

North East India in Transition

Land People and Economy

Editors

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Mr. Hirupjit Hazarika

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Foreword

North East India in transition: Land, People and Economy is more than a compendium. It is a dialogue between scholars who may never have met, yet whose ideas find a common home here.

I commend the editors for their meticulous curation and the contributors form intellectuals.

For the student, this book is a roadmap; and for the fellow researcher, a provocation to think deeper. It is an honour to introduce this work to the global academic community.

Unlike a single-author monograph, this edited volume offers a kaleidoscope of perspectives. This book brings together a diverse assembly of researchers from seasoned veterans to emerging voices—each contributing a unique thread to the larger tapestry of North East India in transition: Land, People and Economy.

We live in a period where “the economy” can no longer be discussed as a sterile set of indices or stock market fluctuations. It is a living, breathing social construct. The divide between a spreadsheet and a street corner is narrowing, and arrives at the precise moment to bridge that gap. Within these pages, the reader will find a rigorous exploration of several critical aspects.

Methodological Innovation: Several articles push the boundaries of how we collect and interpret data.

Empirical Depth: The studies presented offer grounded, real-world evidence that challenges long-standing assumptions.

Future Trajectories: Perhaps most importantly, this volume does not just look backward at what has been done; it charts a course for where we are to go next.

By curating these specific papers and research articles, the editors have managed to achieve collections which are unique and unlike a single-author monograph, and this edited volume offers a kaleidoscope of perspectives.

The book brings together a diverse assembly of researchers—from seasoned veterans to emerging voices—each contributing a unique thread to the larger tapestry of North East India in transitioning. Since socioeconomic literature often deals with the complex “human” side of data, the tone for this foreword is grounded, urgent, and insightful.

The challenge of the modern era is not just the creation of wealth, but its distribution, its sustainability, and its impact on the social fabric. This compendium reflects a profound understanding that economic outcomes are inseparable from social realities. Whether addressing labour markets, educational equity, or the digital divide, the research presented here refuses to look at data in a vacuum.

The editors have curated a collection that strikes at the heart of our current global transitions. Readers will find particular value in the way this book addresses:

- **Structural Resilience:** Articles that examine how communities withstand and adapt to systemic shocks.
- **The Human Capital Paradigm:** A deep dive into how shifting social norms—from remote work to lifelong learning—are redefining productivity.
- **Inclusive Growth:** Critical research on ensuring that bridging the gap, rather than widening the existing gap of inequality.

A Multi-Disciplinary Synthesis as the strength of this compendium lies in its diversity. It brings together economists, sociologists, and policy analysts to engage in a cross-disciplinary dialogue that is often missing from departmental silos. By weaving together quantitative rigor with qualitative nuance, this book provides a 360-degree view of the North Eastern Region.

To understand the economy is to understand society itself. This volume does more than just aggregate papers; it builds a framework for a more equitable and informed future. It is a vital resource for policymakers, scholars, and anyone who believes on the progress of North Eastern Region.

Professor, Ajanta Borgohain Rajkonwar

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Preface

For decades, North East India was treated as a distant frontier with its vast potential largely overlooked. Over the last few decades, this region has witnessed rapid changes in land use pattern, demographic composition and economic practices. Owing to its unique geographical positions, ethnic diversity and rich natural resources, the region is full of opportunities to become engine of growth for the whole nation. In recent days, the region has increasingly drawn the attention of policymakers and has made gradual progress. However, several challenges remain to be addressed. This reflects in its relatively weak performance in certain Sustainable Development Goals. Therefore, there is a need to analyse the transitions that have taken place in North East India to identify the emerging issues as well as the region's vast potentialities. At a time when the region is undergoing rapid socio-economic, cultural, and developmental transformations, a dedicated volume that critically documents and reflects upon these changes becomes essential to inform policy, research, and future pathways of sustainable growth. Accordingly, this edited volume titled "North East India in Transition: Land People and Economy" seeks to bring together original research, case studies and review article in the intertwined themes of Land, People and Economy to provide a comprehensive understanding of the ongoing transitions in North East India. This edited volume is an academic initiative of the Department of Economics, Assam Women's University, Jorhat, Assam (India).

The volume comprises thirty-two scholarly contributions that collectively explore a wide range of issues, challenges, and opportunities in North East India. The contributions span diverse themes, including gender, livelihoods, migration, financial inclusion, environmental sustainability, entrepreneurship, and regional development.

In the study of Dr. Temsukmala Ao, the socio-economic conditions and health challenges faced by women vendors in Dimapur are critically examined, highlighting their occupational vulnerabilities and the structural inequalities embedded within the informal sector. Dr. Juri Baruah explores the interaction between community-based economic practices and market mechanisms along the Assam–Arunachal border, offering insights into the adaptive nature of local economies. Dr. Jyotika Medok discusses the role of women in advancing inclusive development and achieving the Sustainable Development Goals in the region, while Dr. Mohshina Rahman investigates the resilience and adaptive strategies of local newspapers in Assam in response to the challenges posed by digitalisation.

Extending the discussion to broader economic processes, Dr. Rishi Bhargav Das and Dr. Rinki Das analyse export diversification and market integration, presenting a comparative perspective on trade resilience between India and ASEAN economies from 2010 to 2024. Dr. Manoj Baruah and Dr. Banalata Saikia examine the production and export performance of the handloom industry in India, while Dr. Malobika Sarmah and Dr. Simi Borah focus on the Tiwa women community, exploring pathways for empowerment among marginalised groups. Bhalinder Singh and Banashree Devi contribute to this discourse by assessing agricultural modernization through an Agricultural Modernization Index (AMI) across selected villages in Morigaon district, Assam.

The volume also engages with issues of inclusion, demography, and labour. Bhargav Das and Dr. Suranjan Sarma evaluate financial inclusion under the National Rural Livelihood Mission (NRLM) in Northeast India, with a focus on Assam. Daisy Basistha analyses migration trends using Census data, while Pratiksha Goswami reviews the landscape of educational institutions in Assam. The study by Swagata Bezboruah delves into the female labour force participation and its determinants in Northeast India, and Sumona Duari presents a bibliometric and altmetric analysis of research trends in the digital economy, highlighting a notable rise in publications between 2020 and 2024.

Cultural, environmental, and regional dimensions are also thoughtfully explored. Sashanka Gogoi examines the relationship between river geography and linguistic patterns among tribal

communities, while Himadri Lekharu reflects on the current status of handloom heritage in Assam. Viva Rani Narzary discusses the evolving livelihood strategies of Bodo women. Ankita Kotoky and Dr. Nilutpal Neog investigate community perceptions toward the conservation of Satras in flood-prone areas of Assam, and Shilpi Chamuah and Kakumoni Rajkhowa analyse the relationship between investment and industrial output across selected Northeastern states.

Further contributions address emerging challenges and structural concerns. Shikha Sahu studies migration and urbanisation trends in Assam, while Mintu Kumar and Dr. Sanghamitra Das explore barriers to women's participation in STEM and entrepreneurship. NK Lianthouba and Dr. Utpal Kumar De examine the root causes of ethnic conflict in Manipur, and Sanghamitra Duarah and Prof. B. Kilangla Jamir analyse the environmental impacts on the industrial sector in Assam.

The volume is further enriched by studies that engage with contemporary and grassroots issues. Ananya KN Khanikar reflects on women in social entrepreneurship, Himasmita Kakati analyses tourism growth before and after the COVID-19 pandemic, and Tnang Loaen Kachari examines women-led enterprises. Momtaz Begum evaluates the socio-economic benefits of fitness centre usage, while Tanmay Nandi investigates the effects of climate shocks on livelihoods and social relations. Bastabi Gogoi analyses backyard pig rearing among tribal communities in Assam, and Puja Dey studies betel nut farming as a livelihood strategy. Kamal Jyoti Patar explores income volatility among gig workers in Sivasagar district, while Darothi Kakoty and Shalini Roychoudhury highlight the integration of mental health and education for sustainable livelihood outcomes. Finally, Baby Karmakar examines entrepreneurship and green economic practices, emphasizing sustainable tourism opportunities in the region.

Further, we express our sincere gratitude to Professor, Ajanta Borgohain Rajkunwar, Hon'ble Vice Chancellor, Assam Women's University for her gracious goodwill message, which enriches this volume and serves as a source of encouragement for this academic endeavour.

Collectively, the contributions provide a nuanced and multidimensional understanding of the transformations shaping North East India, reflecting both the challenges and opportunities that define the region's developmental trajectory. It is hoped that this collection will serve as a valuable resource for researchers, policymakers, and practitioners, fostering informed dialogue and encouraging further inquiry into the region's evolving dynamics.

Editors

Dr. Debakshi Bora

Dr. Biswajyoti Sarmah

Hirupjit Hazarika

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A Sociological Study on Women Vegetable Vendors and Health in Dimapur

Dr. Temsukumla Ao*

Abstract

Women vegetable vendors constitute a significant yet marginalized segment of the informal economy in Dimapur, Nagaland. This study examines the socio-economic conditions and health challenges faced by women vendors working in local markets. Using a mixed-method approach, primary data were collected from 50 women vegetable vendors across major market areas in Dimapur through structured questionnaires, supported by secondary literature. The findings reveal that most women work long hours under poor infrastructural conditions, with limited access to sanitation, healthcare, and social security. Common health problems include back pain, fatigue, and weather-related illnesses, exacerbated by financial constraints and irregular incomes. Despite awareness of health risks, access to medical care and insurance remains minimal. The study highlights the intersection of gender, class, and occupational vulnerability, reflecting broader structural inequalities within the informal sector.

Keywords: *Women vegetable vendors, Informal economy, Occupational health, Gender inequality, Urban markets, Informal labour, Health access.*

Introduction

The unorganized sector forms the backbone of local economies in developing regions, offering employment possibilities to

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many, notably women. In Nagaland, a considerable number of women engage in small-scale vending operations, such as selling vegetables in local markets. These women, mainly from lower socio-economic backgrounds, labour long hours in open-air settings to support their families. Their contribution to the urban food supply and household income is enormous, yet their employment remains devalued and unprotected by labour or health standards.

Most women sellers put in long hours and often operate in unsafe environments. Their lack of access to hygienic facilities, clean water, and medical care has a detrimental effect on their health and well-being. Despite their economic and social importance, little research has been done to look at their particular problems, particularly in northeastern India.

Review of Literature

Women play an important but frequently unseen role in the unorganized sector, which makes up a sizable share of India's work force. Street sellers and other informal laborers make significant contributions to urban economies, but they are not covered by social security or labor laws, according to Bhowmik (2005). According to Singh (2019), women's involvement in informal employment is influenced by social expectations and economic necessity, which frequently force them to work in low-paying, unregulated jobs like vending. According to Chen (2012), the informal economy is marked by unstable work, a lack of benefits, and little government assistance conditions that are especially detrimental to women.

