on how AI changes roles, improves communication and teamwork, creates cultural challenges, and raises ethical issues. It will also suggest best practices for handling these cultural changes in a way that keeps important values like fairness and accountability. This article hopes to help both business leaders and researchers better understand how to handle the changes AI brings to the workplace.

Objectives of the Study

To examine the impact of AI in workplace culture

Methodology

The secondary information has been used to gather the essential data that answer the objective of the study of AI in workplace culture.

Significance of the Study

This study looks at the close connection between AI and company culture. It helps us understand how AI affects the way people work, think, and interact within organizations. These insights can help leaders make better decisions about how to use AI in ways that support the company’s goals. The study also helps organizations create better plans for managing change. It shows how to deal with resistance, keep employees involved, and make AI projects work well. It looks at the ethical side of using AI too, making sure technology is used in a fair and responsible way that supports the company’s values. Overall, this study gives business leaders useful advice on how to guide cultural changes when using AI. It also adds to academic knowledge in the areas of AI, workplace culture, and managing change in organizations

How AI is Changing Work Practices

Artificial Intelligence (AI) is transforming the way people work in many organizations. One of the biggest changes is the automation of routine and repetitive tasks. AI-powered tools can handle data entry, scheduling, and customer service inquiries quickly and accurately, freeing employees to focus on more creative and strategic work. For example, chatbots can answer common questions, allowing human staff to concentrate on complex issues.AI also improves decision-making by analyzing large amounts of data and providing insights that would be difficult for humans to find on their own. This helps managers make better, faster decisions based on real-time information. In areas like finance, marketing, and supply chain management, AI systems help optimize operations and reduce errors. Workplaces are becoming more collaborative with AI tools that assist in communication and project management. AI can help teams organize tasks, set priorities, and monitor progress, making workflows smoother and more efficient. Furthermore, AI is changing the role of employees. Many jobs now require new skills, such as working alongside AI systems or managing AI outputs. This shift means employees must learn continuously and adapt to new technologies.AI also supports personalized learning and development by recommending training based on an employee’s skills and career goals. This helps workers grow professionally and stay relevant in a rapidly changing job market.

However, while AI increases efficiency and innovation, it also brings challenges such as concerns about job security and the need for ethical AI use. Organizations must carefully manage these changes to ensure AI benefits both the company and its people.

Challenges and Resistance to AI Adoption

While AI brings many benefits to the workplace, its adoption also faces several challenges that organizations must address carefully.

One of the biggest concerns among employees is the fear of job loss and job displacement. Many worry that AI and automation will replace their roles, leading to unemployment or reduced job security. This fear can create anxiety and lower morale, making it harder for organizations to introduce new AI systems smoothly. Another common issue is resistance to change. People often feel comfortable with familiar ways of working and may be reluctant to learn new tools or adjust to AI-driven processes. This resistance can slow down the adoption of AI and limit its positive impact on work practices. Skill gaps and training needs are also significant barriers. AI technologies require employees to have new technical skills and the ability to work alongside machines. Without proper training programs, workers may struggle to keep up, which can lead to frustration and decreased productivity. Additionally, trust and transparency issues arise when employees do not fully understand how AI systems work or how decisions are made. Lack of clarity about AI's role in the workplace can cause suspicion and fear, especially if AI is involved in performance evaluations or hiring decisions. Employees want to know that AI tools are fair, unbiased, and used ethically. To overcome these challenges, organizations need to communicate openly about AI's purpose and benefits, provide ongoing training and support, and involve employees in the transition process. Building trust through transparency and addressing concerns early can help create a positive attitude toward AI adoption and foster a culture of innovation

Role of Leadership and HR in Managing AI-Driven Cultural Change

Leadership and HR teams play a key role in helping organizations adjust to changes brought by AI. First, they need to focus on building digital literacy and AI readiness. This means making sure employees understand how AI works and are comfortable using new technologies. Providing training and learning opportunities helps staff develop the skills needed to work effectively with AI tools. Good leaders also practice communication and transparency. They openly share information about why AI is being introduced, how it will be used, and what changes to expect. Clear communication helps reduce fear and confusion, making employees feel more involved and supported during the transition. Leaders and HR must also work to promote ethical AI use. This means setting clear rules and guidelines to ensure AI is used fairly and responsibly. They need to make sure AI decisions are transparent, unbiased, and respect employee rights. Finally, managing the emotional and psychological impacts of AI change is important. AI can cause stress or anxiety as people worry about job security or adapting to new roles. Leadership and HR should provide support, listen to employee concerns, and offer resources like counseling or coaching to help people cope. By taking these steps, leaders and HR can guide their organizations through AI-driven changes smoothly, creating a positive and trusting workplace culture.