Women who work in informal markets face a variety of health concerns, according to research. According to Choudhury and Chatterjee (2018), female street sellers endure prolonged physical strain as a result of their long workdays, heavy lifting, and continuous exposure to heat, rain, and dust. Gupta (2020) goes on to say that chronic weariness and musculoskeletal diseases are caused by a lack of rest, inadequate sanitation, and restricted access to drinking water. Research shows that informal workers, especially women, have limited access to social security and healthcare. According to NCEUS (2009), more than 90% of Indian workers do not have official social protection. In her research

on Mizoram marketplaces, Lalthanmawia (2022) stressed that unsafe market conditions and a lack of sanitary facilities deter women from putting their health first.

According to Kikon (2020), structural disparities still exist in Northeast India despite strong cultural portrayals of women as community builders, as seen by their restricted access to healthcare, safety infrastructure, and financial credit.

In northeastern states like Nagaland, where climate, infrastructure, and policy considerations differ from other regions, there is an urgent need for localized research that address the unique socio-cultural contexts of women sellers, according to the literature now in publication.

Objectives of the Study

The major objectives of this study are:

1. To identify the major health-related problems faced by the women vegetable vendors in their occupation.
2. To examine the relationship between work conditions, gender, and health vulnerabilities.

Methodology

Both quantitative and qualitative methods were used in the investigation. A structured questionnaire was used to gather primary data from fifty female vegetable vendors who were chosen from the New Market, Purana Bazaar, Supermarket, Monday Bazaar, and Burma Camp regions of Dimapur town.

Variables including vending type, daily income, sanitation availability, healthcare-seeking behavior, and perceived health consequences were all included in the questionnaire. Secondary data on gender, health, and informal labour were gathered from books, journals, and official papers. The data was presented using frequency and percentage distributions using descriptive statistics, and the qualitative responses were analyzed thematically.

Findings and Discussion:

The results highlight the relationship between gender, and occupational health. In Dimapur, women vendors work in an underprivileged sector of the economy where they are not

recognized as real employees and do not have access to social security or healthcare. In addition to physical strain, systemic neglect within policy frameworks governing urban informal sectors is the cause of their health issues.

Similar to other studies, the findings highlight the disproportionate health issues faced by women in the informal economy as a result of poor working conditions, a lack of social safety, and restricted access to healthcare. Urban labour policies must take a gender-sensitive stance in light of these injustices.

Socio-Economic Profile

The majority of respondents belonged to lower-income households with limited formal education. Many had entered vending due to lack of employment opportunities or to supplement family income.

Table 1 Duration of Work as a Vegetable Vendor Among Women in Dimapur

Duration of Work (in years)	Number of Respondents	Percentage (%)
Less than 1 year	4	8%
1 – 3 years	10	20%
4 – 6 years	9	18%
7 – 10 years	12	24%
More than 10 years	15	30%
Total	50	100%

Note. $n = 50$

The data shows that the majority of respondents (30%) have been working as vegetable vendors for more than 10 years, indicating that vending is a long-term and sustained occupation for many women in Dimapur. A smaller proportion (8%) are relatively new to the trade, working for less than one year.

Table 2 Type of Vending among Women Vegetable Vendors in Dimapur

Type of Vending	Number of Respondents	Percentage (%)
Stationary (fixed stall/shop)	32	64%
Mobile (moving from place to place)	18	36%
Total	50	100%

Note. n=50

The table indicates that a majority of women vendors (64%) in Dimapur operate from stationary stalls or shops, while 36% engage in mobile vending, moving from place to place. This suggests that most women vendors have a relatively stable selling location, which may provide consistent customer flow and income security compared to mobile vending. A large majority operated from stationary stalls, while remaining were mobile vendors who moved around different locations.

Table 3 Average Daily Income of Women Vegetable Vendors in Dimapur

Average Daily Income (₹)	Number of Respondents	Percentage (%)
Below 500	8	16%
500 1000	22	44%
1001 1500	13	26%
Above 1500	7	14%
Total	50	100%

Note. n=50

The data reveals that the majority of women vendors (44%) earn between ₹500 and ₹1000 per day, followed by 26% who earn between ₹1001 and ₹1500. A smaller group (14%) earn above ₹1500 daily, while 16% earn less than ₹500. This indicates that most women vegetable vendors fall within the lower-middle income bracket, reflecting the modest earnings typical of informal market work. These figures indicate that women vendors largely belong to the low-income group, dependent on daily sales for sustenance.

Work Challenges

Most vendors reported difficult working conditions. Exposure to sun, rain, and dust and lack of proper shelter or stalls were the most cited challenges.

Table 4 Major Challenges Faced by Women Vegetable Vendors in Dimapur

Challenges Faced	Number of Respondents	Percentage (%)
Lack of proper shelter/stalls	14	28%
Exposure to sun/rain/dust	18	36%
Harassment or eviction by authorities	5	10%
Poor sanitation and water facilities	7	14%
Lack of customers	4	8%
Others (e.g., price fluctuations, competition, transportation issues)	2	4%
Total	50	100%

Note. n=50

The data indicates that the most common challenge faced by women vegetable vendors in Dimapur is exposure to sun, rain, and dust (36%), followed by lack of proper shelter or stalls (28%). Issues like poor sanitation, harassment by authorities, and lack of customers were also reported, though to a lesser extent. This highlights the need for improved infrastructure and protection policies for women vendors in the informal sector.

Table 5 Availability of Hygienic and Sanitary Facilities Near Vending Place

Availability of Facilities	Number of Respondents	Percentage (%)
Yes	11	22%
No	39	78%
Total	50	100%

Note. n=50

The table shows that a large majority (78%) of women vegetable vendors in Dimapur do not have access to hygienic and sanitary facilities near their vending places. Only 22% reported having such facilities. This indicates a serious lack of basic sanitation infrastructure, which may contribute to health issues and poor working conditions among women vendors.

These conditions expose women to frequent illnesses and physical strain. The poor state of market infrastructure especially absence of toilets and waste disposal reflects institutional neglect toward informal women workers.

Health Problems

The majority of women are the primary caregivers at home, juggling long hours of selling with household duties. Chronic weariness and poor self-care are the results of this dual load. They are susceptible to both financial instability and health concerns due to their irregular incomes and lack of official labour safeguards. A significant portion of the respondents experienced back pain and body ache, followed by fatigue and weather-related cough/cold.

Table 6 Health Problems Experienced by Women Vegetable Vendors in Dimapur

Type of Health Problems	Number of Respondents	Percentage (%)
Back pain / Body ache	20	40%
Headache / Fatigue	10	20%
Cough / Cold due to weather exposure	11	22%
Skin problems / Allergies	6	12%
Others (e.g., joint pain, eye strain, leg swelling)	3	6%
Total	50	100%

Note. n=50

The table reveals that back pain or body ache (40%) is the most frequently reported health issue among women vegetable vendors in Dimapur, followed by cough and cold (22%) and headache or fatigue (20%). The findings highlight that prolonged

sitting or standing, exposure to harsh weather, and inadequate facilities contribute significantly to the health problems faced by these women.

These findings align with other studies on female street vendors in India (Joshi, 2018; Singh & Devi, 2020), showing that occupational health issues are common due to prolonged sitting, standing, and carrying heavy loads. Despite these health problems, only few vendors seek medical help, while majority rarely or never do.

Table 7 Frequency of Seeking Medical Help among Women Vegetable Vendors in Dimapur

Frequency of Seeking Medical Help	Number of Respondents	Percentage (%)
Always	6	12%
Sometimes	25	50%
Rarely	14	28%
Never	5	10%
Total	50	100%

Note. n=50

The table indicates that half of the respondents (50%) seek medical help only sometimes, while 28% rarely visit a healthcare facility when ill. Only 12% always seek medical attention, and 10% never do so. This suggests that economic constraints, time limitations, and lack of access to healthcare facilities may prevent many women vendors from seeking timely medical care.

Table 8 Place of Medical Treatment among Women Vegetable Vendors in Dimapur

Place of Medical Treatment	Number of Respondents	Percentage (%)
Government hospital	21	42%
Private clinic	11	22%
Traditional healer	5	10%
Self-medication	13	26%
Total	50	100%

Note. n=50

The data shows that 42% of women vendors in Dimapur seek medical treatment from government hospitals, while 26% rely on self-medication. A smaller percentage visit private clinics (22%) or traditional healers (10%). This pattern suggests that government healthcare services remain the main source of treatment due to affordability, but self-treatment practices are also quite common, possibly because of financial or time constraints. Many rely on government hospitals, and a notable portion resort to self-medication.

Table 9 Health Insurance or Medical Coverage among Women Vegetable Vendors in Dimapur

Health Insurance / Medical Coverage	Number of Respondents	Percentage (%)
Yes	8	16%
No	42	84%
Total	50	100%

Note. n=50

The data indicates that a large majority (84%) of women vegetable vendors in Dimapur do not have any form of health insurance or medical coverage, while only 16% reported having some form of coverage. This highlights a significant gap in social protection and access to health security among women working in the informal sector. Furthermore, the study found that the majority respondents had no health insurance coverage.

Table 10 Factors Preventing Access to Proper Healthcare Among Women Vegetable Vendors in Dimapur

Factors Preventing Access to Healthcare	Number of Respondents	Percentage (%)
Financial constraints	24	48%
Lack of awareness	7	14%
Distance / Transportation problems	8	16%
Long working hours	9	18%
Others (e.g., family responsibilities, lack of time, negligence)	2	4%
Total	50	100%

Note. n=50

The data shows that financial constraints (48%) are the main barrier preventing women vegetable vendors in Dimapur from accessing proper healthcare. Other significant factors include long working hours (18%) and distance or transportation difficulties (16%). A smaller portion cited lack of awareness (14%) or other personal reasons. Indicating a critical gap in healthcare access. Financial constraints and long working hours were major barriers to accessing proper medical care. This highlights the need for affordable, accessible, and flexible healthcare services for women in the informal sector.

Perceptions and Awareness

Most women believe that their health has been negatively affected by their work. More general patterns of institutional inequality are reflected in the lack of organized market infrastructure. Despite their crucial role in maintaining the city's food economy, local authorities have not given enough priority to the health and safety concerns of women vendors. Moreover, limited awareness about occupational health and hygiene contributes to preventable illnesses.

Table 11 Perception of Health Impact due to Vending Work among Women Vegetable Vendors in Dimapur

Response	Number of Respondents	Percentage (%)
Yes	37	74%
No	8	16%
Not sure	5	10%
Total	50	100%

Note. $n=50$

The findings reveal that a majority (74%) of women vegetable vendors in Dimapur believe that their health has been negatively affected by their work. Only 16% felt their health was unaffected, while 10% were unsure. This suggests that most women recognize the physical strain and health risks associated with vending such as prolonged standing, exposure to weather, and inadequate facilities which underscores the urgent need for better occupational health awareness and support.

The study found that most women vegetable vendors in Dimapur believe their health has been affected by their vending activities. Many reported problems such as back pain, fatigue, and frequent cough or cold due to long working hours and constant exposure to the sun, rain, and dust. Only a small number felt that their work had no major effect on their health, while few were unsure.

This shows that vending work has a significant physical impact on women, reflecting the challenging and unhealthy working conditions faced in the informal sector. However, the data below shows that there is no health or safety support from government or NGOs.

Table 12 Support or Awareness on Health and Safety from Government or NGOs

Response	Number of Respondents	Percentage (%)
Yes	6	12%
No	44	88%
Total	50	100%

Note. n=50

The data shows that an overwhelming 88% of women vegetable vendors in Dimapur have not received any support or awareness programs on health and safety from either the government or NGOs. Only 12% reported receiving some form of assistance or awareness training.

This highlights a serious lack of institutional outreach and welfare initiatives targeted at informal women workers. Strengthening collaborations between local authorities, NGOs, and health departments could help improve awareness and promote better health and safety practices among women vendors. Only a few had attended health camps or awareness workshops.

When asked about needed improvements, vendors prioritized better stalls and roofing, clean drinking water, and sanitary toilets.

Table 13 Suggested Improvements in Market Facilities Among Women Vegetable Vendors in Dimapur

Suggested Improvements	Number of Respondents	Percentage (%)
Better stalls and roofing	17	34%
Clean drinking water	10	20%
Sanitary toilets	8	16%
Waste disposal system	7	14%
Security and lighting	5	10%
Others (e.g., storage space, resting area, parking facility)	3	6%
Total	50	100%

Note. $n=50$

The data reveals that the most desired improvement among women vegetable vendors is the provision of better stalls and roofing (34%), followed by clean drinking water (20%) and sanitary toilets (16%). Other important needs include waste disposal systems, security, and lighting. These responses reflect the poor infrastructure conditions in local markets and the urgent need for improved facilities to ensure a safe, hygienic, and dignified working environment for women vendors.

Table 14 Preferred Health Awareness Programs or Services Among Women Vegetable Vendors in Dimapur

Preferred Health Awareness Programs / Services	Number of Respondents	Percentage (%)
Free health check-ups	20	40%
Health insurance schemes	13	26%
Workshops on occupational safety	9	18%
Nutritional awareness programs	8	16%
Total	50	100%

Note. $n=50$

The data shows that the majority of women vegetable vendors (40%) expressed the greatest need for free health check-ups, while 26% preferred health insurance schemes to provide long-term medical security. Others favored workshops on occupational safety (18%) and nutritional awareness programs (16%). This indicates that women vendors are most interested in accessible, preventive, and affordable healthcare services, highlighting the importance of community-based outreach and welfare programs for informal women workers. Regarding health support, many preferred free medical check-ups, while others emphasized health insurance and occupational safety training.

These results collectively demonstrate that while women vendors are aware of their health vulnerabilities, they lack institutional support and awareness programs to address them.

Sociological Analysis

From a sociological perspective, the experiences of these women reflect the intersectionality of gender, class, and occupation. Their marginal position in the informal economy illustrates how structural inequalities are reinforced by inadequate policy frameworks. The absence of social security, poor working infrastructure, and limited access to healthcare reveal systemic neglect of informal women workers. Moreover, traditional gender roles compel women to balance household duties with vending work, increasing their physical and emotional stress.

This study supports the framework of C. Wright Mills' sociological imagination, linking individual suffering (e.g., illness, fatigue, economic struggle) to broader social structures such as poverty, gender discrimination, and institutional exclusion. The women's health conditions are not merely personal issues but reflections of structural injustice in labour and public health systems.

Conclusion

Women vegetable vendors in Dimapur form a vital yet underrecognized part of the informal economy, sustaining both local markets and their households. However, their livelihoods involve significant physical strain, environmental exposure, and

limited access to healthcare. The study highlights how gender- and class-based social and structural inequalities are closely linked to their health challenges. Addressing these concerns requires a comprehensive approach that integrates social, economic, and health dimensions. Policies aimed at improving market infrastructure, healthcare access, and social protection must be informed by the lived experiences of women vendors. Enhancing their well-being is essential not only for gender equity but also for sustainable urban development. By foregrounding their everyday realities, the study strengthens the discourse on informal labour, health, and gender justice and emphasizes the urgent need for policy reforms that protect the health rights of marginalized women workers.

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2

Markets at the Margin: Community, Culture, and Continuity in the Naga Bazaar of Borhat, Assam

Dr. Juri Baruah*

Abstract

Economies operate through two interrelated realms: community and market. While community-based economies are locally embedded and shaped by social relations and cultural values, markets are often viewed as impersonal systems of exchange structured by broader institutional forces. This paper examines the interaction between these realms through a case study of the Naga Bazaar near Borhat in Sivasagar district of Assam, a borderland market linking hill and plains communities of Northeast India. Situated at the Assam–Arunachal Pradesh interface, the Naga Bazaar functions as a dynamic space of community, market, and culture. Originally established to serve the Wancho community of the Patkai Hills in Longding district, Arunachal Pradesh, the bazaar connects culturally Naga groups with Assamese traders and consumers. Using photo-ethnography and semi-structured interviews, the study conceptualises the bazaar as a rural institution rather than a mere site of exchange. The findings show that the Naga Bazaar sustains social trust, cultural negotiation, and an informal administrative order, exemplifying a socially embedded economy where community, market, and culture are mutually constitutive.

Keywords: Community; Borderland Market; Moral Economy; Gendered Space.

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Introduction

Economy consists of two interrelated realms: **community** and **market**, a distinction that has been central to debates in economic anthropology and human geography. Community, in this context, is not merely a social grouping but a sphere through which cooperation, competition, and the accumulation of material and symbolic gains are socially regulated. As argued by Stephen Gudeman, community economies are sustained by a shared *base* or *commons*—material resources, cultural practices, and social relationships that ensure continuity over time (Gudeman, 2001). From this perspective, the market cannot be understood simply as a short-term transactional arena; rather, it is embedded in on-the-ground social associations and imagined solidarities through which people experience economic life.

Markets therefore display the **double face of economy**, encompassing both the *up-close* and the *far-distant*. On the one hand, economic practices are local and place-specific, constituted through face-to-face social relationships, trust, and culturally defined values. On the other hand, they are impersonal and abstracted from social contexts, operating through generalized rules of exchange and accumulation. Although analytically distinguishable, these two realms are mutually constitutive and continuously interacting. In this sense, markets function simultaneously as **institutions** and **social practices**, a view closely aligned with Karl Polanyi's concept of the *embedded economy*, which emphasises that economic processes are inseparable from social relations and spatial contexts (Polanyi, 1944; 1977).

The conceptualisation of community further deepens this understanding. Communities may be understood as small, intimate social formations, as described by Ferdinand Tönnies (1988), as well as imagined collectivises, as articulated by Benedict Anderson (1991). Community boundaries are therefore neither fixed nor uniform; they are fluid, negotiated, and often perceived differently by their members. Communities are organised around activities that vary in economic and social importance and are hierarchically arranged, embedded, and overlapping. Economic functions play a crucial role in shaping these formations, linking social organisation to spatial practices and regional interactions.

The **Naga Bazaar** at Borhat in Sivasagar district of Assam illustrates these theoretical insights in a concrete geographical setting. Locally constituted at the interface between the Wancho community of the Patkai Hills and the Assamese population of the border areas, the bazaar represents a socially embedded market space. It operates not only as a site of material exchange but also as a space of cultural negotiation, identity formation, and social interaction. In Polanyian terms, the market is embedded in reciprocal relationships and customary practices rather than governed solely by price mechanisms (Polanyi, 1944).

At the same time, the market reflects elements of abstraction and exchange value, resonating with Karl Marx's distinction between *use value* and *exchange value* (Marx, 1976). However, unlike fully commodified capitalist markets, social relations in the Naga Bazaar remain visible and integral to exchange, limiting the fetishisation of commodities. This corresponds with Aristotle's distinction between exchange undertaken for sustenance and exchange pursued purely for profit, which he viewed as morally problematic (Aristotle, *Politics*). The Naga Bazaar thus exemplifies a hybrid economic space where community and market are not opposing realms but overlapping and mutually reinforcing processes, deeply shaped by place, culture, and borderland geography.

Objective

To examine the interaction between community-based economic practices and market mechanisms in the Naga Bazaar at the Assam–Arunachal Pradesh border.

Methodology

The study adopts a qualitative, ethnographic research design to examine the socially embedded nature of the Naga Bazaar. Fieldwork was conducted at the Naga Bazaar near Borhat in Sivasagar district of Assam, a borderland market. Primary data were collected using **photo-ethnography** and **semi-structured interviews**. Data were analysed thematically, focusing on the intersections of community, market, and culture that shape the functioning of the Naga Bazaar.

Discussion

Community, Exchange and Borderland Markets

A community economy is sustained through the making and sharing of a **commons**. Drawing on perspectives from economic anthropology, particularly Latin American and substantivism traditions, the notions of *base* and *foundation* are closely linked to the commons. The commons refers to shared interests, values, and resources that underpin collective life. It represents the **patrimony or legacy** of a community and includes material and symbolic elements such as land, buildings, seed stock, ecological knowledge, customary practices, transportation networks, and ritual systems. These shared resources contribute to both the material sustenance and social reproduction of a group with a common identity. Importantly, the base signifies **temporality and continuity**, connecting present economic practices with past traditions and future generations.

As argued by Stephen Gudeman, “without a commons there is no community, and without a community there is no commons” (Gudeman, 2001). In this formulation, economic life is not reducible to market exchange alone; rather, it is grounded in shared resources and social relationships that precede and sustain market activity.

The **Naga Bazaar** at Borhat exemplifies this community base as a lived economic reality. The market embodies community values as symbols of identity, expressions of cultural norms, and sources of material sustenance. One manifestation of this embeddedness is found in systems of **measurement and valuation**. Wancho women sellers do not rely on standardised weighing instruments; instead, they employ culturally familiar units such as bunches, heaps, or quantities to measure banana flowers, Naga chilli, betel leaf, ginger, bamboo shoots, and pulses. For example, Naga pulses are commonly sold in bunches rather than by weight. These practices reflect a valuation system rooted in customary knowledge rather than abstract market rationality.