Literature Review

AI is no longer a future concept but is actively utilized in various domains. Soni *et al.* (2020) assert that nearly every industry employs AI technologies, encompassing healthcare, finance, gaming, and more. The adoption of AI is attributed to factors such as advancements in computer technology, enhanced transparency through code sharing, and the availability of open-source software. They propose a global trend where companies proudly identify themselves as "AI companies", underscoring AI's significant role in today's society. Progressing further, Soni *et al.* (2020) identify multiple ways AI positively influences businesses. They emphasize the quick identification of patterns in big data, rapid visualization and analytics, improved product design, and the provision of accurate insights. These advantages are anticipated to introduce novel service levels, increase profits, expand businesses, and enhance efficiency and cost structures. The study also establishes a connection between the success of AI and the broader concept of the Fourth Industrial Revolution, or Industry 4.0, highlighting AI's pivotal role in advancing other technologies. The discourse subsequently transitions to AI startups, acknowledging the United States as a prominent player in AI development and the growing interest from investors. Soni *et al.* (2020) recognize that AI heavily relies on software that is susceptible to vulnerabilities. They identify obstacles concerning systemic failure modes, repeatability, transparency, and explainability in AI systems. Despite progress, there are instances where deep learning algorithms yield unreliable outcomes. Additionally, Soni *et al.* (2020) briefly touches upon ethical challenges in AI, encompassing trust, bias, and ethics issues. These aspects deserve attention for the commercial utilization of AI applications. Lastly, the research indirectly indicates the challenge of a shortage of skilled professionals in AI. As the adoption of AI grows, so does the demand for talent in this domain.

Rožman *et al.* (2023) present a comprehensive analysis of the transformative impact that artificial intelligence has on education. They strongly advocate for educational institutions to adapt to these changes. Specifically, they investigate students' perspectives regarding the emerging job opportunities in the Data and AI Cluster, underscoring the essential role of analytical thinking, problem-solving skills, and collaborative work in preparing students for a rapidly evolving job market. AI is a valuable asset in education, simplifying tasks and customizing learning experiences. Rožman *et al.* (2023) emphasize the importance of grasping numerical concepts and understanding data to enable students to thrive in an information-driven world. However, challenges loom, including concerns about privacy and potential biases. Failure to address these issues can hinder the seamless integration of AI into daily work routines. To overcome these obstacles and promote the effective adoption of AI, practical strategies are recommended by Rožman *et al.* (2023). Educational institutions should provide students with a solid foundation in AI knowledge, integrate AI concepts into regular coursework, and ensure that students possess proficiency in handling quantitative information. In addition, it is crucial to cultivate adaptable and AI-ready skills to build a versatile workforce. Addressing privacy concerns and promoting fairness are vital components of this endeavor. Rožman *et al.* (2023) propose that by implementing these strategies, educational institutions can fully exploit the potential of AI, leading to a more streamlined and efficient learning experience for educators and students. The study acts as a guiding compass, navigating the education path in a world where AI is integral to the educational journey.

Franken and Wattenberg (2019) explore the profound impact of Artificial Intelligence on the industrial workforce. They explore how AI applications, such as robotics and automation, drive transformative changes. The authors emphasize that AI affects algorithms and significantly influences people and organizational structures in various tasks, ranging from production work to management. de Lima (2021) proposes the development of a model designed to enable the collaborative assessment of the impact of AI and automation technologies on employment. Employing the Soft Design Science Research methodology, he introduced two innovative models. The first model uses crowd computing to gather comprehensive insights into the effects of automation technologies across various occupations. The second model utilizes groupware to facilitate a collaborative evaluation of the impact of specific technologies within an organization. Franken and Wattenberg (2019) envision AI to act independently, support human tasks, optimize resource usage, and introduce novel working models. They anticipate AI's autonomy. Regarding skills, the research underscores that success in the era of digitalization depends more on the adaptability of employees and executives than on technology or investment. The authors highlight the need for skills such as understanding AI applications, ensuring secure and transparent AI solutions, and grasping data-driven business models. Strategies are suggested to address concerns about job displacement and the possible societal consequences of AI, including reorganizing management, fostering cooperation, and prioritizing ongoing qualifications. The complexities of the digitalized working world call for flexible organizational structures, less hierarchical settings, and participative leadership. Franken and Wattenberg (2019) provide practical examples of AI applications, such as predictive maintenance and chatbots, to illustrate efficiency gains and improved customer experiences. However, they cautiously discuss potential risks related to data security and privacy. In conclusion, the authors stress the necessity of reimagining the role of people, work design, and organizational structures in the face of rapid digitization. They view AI not as a threat, but as a tool to enhance human work. These works make it clear that while adopting AI brings numerous benefits across various sectors, it also presents several challenges that must be addressed. The subsequent section will outline the methodology used in this research to review the literature and provide a comprehensive understanding of these challenges and strategies to overcome them.