Economic practices in the Naga Bazaar are thus constituted within the **intersecting realms of community and market**, operating across four interrelated value domains: the base

(commons), social relationships, trade, and accumulation (Gudeman, 2001). All four domains are visibly present in the everyday functioning of the market. Exchange is embedded in social ties, accumulation is modest and livelihood-oriented, and the commons continues to structure production and circulation.

From an anthropological perspective, **culture is integral to economic life**, shaping how markets are imagined, organised, and practiced (Geertz, 1973). The Naga Bazaar can be understood as being constructed through *folk models* and shared metaphors of exchange. Spatial organisation within the market illustrates this clearly. Wancho women tend to gather on one side of the market, forming semi-circular or linear seating arrangements, distinct from sellers belonging to other communities. While Wancho women primarily sell vegetables and forest produce, men are more commonly involved in selling pork and locally brewed liquor. Goods are arranged on the ground in front of sellers according to preferred local units of measurement.

Language further reinforces cultural embeddedness. Most Wancho women use **Nagamese** to communicate with buyers, facilitating interaction across ethnic boundaries. On market days, they begin their journey as early as 3 a.m., arriving at the market by 4 or 5 a.m. After selling their produce, they purchase essential goods—such as rice, salt, clothes, cosmetics, and footwear—from Assamese traders. This cyclical flow of goods underscores the **mutual dependence** between the two communities; the continuation of exchange relies on reciprocal participation.

Interviews with Wancho sellers indicate that the market was earlier dominated by **barter exchanges**, and remnants of this system persist in present practices. Even today, bargaining is limited, and sellers often prefer fixed prices, reflecting a moral economy grounded in trust, stability, and long-term relationships rather than competitive price negotiation.

In contemporary economic discourse, community and market are often treated as analytically separate realms. Neoclassical economics privileges the market as the primary domain of value creation, viewing households and communal transactions as peripheral or inefficient. However, as Gudeman (2001) notes, the economy consists of two foundational institutions: **households**

and businesses. Households rely on their own labour and resources to produce goods that enter the market, while markets circulate materials, goods, and services through systems that appear self-contained. Within this framework, communal transactions are often framed as irrationalities or externalities. The Naga Bazaar challenges this assumption by demonstrating that community-based practices are not obstacles to economic efficiency but essential conditions for sustaining local economies and social life.

Comparatively, the Naga Bazaar shares significant structural and cultural affinities with borderland markets in other parts of the world, where economic exchange is deeply embedded in community relations, customary practices, and cross-cultural interaction. Studies of border markets such as Mae Sot along the Thailand–Myanmar frontier, La Quiaca in South America, and periodic cross-border haats along the Indo–Bangladesh border reveal similar patterns of exchange rooted in trust, reciprocity, and informal regulation (Donnan & Wilson, 1999; Cons & Eilenberg, 2019). In these markets, as in the Naga Bazaar, traders frequently rely on non-standardised units of measurement, culturally embedded valuation systems, and long-standing interpersonal relationships rather than formal contracts or state-mediated mechanisms (Humphrey, 1985).

Border markets often operate within spaces of legal and administrative ambiguity, where contemporary state boundaries intersect with older social, ethnic, and ecological networks (Donnan & Wilson, 2010). As Karl Polanyi argued, such markets exemplify *embedded economies* in which exchange is regulated by social relationships rather than autonomous price mechanisms (Polanyi, 1944). Similarly, drawing on Stephen Gudeman's notion of the *commons*, these markets depend upon shared cultural knowledge, mobility practices, and collective access to resources that often transcend national borders (Gudeman, 2001). Gendered participation—particularly the central role of women as petty traders and producers—is another recurring feature of border markets globally, reinforcing their orientation toward livelihood security rather than capital accumulation (Sahlins, 1976).

Viewed within this broader comparative framework, the Naga Bazaar emerges not as an isolated local phenomenon but as part of a global constellation of borderland markets that sustain alternative economic logics. Despite increasing pressures from globalisation, formalisation, and state regulation, such markets continue to reproduce community-based economies in which culture, place, and social relations remain central to market practice.

Interplay of Culture and Community

Culture is continuously produced and reproduced through socially contingent categories such as home and work, body and other, weekdays and weekends, beauty and efficiency, or friendship and kinship (Geertz, 1973). Economic life and cultural practice are mutually constitutive: markets both sustain existing cultural norms and introduce new values, mediating processes of continuity and transformation. By foregrounding economic exchange, markets provide institutional frameworks—sometimes formalised through legal or administrative structures—through which culture is continually reshaped.

The foundation of the **Naga Bazaar** is grounded in the community's *shared interests*—a combination of enduring resources such as land, water, cultivated products, and forest resources, as well as ideational constructs like local knowledge, technologies, skills, laws, and customs (Gudeman, 2001). In this way, the three domains of **community, market, and culture** are inseparable and mutually reinforcing, sustaining both local political order and social equilibrium. The market's organisation reflects locally defined values embodied in goods, services, and daily practices, while these same values simultaneously express community identity through social relationships and networks.



Fig. 2 Local products arranged for selling in the market

Markets are not merely venues for the transactional exchange of goods; they also produce **relationships based on commitment**, including household economies, lineages, and reciprocal obligations. Unlike corporate or club-based economies, borderland markets operate on trust, embedded norms, and long-term social expectations (Polanyi, 1944). In this relational context, the *base* of the market is co-created through social interactions, allocated and negotiated among community members. Material exchange both mediates and expresses social ties, as seen in the interactions between Wancho traders and Assamese buyers at Borhat.

Another dimension of the Naga Bazaar is the coexistence of **impersonal trade**, where goods and services are exchanged for production, savings, or consumption at variable rates, with communal relationships embedded in the process. Participants in this domain are socially constituted as individuals, households, families, kin groups, and lineages, demonstrating the entwining of market logic with community structure.

Gender plays a particularly important role in structuring cultural and economic activity. Wancho women are central actors in the marketplace: on market days, they complete domestic chores early in the morning, carry produce in *hura*—oval bamboo baskets strapped to their backs—and occupy areas of the market near the hills from which they descend. Male sellers from other communities tend to occupy spaces closer to the street. This gendered spatial organisation reflects broader cultural norms, delineating roles and responsibilities while facilitating efficient exchange. The integration of cultural practices, gendered labour, and economic exchange illustrates the deeply **embedded character of the Naga Bazaar**, where community, market, and culture are co-constituted in everyday life (Gudeman, 2001; Polanyi, 1944).



Fig. Women sellers in the market

Globalisation, Borderland Markets, and Capital Accumulation

The dynamics of the Naga Bazaar at Borhat highlight critical questions for the political economy of borderland markets in the era of globalisation. One central concern is determining which goods and services should be produced and exchanged through the market and which should remain within the community's internal sphere. A related question involves identifying what forms of production and resource allocation ought to be retained under communal control, and what types of communities should actively participate in economic life. Finally, there is the challenge of integrating and balancing the two intertwined realms of value—community and market—so that economic exchange does not undermine social cohesion or cultural identity. Together, these questions underscore the complex negotiation between sustaining local livelihoods, preserving community structures, and engaging with broader market forces (Polanyi, 1944; Gudeman, 2001). These questions extend beyond economic considerations, encompassing **development, identity, environmental sustainability, and shared life**, reflecting the intertwined social, cultural, and material stakes of rural markets (Polanyi, 1944; Gudeman, 2001).

Capital and Borderland Markets

Borderland markets serve as important mechanisms for the **appropriation of local resources**, a process that encompasses both material goods and social capital. Appropriation refers not

merely to ownership but to the **collection and consolidation of value**, which may include resources, social relationships, goods, and money. In the Naga Bazaar, these forms of value interact across domains: the same lineage elders, petty commodity producers, and local shopkeepers participate simultaneously in trade, social regulation, and community reproduction, illustrating what Marx (1976) would describe as a distinct *mode of production*.

While capital in classical Marxist terms is acquired primarily through trade and production, measured in money, and accumulated as financial capital, borderland markets like the Naga Bazaar demonstrate a **different logic of accumulation**. Monetary profit is not the primary goal; instead, economic activity ensures the continuity of **lineages, households, and community networks** across generations. For example, the Naga Bazaar facilitates the circulation of goods that sustain the material and social base of Wancho families, preserving relationships, customs, and local identity while enabling modest accumulation of trade-based resources (Gudeman, 2001).

In this sense, the Patkai Hills do not constitute a rigid border but a **meeting point of distinct production systems, social practices, and worldviews**, where community-based economies intersect with market logics. The Naga Bazaar exemplifies the integration of local knowledge, cultural norms, and economic activity, forming a **space of interconnection** that mediates between tradition and broader market forces.

Thus, borderland markets are **critical sites of embedded capital accumulation**, where economic, social, and cultural forms of value converge. They demonstrate that even in the era of globalisation, local markets maintain a dual role: sustaining community life and mediating connections with external economic networks, while balancing the imperatives of identity, continuity, and resource mobilisation (Polanyi, 1944; Marx, 1976; Gudeman, 2001).

Conclusion: Border and Changing Transaction Realms

In the community realm of the economy, the **base**—comprising communal resources and shared values—and **social relationships** are of primary significance. Communities,

though often small, exercise accumulation through these social ties by engaging with markets. Borderland markets provide opportunities to encounter new goods, ideas, and people, creating a space where economic exchange is embedded in social relations, even if participants are not always explicitly aware of it. The market realm, in contrast, operates through trade and accumulation, connecting individuals and groups as agents pursuing both material ends and profit. Yet, these two realms are inseparable: the market relies on socially constituted units and relationships, while community relations are reinforced through market participation. In this sense, the Naga Bazaar exemplifies **short-term material relationships conducted for their own sake**, grounded in both social and economic imperatives (Polanyi, 1944; Gudeman, 2001).

Aristotle (1998) observed that humans often conflate actions undertaken “for the sake of” something else with activities pursued “for their own sake.” For instance, the instrumental act of buying goods to sell at a profit can, over time, become an end in itself. Aristotle viewed this transformation as a moral confusion, a notion further elaborated in Marx’s concept of commodity fetishism, Veblen’s idea of pecuniary derangement, and Polanyi’s concept of fictitious commodities (Marx, 1976; Veblen, 1899). Applied to borderland markets, this framework suggests that trade is conducted primarily to secure goods with **use value** that sustain the community’s base, even as these goods acquire **exchange value** in monetary transactions. While classical Marxist analysis may highlight the exploitative potential of markets, from a local perspective, market engagement can enhance living standards, facilitate choice, and reinforce social networks.

Thus, the interplay between **border and transaction realms** demonstrates the embeddedness of markets: economic activities are never purely instrumental, nor are social relationships purely normative. In the Naga Bazaar, the boundaries between community and market, use and exchange value, and tradition and profit are continually negotiated, revealing the complex dialectics of embedded economies (Polanyi, 1944; Marx, 1976; Aristotle, 1998; Gudeman, 2001).

The Naga Bazaar at Borhat exemplifies the unique dynamics of **borderland markets**, where economic exchange, community, and culture intersect across geographic and social boundaries. In such contexts, the two realms of economy—market and community—are mutually constitutive. Community provides the **base of shared resources, norms, and relationships**, while the market mediates the circulation of goods, ideas, and social ties beyond the immediate community. Borderland markets serve as embedded economic spaces, sustaining local identity and cultural continuity while simultaneously engaging with broader economic networks (Polanyi, 1944; Gudeman, 2001).

Borderland markets are distinctive in that they negotiate both **locality and mobility**. The Naga Bazaar facilitates trade between the Wancho of the Patkai Hills and Assamese populations of the plains, reflecting a **dialectical integration of use value and exchange value**. Economic transactions are embedded in social relationships, trust, and communal obligations, balancing profit motives with long-term relational and cultural commitments (Aristotle, 1998; Marx, 1976). Gendered participation, such as the prominent role of Wancho women in selling and arranging produce, illustrates how social norms and cultural identity shape market practices, reinforcing community structures even within cross-border exchanges.

Borderland markets also highlight the interplay of **self and other**, where economic actors simultaneously pursue material gain and maintain communal ties. Following Collingwood's (1945) notion, each party uses the other as a means for economic action, yet this interaction is regulated by shared norms, trust, and reciprocal obligations. The persistence of barter practices, locally defined units of exchange, and customary valuation underscores that these markets are not merely sites of monetary accumulation but arenas for the reproduction of **community, culture, and social cohesion**.

In an era of globalisation, borderland markets face pressures that challenge the preservation of local identity, communal bases, and customary practices. Yet the Naga Bazaar demonstrates that borderland markets are **resilient sites of embedded economic life**, mediating between tradition and external market forces. They function as **self-contained yet interconnected**

spaces, sustaining livelihoods, reinforcing social solidarity, and enabling cross-cultural exchange. Ultimately, the study of borderland markets such as the Naga Bazaar underscores their critical role as **economic, social, and cultural nexuses**, bridging communities across political, geographic, and cultural boundaries while maintaining the integrity of local knowledge and practices.

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3

The Role of Women in Inclusive Development of North-East India

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Abstract

The role of woman has shifted from traditional domestic responsibilities to active participation in political, social, educational and economical spheres; hence playing a crucial role in India's inclusive development. The present study throws light on the evolving contributions of women toward realizing the goal of inclusive development of North-East India along with achieving the Sustainable Development Goals (SDGs). The study is based on a descriptive and analytical approach. The research employs both qualitative and quantitative methods based on the secondary data from government reports, academic studies and national surveys. The findings reveal significant progress in women's literacy levels, political representation specially in grassroot levels and workforce participation. However, challenges like gender discrimination, rural- urban disparities, socio- cultural barriers and unequal access to resources still persists which limits the full participation of women in the development process. The study draws a conclusion that the empowerment of women is not just a matter of social justice but an economic imperative for inclusive and sustainable regional development.

Keywords: *Inclusive development, Women, Sustainable Development Goal.*

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Introduction

India's half of the population is constituted by the women folk. Women play a critical role in the developmental journey of the country. The North- Eastern India comprises of 8 states, namely, Arunachal Pradesh, Assam, Mizoram, Nagaland, Meghalaya, Manipur, Tripura and Sikkim. It is believed that the women of the North- Eastern region enjoys a better position in the society as compared to other women of the country. But still certain barriers exist that limits the participation of the women folk in the developmental process.

The roles of women have evolved from traditional domestic responsibilities to significant contributions in education, economy, politics and social reforms. Changing societal norms, progressive government policies and global influences has resultant into the transformation of the role of women and advocating gender equality. However, challenges such as economic inequality, socio- cultural barriers and gender discrimination still persists. Therefore, adequate measures must be taken in order to overcome the barriers as the vision of a developed India is incomplete without addressing the role of women. The transformational role of women also aligns with the Sustainable Development Goals (SDGs). The ongoing study aims at examining the changing role of women in India and their contribution toward realizing the goal of India's inclusive development.

Objectives of the Study

1. To examine the role of women in North- East India's socio-economic development.
2. To address the challenges that act as barriers for women's empowerment and equality.

Methodology of the Study

The study is descriptive and analytical in nature. To provide a comprehensive understanding of the topic, both qualitative and quantitative analysis has been done. The study is based on secondary data. The secondary data has been collected from the existing literature review, policy documents, newspapers,

journals, government and non- governments reports, National Sample Survey Office, Census of India, etc.

Limitation of the Study

The study suffers from regional and demographic constraints, data reliability and time constraint.

Literature Review

The review of literature explores existing studies, reports and academic work related to the evolving role of women in India's socio-economic and political landscape. The study is focused on identifying the gaps and future opportunities.

Klasen and Lamanna (2009): The study focuses on the correlation between economic growth and gender equality and emphasizes the increasing rate of women's workforce participation which significantly shows a positive impact on a nation's GDP.

NITI Aayog Reports (2022): The report highlights India's efforts to promote women's economic participation through initiatives such as Start-Up India and Pradhan Mantri Mudra Yojana (PMMY). It reflects the challenges such as gender inequality and access to financial resources still persists.

UNESCO Report (2021): The report points out that though India has improved in female literacy rates but disparities still exist in rural areas where stereotypical mindset hinder girls' access to education.

Banerjee (2018): The study reflects the empowerment of women through skill development programs and thus reshaping the societal perceptions of gender roles.

Desai and Thampi (2019): The paper throws light on the persistence of cultural and societal barriers that act as limitation on women's mobility, access to opportunities and decision-making power.

From the above review, the following gap such as focus on the intersection of gender and technology, impact of AI and automation on women's employment opportunities, effectiveness of grassroot initiatives in rural India, analyses of long-term impact of government policies and programs on

women empowerment, etc. has been identified. The ongoing study makes an attempt to address these gaps by highlighting the significant progress in women's education, economic participation, and leadership in India.

Data Analysis and Findings

Quantitative analysis

- According to the data from NSSO and NITI Aayog reports, the rate of women's workforce participation has been increased from 25.3% in 2018 to 30.60% in 2023.

Table 1 Female Workforce Participation in North- Eastern States, India

States	1991	2001	2011
Arunachal Pradesh	37.5	36.6	35.44
Assam	21.6	20.8	22.46
Manipur	39	39.02	38.56
Meghalaya	34.9	35.2	32.67
Mizoram	43.5	47.6	36.16
Nagaland	38	38.06	44.74
Sikkim	30.4	21.08	39.57
Tripura	13.8	25.7	23.57

Source: Census of India 1991, 2001 and 2011

- The report from NSSO and NITI Aayog also states that there is a significant growth in urban areas due to ample opportunities in IT sector, entrepreneurship and in the field of finance.
- The data also indicates a need for targeted interventions in rural areas for showing slower progress comparatively.
- There is a significant rise in the female literacy rate i.e it rose from 65% in 2011 to 77% in 2023.

Table 2 Female Literacy Rate of North- Eastern States and India

States	1991	2001	2011
Arunachal Pradesh	29.7	43.5	59.57
Assam	43	54.6	67.27

Manipur	47.6	60.5	73.17
Meghalaya	44.9	59.6	73.78
Mizoram	78.6	86.7	89.4
Nagaland	54.7	61.5	76.69
Sikkim	46.7	64.9	76.43
Tripura	49.6	64.9	83.15

Source: Census of India 1991, 2001 and 2011

- Programs like Beti Bachao Beti Padhao has succeeded in decreasing the dropout rate of female students in secondary education.
- Due to the reservation policy, women's representation in Panchayati Raj Institutions is over 40%
- There is a need for improvement at the national level where the female MPs constitute only 14.4%.
- There is a significant growth in women entrepreneurship which have contributed a lot to employment generation.
- The biggest challenge faced by the modern-day women entrepreneurs is the access to finance. About 60% of the women entrepreneurs have cited this as a hindrance on their pathway.

Qualitative analysis

- The transformative role of education has been cited by the women of North- East India in achieving financial independence and respect from society.
- The need for more vocational training programs that is tailored to non-traditional roles are sought by many of the women of the North- Eastern India.
- One of the major obstacles to career advancement is family obligations, as cited by many of the career- oriented women of the states.
- The rural respondents pointed out the limited access to technology and inadequate infrastructure facilities as significant challenges.
- The uneven implementation of policies in remote areas is raising concerns among the masses.

From the above analysis and findings, it could be stated that untapped potential exists in both rural and semi-urban areas though it is undoubtedly clear that women's participation in the workforce has a direct and positive impact on the economy of the North-Eastern region. Also, factors like better employment opportunities and improved health outcomes is the result of higher literacy rates among the women folk. Regarding the policy implementation by the government, there is a substantial progress due to the initiatives undertaken by the government; yet inconsistencies limit their impact. In spite of deeply ingrained patriarchal norms, a gradual shift in societal attitudes towards the leadership roles of women has been noticed which has a huge positive impact on the changing roles of women in the developed North-East India.

Suggestions

- Measures must be adopted in strengthening the implementation of skill development and entrepreneurship development programs in rural areas and consistency must be maintained for a sustainable development of the North-Eastern region.
- Women's participation in the public and professional spaces must be facilitated by promoting gender-sensitive infrastructure.
- The reservation policies for women in leadership role must be expanded at both regional and national levels.
- The digital divide could be bridged by providing women in remote areas access to technology and digital literacy programs.
- The effectiveness of programs such as Beti Bachao Beti Padhao and Stand-up must be evaluated regularly to improve their reach and impact.
- The gender-focused policies must be vigorously enforced particularly in rural and marginalized areas.
- The women entrepreneurs of the region must be provided with greater access to finance facility such as microfinance and low-interest loans, etc.

- The societal biases must be addressed by creating mentorship programs and networking opportunities and encourage women- led start-ups.
- Vocational training programs must include fields like IT, digital marketing and green technologies.
- The technology divide must be bridged by conducting digital literacy programs.
- Women's representation in state and national legislatures must be increased by implementing and expanding reservation policies.
- Women must be encouraged to participate actively in governance and decision- making processes.
- The stereotypical thoughts must be challenged by launching campaigns and initiatives to promote gender equality in education, employment and family roles.
- Women's greater participation in the workforce must be ensured by improving childcare facilities, safe working environments and public transportation.