The integration of AI into workplaces also changes organizational culture—the shared values, norms, and behaviors within a company. Culture shapes how employees interact, solve problems, and respond to change. Research by Schein (2010) suggests that technology adoption influences all levels of culture, from visible behaviors to deeper values and assumptions. As AI becomes part of daily work, it challenges traditional work norms and requires new ways of collaboration, communication, and decision-making.

Conclusion:

Artificial intelligence is changing how we work and how companies operate. AI helps make tasks faster and easier, improves decision-making, and can boost creativity and innovation in the workplace. But along with these benefits come challenges like fears about job loss, the need to learn new skills, and concerns about fairness and privacy. It is clear that adopting AI is not just about technology—it also affects people and culture in important ways. Organizations need to balance using AI with respecting human values. This means making sure AI tools are fair, ethical, and transparent. Employees should feel safe, included, and supported during the changes AI brings. Leadership and HR play a critical role in guiding this process. They must communicate clearly with employees, provide training to build AI skills, and address worries about job security and changes in work. They also need to make sure AI is used responsibly, avoiding bias and protecting personal data. For AI adoption to be successful, organizations must create a culture of trust and openness. This means encouraging teamwork between humans and AI, where AI supports people instead of replacing them. It also means being open about how AI is used and making sure decisions involving AI are fair and accountable. In conclusion, the future of work with AI depends on ethical and inclusive approaches. Organizations should take a careful, thoughtful path when introducing AI, making sure it benefits everyone involved. By doing so, businesses can enjoy the many advantages of AI while creating a workplace that is positive, innovative, and ready for the future.

References:

1. Azari, R. (2003). *Current security management & ethical issues of information technology*. IRM Press.
2. Baase, S., & Henry, T. (2018). *A gift of fire: Social, legal, and ethical issues for computing technology* (5th ed.). Pearson.
3. Bentham, J. (1789). *An introduction to the principles of morals and legislation*. Oxford at Clarendon Press. http://oll.libertyfund.org/titles/278 (Reprint, 1907)
4. Blum, D. (2020). *Rational cybersecurity for business*. Apress Open.
5. Boas, F. (1928). *Anthropology and modern life*. Dover Publications, Inc. (Reprint, 1986)
6. Borkovich, D. J., Skovira, R. J., & Kohun, F. (2023). Foundation of cybersecurity infoscapes: It's all about the culture. *Issues in Information Systems, 24*(3), 1–14. https://doi.org/10.48009/3_iis_2023_101
7. Boucher, D., & Kelly, P. (1994). *The social contract from Hobbes to Rawls*. Routledge.
8. Castells, M. (2009). *The rise of the network society*. In *The Information Age: Economy, Society, and Culture* (Vol. 1, 2nd ed.). Wiley-Blackwell. https://doi.org/10.1002/9781444319514
9. Coeckelbergh, M. (2020). *AI ethics*. MIT Press.
10. Elliot, R. (2022). *Culture factor: Why employee experience is more important than you think*. Conscious Culture Group. https://consciousculturegroup.com/the-culture-factor-hbr-article-review/
11. Foot, P. (2021). *Philippa Foot's metaethics* (J. Hacker-Wright, Ed.). Cambridge University Press.
12. **Fortune 100 Best Companies.** (2023). *Fortune Online*. https://fortune.com/ranking/best-companies/2023/search/
13. Frankena, W. K. (1963). *Ethics*. Prentice-Hall, Inc.
14. Freeman, L., & Graham, P. (2005). *Information ethics: Privacy and intellectual property*. Information Science Publishing.