Conclusion

Women in India are empowered to break the traditional barriers due to initiatives like increased access to education, micro-finance and skill development programs. This has led to increasing contribution of North- East Indian women to economic, social and political domains which reflects their active role in shaping the vision of an inclusive development. But it is seen that the rural women still face certain challenges compared to their urban counter-parts which reflects the urban- rural disparity in opportunities. The deep- rooted cultural norms creates gender biasness which hinder women's potentiality.

As the active participation of the women folk accelerates the journey of North- East India toward becoming a developed region, hence empowering women has not only become a moral imperative but also an economic necessity. The North- East India can unlock its full potentiality in the journey toward an inclusive development by investing in women's development and addressing the existing barriers.

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4

The Resilience of Local Print Media in the Digital Era: Insights from Jorhat, Assam

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Abstract

This study examines the economic resilience and adaptive strategies of local newspapers in Assam in response to the disruptive forces of digitalisation. Focusing on a case study of two prominent Assamese dailies, Dainik Janambhumi and Asomiya Khabor, in Jorhat district, the research examines how these institutions are navigating declining print revenue and shifting reader habits. Employing a qualitative methodology, including in-depth interviews with key editorial and managerial staff, the study identifies major themes related to generational readership divides, the critical decline of commercial advertising, and the varied paces of digital transition. Findings reveal that while these newspapers are experimenting with digital platforms, such as e-papers and social media, their primary resilience stems from deep-rooted community trust, cultural relevance, and a commitment to fact-checked, credible journalism. However, a reliance on low-yield government advertisements and a slow innovation cycle pose significant threats to long-term sustainability. The study concludes that the survival of regional vernacular press depends on a strategic duality: leveraging their unique value of local credibility while aggressively pursuing digital revenue models and audience engagement to secure a viable future.

Keywords: Local Newspaper, Readership Pattern, Advertising Decline, Digital Transition.

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Introduction

The emergence of the digital age has instigated a profound transformation in journalism, altering the creation, dissemination, and consumption of news. In this rapidly evolving media landscape, local newspapers—long the cornerstone of civic engagement and community information—face unprecedented challenges. In Jorhat District of Assam, these publications have historically been essential for informing the public about local events, fostering community identity, and encouraging democratic participation. However, the ascendancy of digital media platforms now poses significant threats, including dwindling readership, shrinking advertising revenue, and intense competition from online news sources.

While prominent national newspapers in India have successfully transitioned to digital platforms with viable revenue models, local and regional-language publications struggle to stay afloat. This challenge is particularly acute in Northeast India, where linguistic diversity, infrastructural constraints, and a complex socio-political landscape shape the media environment. This study focuses on two influential Assamese dailies in Jorhat district—*Dainik Janambhumi* and *Asomiya Khabor*—which have been pioneers in local journalism, delivering in-depth coverage of community affairs, culture, and governance.

This research examines how these newspapers are navigating the pressures of digital transformation. It examines their survival strategies, the challenges they face, and the implications for the future of local journalism in Assam. Through qualitative interviews and thematic analysis, this study aims to contribute to the broader discourse on media sustainability in the digital era.

Literature Review & Theoretical Framework

Scholars such as Radcliffe & Ali (2017) and Nielsen (2015) document the economic and operational struggles of local newspapers in Western countries, highlighting their continued importance despite declining traditional revenue streams. Studies from other contexts, such as Alfani's (2020) research in Indonesia, reveal common global challenges, including eroding public trust and the need for innovative business models.

Research on the Indian newspaper industry presents a more complex picture. While scholars like Arya (2017) note the relative resilience of print in India due to cultural and demographic factors, Kumar & Sarma (2015) warn of the threats posed by digital competition and rising production costs. Agrawal (2024) observes a strategic shift towards digital-first approaches and paywalls among national players.

Deori, Baruah & Bora (2021) and Sarma (2018) emphasise the existential threat that digital media poses to vernacular presses. They argue that leveraging hyperlocal content, language, and culture is critical for survival, providing a crucial context for this study.

Theoretical Framework

Diffusion of Innovation Theory

Everett Rogers' Diffusion of Innovation Theory explains how new ideas and technologies spread through society. In this context, "innovation" refers to traditional newspapers adopting digital platforms, such as websites, mobile apps, and social media.

Media Ecology Theory

Media Ecology Theory, developed by scholars like Marshall McLuhan and Neil Postman, examines how media and technology influence communication and society. This study helps us understand how the emergence of digital media is altering the landscape in which newspapers operate.

These two theories, together, provide a strong foundation for this research. Diffusion of Innovation Theory explains the process of digital adoption, while Media Ecology Theory helps understand the changing communication environment. They guide the analysis of interview responses and the challenges faced by local newspapers in the digital era.

Objectives of the Study

1. To determine the obstacles faced by local newspapers in Jorhat district.

2. To analyse the impact of digital media on the revenue generation and readership of local newspapers in Jorhat district.
3. To explore the strategies employed by local newspapers to adjust to the digital era.

Research Questions

1. What has been the trend in local newspaper sales in Jorhat district over the years?
2. Has the allocation of advertisement space in local newspapers in Jorhat district increased or decreased over the years?

Research Methodology

The study employs purposive sampling, selecting participants based on their expertise, roles, and relevance to the research objectives. Key professionals from two prominent Assamese newspapers, Dainik Janambhumi and Asomiya Khabor, were selected for their direct involvement in editorial, managerial, and reporting functions, as well as their ability to offer valuable insights into the adaptation of local newspapers to the digital age.

The selected participants include:

1. General Manager, Desk In-charge and Magazine Editor of Dainik Janambhumi
2. Asomiya Khabor's Staff Reporter and Upper Assam In-charge

Data Collection: Data was collected through semi-structured interviews, allowing for flexibility and in-depth exploration. An interview guide ensured coverage of key themes.

Data Analysis: Thematic analysis was used to identify, analyse, and report patterns (themes) within the data.

Ethical Considerations: Informed consent was obtained from all participants, confidentiality was assured, and ethical research standards were maintained throughout.

Limitations: The study's findings are based on a small sample size from only two newspapers in a single district, which may limit their generalizability.

Data Analysis and Findings

The analysis revealed several key themes:

Shifting Readership Patterns: A clear generational divide was evident. Older readers, those above 50 years, prefer print, while younger audiences are drawn to digital platforms for their speed and interactivity, resulting in a gradual decline in print circulation.

Decline in Print Advertising Revenue: A significant theme was the sharp decline in commercial advertisements, with budgets shifting to digital platforms. While government advertisements have increased, they are insufficient to offset the financial strain.

Digital Transition and Technological Adaptation: Both newspapers have initiated digital transitions (e-papers, websites), but the pace and scale vary. *Dainik Janambhumi* began around 2015-2014, while *Asomiya Khabor* started in 2019.

Challenges in the Digital Media Landscape: Key challenges include declining circulation, competition from the immediacy of social media, and the spread of misinformation.

Innovation and Regional Expansion: *Dainik Janambhumi* has launched new regional editions (e.g., Bongaigaon, 2023) to expand reach, whereas *Asomiya Khabor* reported no major recent innovations, indicating a disparity in adaptive capacity.

Community Engagement and Impact: Newspapers continue to play a vital role in community development, with their reporting often prompting swift government action on local issues.

Upholding Credibility through Fact-Checking: Respondents consistently highlighted their commitment to fact-checking and verification as a key differentiator from less-regulated digital media, reinforcing their value proposition of trust and credibility.

Discussion

The findings align with the theoretical frameworks. The generational shift in readership reflects the Diffusion of Innovations, with younger demographics as early adopters. The financial and competitive pressures illustrate the changing Media Ecology, where traditional print models struggle to thrive.

The study confirms the challenges documented in the literature, such as advertising decline and digital disruption. However, it also highlights the unique resilience of these Assamese papers, rooted in their community ties, cultural relevance, and commitment to credible journalism. The differing levels of digital adaptation between the two case studies suggest that organisational vision and resources are critical factors in navigating the digital transition.

Conclusions

This study concludes that local newspapers in Jorhat, Assam, are navigating a complex crisis. While they retain significant cultural capital and trust, their economic model is under severe threat from digital competition. Their survival hinges on a delicate balance between preserving their core strengths—credibility and community focus—and aggressively innovating their digital presence and revenue streams.

Recommendations

1. **Bolster Digital Presence:** Develop mobile-optimised, interactive digital platforms and incorporate multimedia content (videos, podcasts) to engage younger audiences.
2. **Diversify Revenue Streams:** Implement digital subscription models, explore ethically sponsored content, and create reader-supported special reports to reduce dependence on print advertising.
3. **Invest in Hyperlocal and Investigative Journalism:** Double down on deep, accountability reporting that resonates with the local community and cannot be easily replicated by national outlets.
4. **Upskill Staff:** Provide journalists with training in digital skills, data journalism, and multimedia storytelling to meet the demands of contemporary news production.

Policymakers and civil society must recognise the democratic value of local news and explore supportive measures. Future research should expand to include reader and advertiser perspectives across a wider geographical area for a more comprehensive understanding. The future of local print media

in Assam depends on its ability to adapt without abandoning the principles that make it indispensable.

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5

Trade Resilience through Export Diversification and Market Integration: Lessons for India from ASEAN's Experience

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Abstract

Trade resilience has become a key priority amid global uncertainty and supply-chain disruptions. This study examines how export diversification and market integration shape trade resilience through a comparative analysis of India and ASEAN economies from 2010–2024, using indicators such as the Export Diversification Index, Herfindahl–Hirschman Index, Economic Complexity Index, and Export Market Penetration Index. The results show that advanced ASEAN economies—Singapore, Malaysia, Thailand, and Vietnam—display diversified exports, stronger technological capabilities, and deeper integration into global value chains, resulting in higher trade resilience. In contrast, lower-income ASEAN economies remain highly export-concentrated with limited market reach. India lies between these groups, with improving diversification and market penetration but moderate economic complexity and GVC integration. The findings highlight the role of coordinated industrial policies, institutional reforms, digital readiness, and global production network integration

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in strengthening trade resilience. Drawing lessons from ASEAN, the study underscores the need for India to pursue structural upgrading, enhance manufacturing competitiveness, and deepen participation in technologically advanced value chains to expand its global market presence.