15. Friedman, M. (1984). The social responsibility of business is to increase its profits. In W. M. Hoffman & J. M. Moore (Eds.), *Business ethics: Readings and cases in corporate morality* (pp. 126–131). McGraw-Hill.
16. Garza, C. (1991, November 25). The touchy ethics of corporate anthropology. *Business Week*, 3233, 78.
17. Goffman, E. (1959). *The presentation of self in everyday life*. Anchor Books.
18. Groysberg, B., Lee, J., Price, J., & Cheng, J. (2018). The culture factor. *Harvard Business Review*, *1*(4), 43–57. https://hbr.org/2018/01/the-culture-factor
19. Haan, K. (2024). How businesses are using AI in 2024. *Forbes Advisor Survey Report*. https://www.forbes.com/advisor/business/software/ai-in-business/#conclusion_section
20. Hammersley, M. (2019). Alfred Schutz and ethnomethodology: Origins and departures. *History of the Human Sciences, 32*(2), 59–75. https://doi.org/10.1177/0952695119830304
21. Harris, D. (2019). *Literature review and research design: A guide to effective research practice*. Routledge.
22. Hartman, E. M. (1996). *Organizational ethics and the good life*. Oxford University Press.
23. Heidegger, M. (1954). The question concerning technology. In C. Hanks (Ed.), *Technology and values: Essential readings* (pp. 99–113). Wiley-Blackwell.
24. Hobbes, T. (1651). *Leviathan*. London: Self-published treatise. (Reprint, 1982, Penguin Books)

Trends and Transformations in Humanities, Commerce and Management Research

ISBN: 978-93-48620-99-6

About Editors

Dr. L. Thirupathi is an Assistant Professor of Political Science at Government City College (A), Hyderabad. He holds a Ph.D. from Osmania University and has qualified UGC NET thrice and TSSET 2023. He received the State Best Teacher Award (2023) from the Government of Telangana and an ICSSR MRP award (2022–23). With 14 years of teaching experience, he has presented papers at national and international conferences, authored 9 edited books and 20 chapters, and organized seminars and conferences. He is a BOS member at Osmania University and Executive Committee member of TGCTA. His research interests include Panchayati Raj, Indian Constitution, political thought, and international relations. He serves as NSS Program Officer, was a judge at district Youth Parliament events, and guided a state-level award-winning student project under Jignasa (2019–20) by the Telangana Collegiate Education Department.

Dr. Ranvir Kumar is an Associate Professor-cum-Senior Scientist at Bihar Agricultural University, Sabour (Bhagalpur), Bihar, with 18 years of experience in teaching, research, and extension. He has published several research papers in reputed national and international journals, along with numerous book chapters. Dr. Kumar has led multiple research projects, including those of international relevance. His innovative work in agricultural science has earned him prestigious awards from various scientific societies. He is committed to enhancing agricultural productivity and sustainability through research and field-level applications. His contributions have significantly benefitted students, researchers, and farmers. Dr. Kumar continues to play a key role in advancing agricultural education, research, and outreach for the betterment of Indian agriculture.

Dr. Suman Kalyani is an Assistant Professor-cum-Junior Scientist (Senior Scale) at Bihar Agricultural University, Sabour (Bhagalpur), Bihar, with around 18 years of experience in teaching, research, and extension. She has published numerous research papers in reputed national and international journals, along with several book chapters. Dr. Kalyani has successfully handled various research projects contributing to agricultural advancement. In recognition of her academic and scientific contributions, she has received several awards from esteemed scientific societies. Her work reflects a strong dedication to research excellence, knowledge dissemination, and the development of sustainable agricultural practices. She continues to play a vital role in advancing agricultural education and supporting the farming community through innovative research and outreach activities.

Ms. Aryasree M is an ICSSR Research Fellow and Ph.D. scholar in Commerce at Kuriakose Gregorios College, Pampady. She holds an M.Com and a PG Diploma in Sustainable Rural Development from NIRDPR. Her research interests span financial capability, behavioural finance, banking, HRM, sustainable investment, and gender studies. She interned in wealth management at Hedge Equities and is a life member of the Indian Accounting Association. An active member of NITI Aayog's Women Entrepreneurship Platform, she received a start-up grant from the Business Innovation and Incubation Centre, MGU. Aryasree contributes through research publications, conference presentations, and peer reviews, and serves on editorial boards. Her work bridges academic research and practical application, with a strong focus on inclusive development, entrepreneurship, and evidence-based policymaking in commerce and related fields.

Bhumi Publishing

ISBN 978-93-48620-99-6

9 789348 620996