Keywords: *Export Diversification, Market Integration, Trade Resilience, Economic Complexity, Global Value Chains.*

Introduction

International Trade has increased interconnectedness and reshaped policies for greater economic growth and stability. These strategic initiatives have allowed countries to diversify their exports, channel them through a robust supply network, and contribute to the nation's growth. At various levels of trade integration, Countries follow a diverse approach towards production requirements with diversified partners and suppliers according to countries' potentials (Bernard, 2012). The interconnected among countries enhances strategic changes, allowing countries to adjust and adopt policies that broaden their export baskets and support resilience against economic fluctuation globally (Baldwin & Freeman, 2022). Against these initiatives, ASEAN has framed strategies in trade and product, which have allowed trade diversification and resulted in a diversified and resilient economy through knowledge exchange and technological advancement (König 2022). The development of production networks across the region has also allowed ASEAN economies to lessen the effects of global interruptions and allow sustainability through short-term stability and long-term growth (Carvalho & Tahbaz-Salehi, 2019). The global trade decline during the COVID-19 pandemic and financial crisis has reshaped countries' trade systems, enabling them to understand the openness of their trade systems and their effects. These economic fluctuations have directed many countries to reconsider their new degree of trade openness with product diversification, allowing new markets and value chains (Ray & Thakur, 2025).

India, with diversified products, maximum revealed comparative advantage, and initiatives to participate in the regional value chain, offers a step toward enhancing its strategic relationship

with ASEAN. The trade relationship with ASEAN will present India with a significant opportunity to enhance its trade resilience through diversification and to deepen economic integration into production networks (Bagaria, 2021; Kumarasamy, 2023). But the trade deficit with the ASEAN region restrains India from attaining significant opportunities from export expansion, particularly through integration into global and regional value chains and through the utilisation of underexploited resource-rich regions. Northeast India is an emerging region with domestic industries that cater to the needs of the industrial base that supports a wide dimension of the market has enabling India to expand the export basket and reduce dependency on specific key markets. The government of India's initiatives, such as "Make in India" and the Production Linked Incentive (PLI) schemes, have further strengthened India's capacity to diversify its export base and upgrade domestic manufacturing, allowing it to restructure the trade base (Li et al., 2015; Das & Borkakoty, 2022). India should study ASEAN's success model in the GVC, and regional integration has been followed by open trade markets, enhancing digital and physical infrastructure, and strategically diversifying export destinations. The forward-looking GVC approach of ASEAN has increased the operational efficiency of regional trade, characterized by substantial tariff reductions for both intra- and extra-regional trade, allowing overall growth of the ten member states (Steinberg & Wolff, 2023; Kulkarni et al., 2021). The region's ability to attract sustained foreign direct investment has catalysed industrial ecosystem development, strengthened connectivity infrastructure, and generated mutually reinforcing trade flows between ASEAN, India, China, Japan, and other global partners (Pretorius et al., 2021; Lara, 2021).

Over the years, increasing geopolitical fears, economic instability, and supply chain rearrangements have faster the global shift toward diversified, technologically upgraded export systems in ASEAN's evolution, allowing a commodity-dependent structure to offer valuable intuitions (Taguchi & Thet, 2021). India's current trade structure reflects attentiveness in a limited set of products and markets, along with relatively limited engagement in global value chains compared to ASEAN economies. Existing literature remains largely focused on India-

ASEAN trade volumes, tariff engagements, or sector-specific trade complementarities, leaving a gap in understanding how ASEAN's diversification and GVC-led strategies can strengthen India's trade resilience. So, this study focuses on how ASEAN economies have improved their trade flexibility through product diversification and value chain participation across nations. The study follows three core objectives. First, it aims to analyze the extent of export product diversification in ASEAN and India using the Herfindahl–Hirschman Index and Export Diversification measures. Second, it assesses economic complexity and the index of market penetration to understand the dimensions of trade performance between India and ASEAN.

Theoretical Framework

Trade theories on the gravity model have provided an initial understanding of the trade volume, the economic size of a country, and the influence of trade volume through geographical proximity. Followed by this, trade models incorporated GVC, which has opened new pathways to industrialization, allowing countries to specialize in specific stages of production rather than developing entire domestic supply chains (Awate et al., 2015). To prepare for economic and external shocks, the concept of trade resilience has emerged, which allows countries to navigate through the strategic positioning of diversified trade portfolios. Studies found that trade resilience allows reshaping the trade initiatives through developing the best practices, technological advancements, and quality standards across participating firms and nations (Foo et al., 2019; Park et al., 2023).

Countries have shifted to a new path of industrialization to go for comparative advantages rather than developing a similar supply chain (Taguchi & Thet, 2021). New shifting in trade through diversification has allowed firms to integrate into international production networks, fostering efficiency and upgrading knowledge transfer to access global markets (Stojčić & Matic, 2023). The COVID-19 pandemic and financial crisis have shifted towards understanding how strategic redundancy and regional diversification within global value chains can bolster economic stability against future disruptions (Boffa et al., 2021). Such strategic initiatives have also resulted in creating new

relationships to leverage the market according to specialized comparative advantage (Giovannetti et al., 2023; Mena et al., 2021). Support for trade resilience, infrastructure development, and connectivity integration helps lower trade costs, thereby increasing the efficiency of trade.

The development of both physical and digital platforms allows interplay between institutional frameworks and regulatory environments, significantly influencing a nation's capacity to leverage robust trade resilience. (Vidya & Taghizadeh-Hesary, 2021) (Greve, 2022). The new trade theories are validated by the importance of a broader range of export products and destinations in fostering more sustainable and accelerated economic growth, thereby moving beyond export expansion (Greve, 2022). Theories suggest that for both small and medium enterprises, product and market diversification allows agile response to unforeseen challenges, ensuring sustained economic performance and competitive advantage in the global marketplace and understanding of the market (Essuman et al., 2023). GVC has provided significant opportunities for growth and specialization in a country. GVC has allowed trade resilience to recreate knowledge spillovers, enhancing firm productivity, and promoting diversification into higher value-added activities (Giovannetti et al., 2023).

GVC allows countries to quickly reconfigure supply networks and access substitute inputs or markets during crises, and permits operational flexibility through multinational enterprises. Proper implementation that leverages their foreign diversification to secure resources and adapt behaviours, ultimately enhancing their resilience (Essuman et al., 2023). The improvement of domestic industries and fostering localized production capabilities strengthens regional trade networks, thereby offering a crucial buffer against the exposures inherent in overly globalized supply chains (Anbumozhi & Kalirajan, 2021). Studies also stated a negative aspect where firms more entrenched in GVCs experienced larger declines in export sales and a higher probability of exit, signifying that participation in GVCs can increase short-term openness to global supply shocks (World Bank, 2023). Extended literature also reveals that GVC reduces cost and growth; it reduces trade resilience if not

supported by strong domestic industrial upgrading policies, limited innovation, and less local production.

The relationship between diversification, GVCs, and resilience creates a crucial understanding regarding the economies to navigate their trade directions towards the changed global trade scenario (Ali, 2021). The strategic change in the country's trade framework for diversification, GVCs, and resilience allows expanding the product basket and increasing bilateral relations to support economic growth (Baldwin & Freeman, 2022). Countries' adjustment to product diversification results in reducing reliance on one specific sector, while GVC trade integration allows diverse markets with flexibility and adaptation. Whereas effective supply chain management, all real-time monitoring and translates theoretical linkages into practical resilience (Anbumozhi & Kalirajan, 2021).

India and ASEAN have mixed trade relations, where the gravity model and trade intensity index demonstrated that revealed comparative advantages in specific agricultural and manufactured goods have increased. The structural integration among the countries analyses that incremental changes in India's export composition to ASEAN have not shifted significantly toward intermediate goods, whereas ASEAN's deeper regional value chain (RVC) integration remains limited and uneven across partner countries.

The digital initiatives of ASEAN through its Single Window (ASW) are widely recognized for reducing cross-border transaction costs and supporting paperless trade across member states (ASEAN Secretariat; ISEAS analyses). India's ICEGATE and National Single Window initiatives aim for similar efficiencies, but their regional impact depends on interoperability, mutual recognition of electronic documents, and the readiness of partner countries to adopt harmonized standards. Empirical assessments indicate that aligning India's digital customs and single-window systems with ASEAN practices—such as mutual data exchange protocols and synchronized regulatory processes—could substantially lower trade frictions and enhance India's participation in regional production networks.

The digital initiatives of ASEAN through its Single Window (ASW) have allowed simplified cross-border transactions and supported paperless trade with the aim of increasing efficiency. Aligning with the trade digital standards of India with ASEAN will enhance the exchange of data and provide evaluations to emphasize regional impact is contingent on interoperability, mutual recognition of electronic documents, and partner countries' readiness to adopt harmonized standards.

Research Methodology

The study takes into consideration the descriptive and comparative approach to understand the export diversification, market expansion, and productive capacity of India and ASEAN during the period 2010-2024. The study includes secondary data that was collected from the World Integrated Trade Solution (WITS), UN Comtrade, the World Bank, UNCTAD Stat, and the Observatory of Economic Complexity (OEC). The Study has employed four trade indicators: the export diversification index, which takes into consideration a country's export basket, with a score that represents where high or low diversification; the Herfindahl-Hirschman Index to assess export concentration; the Economic Complexity Index to evaluate productive capacities and technological abilities; and the Index of Export Market Penetration to determine how widely a country's exports access global markets.

Results and Discussion

Similarities and Differences in the Economic Structures of India and ASEAN

Both India and the ASEAN bloc represent dynamic, emerging economies characterized by substantial domestic markets, huge populations, and resources with the ability to diversify. The initiatives of ASEAN have resulted in to focus on export-led growth through regional integration and preferential trade agreements, whereas India has conventionally ranked more towards an inward-looking approach over decades towards achieving a greater global economic engagement. Changes in the global trade scenario have resulted in India opening its economy, reducing trade barriers, and placing an increasing

emphasis on manufacturing for developmental paths observed within ASEAN. On the other side, towards achieving new access to markets and FDI, several ASEAN nations have significantly reduced tariffs and embraced regional free trade. India has also engaged in comparable liberalization, including signing a free trade agreement with ASEAN on Services and Investment (Li et al., 2015) (Vidya & Taghizadeh-Hesary, 2021). This agreement is expected to boost trade and reduce the trade deficit between India and ASEAN. This agreement is expected to boost trade and reduce the trade deficit between India and ASEAN by addressing the bilateral trade and improving the deficits, deepening the tariff, and improving the trade connectivity across the region (Khati & Kim, 2022; Grimpe et al., 2015; Wani & Yasmin, 2023). A key distinction lies in ASEAN's advanced integration within global supply chains, often serving as a manufacturing hub, whereas India, despite its significant industrial base, has been more focused on developing indigenous capabilities, though it is increasingly seeking to integrate into global value chains (Miller et al., 2015).

India's trade scenario has shifted from a traditional approach of factor endowment to comparative advantage, but with limited product diversification and less participation in GVC as compared to ASEAN. This allows India to display a strategic re-evaluation of export strategy, with an emphasis on expanding into product categories with stability and economic growth in international markets. Enhancing product diversification will allow India to reframe its trade structure and promote linkages for domestic industries, and integrate into global value chains. Integrating into backward GVC participation, India can involve the use of imported inputs for exports, which can lead to higher gross exports, increase the domestic value-added, and employment (Veeramani & Dhir, 2022). But India's limited trade integration into global production networks, especially in manufacturing, faces challenges with efficiencies and technological advancements often missed in GVC participation (Reddy & Sasidharan, 2023). India's exports, despite growing, often lack the technological development and value addition that add to its efficiency in the global markets. (Lectard & Rougier, 2017). Identifying these basic challenges, the Indian government has implemented policy initiatives and schemes like "Make

in India,” Production Linked Incentive schemes, and various export promotion councils, all designed to substitute domestic manufacturing and integrate Indian firms more deeply into global trade.

ASEAN engagement strategically will improve the trade participation supported by product diversification and infrastructure development, which will facilitate trade connectivity among member states and with global partners (Vidya & Taghizadeh-Hesary, 2021).

Table 1 Export Diversification of India and ASEAN

YEAR/ Economy	Brunei Darussalam	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Viet Nam	India
2010	0.833	0.796	0.551	0.778	0.469	0.803	0.604	0.487	0.386	0.565	0.502
2011	0.827	0.806	0.558	0.825	0.468	0.811	0.594	0.499	0.396	0.554	0.492
2012	0.841	0.789	0.557	0.771	0.456	0.804	0.568	0.489	0.393	0.547	0.504
2013	0.84	0.795	0.555	0.777	0.454	0.791	0.557	0.486	0.389	0.565	0.489
2014	0.821	0.786	0.539	0.759	0.444	0.822	0.576	0.487	0.386	0.566	0.497
2015	0.862	0.827	0.548	0.75	0.44	0.807	0.573	0.471	0.368	0.567	0.436
2016	0.84	0.79	0.55	0.695	0.441	0.772	0.56	0.463	0.358	0.565	0.441
2017	0.849	0.78	0.561	0.705	0.442	0.762	0.56	0.473	0.366	0.577	0.45
2018	0.851	0.785	0.564	0.697	0.437	0.772	0.551	0.468	0.354	0.553	0.476
2019	0.793	0.771	0.56	0.732	0.434	0.784	0.545	0.46	0.363	0.547	0.439
2020	0.867	0.756	0.566	0.732	0.454	0.799	0.549	0.464	0.358	0.536	0.448
2021	0.836	0.763	0.596	0.738	0.455	0.762	0.555	0.474	0.362	0.53	0.452
2022	0.792	0.761	0.603	0.745	0.452	0.797	0.576	0.488	0.385	0.549	0.439
2023	0.817	0.707	0.599	0.745	0.469	0.779	0.577	0.487	0.376	0.545	0.424
2024	0.815	0.747	0.574	0.726	0.467	0.807	0.554	0.476	0.359	0.539	0.418
Average	0.83	0.78	0.57	0.75	0.45	0.79	0.57	0.48	0.37	0.55	0.46

Source: Authors' Calculation from data collected from WITS, World Bank

The table highlights the export diversification of India and ASEAN from 2010 to 2014, and it was found that ASEAN countries like Brunei Darussalam, Cambodia, Lao PDR, and Myanmar steadily scored 0.75, indicating low reliance on products, whereas other countries like Singapore, Malaysia, Thailand, and Vietnam have lower EDI scores, reflecting more expanded export baskets. In comparison, India has an average index of 0.46, showing reasonable diversification, with scores decreasing from 0.50 in 2010 to 0.41 in 2024. India has been expanding its exports, which are driven by sectors linked with production. But overall, responses to export diversification trends highlight that India and ASEAN have administrative differences in export abilities, with various levels of resilience and competitiveness. Furthermore, ASEAN has restructured formal reforms to improve reliability, certainty and has attracted foreign direct investment with boosting GDP and creating employment opportunities (Lara, 2021).

Table 2 Herfindahl–Hirschman (HH) Market Concentration Index

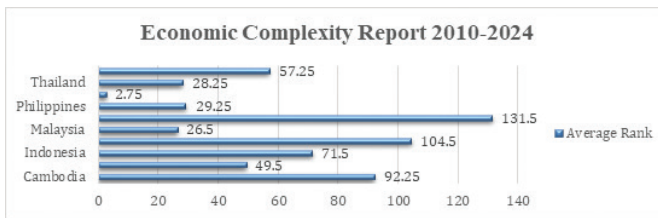
Country Name	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	India
2010	0.258	0.189	0.068	0.234	0.079	0.230	0.097	0.061	0.057	0.071	0.044
2011	0.256	0.150	0.069	0.237	0.082	0.210	0.101	0.060	0.057	0.069	0.043
2012	0.239	0.116	0.070	0.224	0.081	0.232	0.112	0.060	0.058	0.064	0.044
2013	0.223	0.101	0.068	0.213	0.082	0.219	0.105	0.061	0.057	0.061	0.040
2014	0.189	0.085	0.061	0.262	0.076	0.442	0.113	0.063	0.055	0.067	0.043
2015	0.185	0.080	0.057	0.263	0.080	0.241	0.109	0.063	0.057	0.077	0.047
2016	0.183	0.063	0.059	0.278	0.081	0.180	0.100	0.068	0.057	0.082	0.051
2017	0.151	0.065	0.061	0.287	0.079	0.160	0.097	0.069	0.057	0.083	0.048
2018	0.170	0.071	0.066	0.305	0.080	0.151	0.097	0.068	0.057	0.089	0.050
2019	0.170	0.077	0.065	0.291	0.087	0.145	0.097	0.067	0.061	0.094	0.052
2020	0.130	0.103	0.073	0.294	0.096	0.149	0.100	0.073	0.071	0.114	0.054
2021	0.140	0.137	0.087	0.249	0.097	0.178	0.100	0.075	0.075	0.121	0.055
2022	0.122	0.154	0.085	0.249	0.096	0.190	0.081	0.066	0.073	0.126	0.057
Average	0.186	0.107	0.069	0.260	0.084	0.210	0.101	0.066	0.061	0.086	0.048

Source: Author's calculation from data collected from WITS, World Bank

The table highlights the HH Market Concentration Index, which shows how concentrated or diversified a country's export structure is, and interprets when scores closer to 1 result in low diversification, and scores closer to 0 result in high diversification. According to the comparative scores for the years 2010 to 2014 for India and ASEAN, it was found that Brunei Darussalam, Cambodia, Lao PDR, and Myanmar constantly display high HH scores with values more than 0.75. This indicates that ASEAN countries have a highly concentrated export basket but dominated by a few key commodities. The score reveals that Brunei's trade dependence on crude oil and gas explains its consistently high concentration, while Cambodia and Myanmar rely heavily on garments and primary products. Similarly, with Lao PDR has a high concentration, reflecting trade dependence on resource-based sectors. Whereas other ASEAN countries like Malaysia, Singapore, Thailand, Vietnam, and the Philippines demonstrate lower scores ranging between 0.35 and 0.55, allowing more diversified export structures of the economy. The results of the Indian economy, the HH index, score an average of around 0.46, allowing it to be closer to the more diversified ASEAN economies. India's expansion in the trade basket through reduction in trade balance shows improvement over time, with its score declining from 0.50 in 2010 to 0.42 in 2024, reflecting a gradual expansion of its export base. The ASEAN economy is resource-dependent, resulting in it being highly concentrated, whereas India's divergence mirrors differences

in economic complexity, industrial upgrading, and integration into global production networks. With the establishment of RCEP, the ASEAN commitment toward regionalization has been reframed, allowing member countries to harmonize trade while attracting new partners. This framework has shifted the economy's geopolitical landscape from bloc to region with a common objective of diversification and market opportunities (Das, 2015; Do et al., 2019; Sada et al., 2022).

Table 3 Economic Complexity Index of India and ASEAN



Source: Author's calculation from data collected from WITS, World Bank

The economic complexity index allows for the representation of a country's production and technological upgradation. A low score represents high economic participation and the presence of trade diversification, whereas a high score represents less participation and the absence of diversification. Based on the table score of India and ASEAN for the year 2010-2024, it was found that ASEAN has displayed a high level of economic integration supported by government initiatives to promote GVC. The score sheet indicates that Singapore constantly appears as the most developed economy, with a rank of 2.75, whereas other member states like Malaysia, Thailand, and the Philippines have economic sophistication, with ranks of 26.5, 28.25, and 29.25, respectively. In contrast to India, the score is 49.5, which represents a favourable position along with reasonable economic involvement supported by its large manufacturing, technological sectors, and diversified export structure. But despite these developments, India's score remains lower than economies like Malaysia, Thailand, and Singapore, suggesting scope for upgradation and integration. The development of ASEAN in GVC is actually multifaceted, which allows the region the develop infrastructure, improve human capital, and

policy harmonization. GVC and regional integration have also allowed production with research and development, allowing member states to be more competitive through the enhancement of digital transformation. The region has focused on facilitating seamless integration of domestic production into global supply networks (Sundram, 2023).

Table 4 Index of Export Market Penetration of India and ASEAN

Country Name	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Average
Briunei	1.44	1.48	1.47	1.51	1.53	1.57	1.48	1.57	1.58	1.61	1.60	1.68	1.65	1.56
Cambodia	4.15	4.28	4.78	5.06	5.22	4.89	5.86	6.24	6.35	6.44	6.25	6.69	6.76	5.61
India	27.26	27.18	27.76	28.66	28.76	29.59	30.39	31.02	31.37	32.10	30.79	33.00	32.26	30.01
Indonesia	13.61	13.62	13.80	14.14	14.04	14.04	14.72	14.51	14.35	14.62	14.74	14.75	14.39	14.18
Lao PDR	1.95	1.95	2.00	2.12	2.12	2.05	2.24	2.25	2.35	2.48	2.49	2.68		2.21
Malaysia	13.66	14.21	14.34	14.37	14.33	14.42	14.71	14.88	14.78	14.99	14.61	15.17	14.55	14.57
Myanmar	2.64	2.35	2.32	2.56	2.81	3.18	3.87	4.47	4.77	5.13	5.29	5.55	5.63	3.89
Philippines	7.95	8.30	8.46	8.42	8.59	8.75	8.75	8.92	8.87	8.87	8.83	9.49	9.20	8.62
Singapore	13.71	14.01	14.01	13.82	13.42	13.47	13.41	13.91	13.42	13.90	13.33	13.75	12.86	13.62
Thailand	18.72	18.82	18.86	18.65	18.47	18.62	18.89	18.88	18.62	18.82	18.10	18.73	18.06	18.65
Vietnam	9.88	10.38	11.08	11.64	12.22	12.48	13.29	13.75	14.05	14.61	14.66	15.73	15.47	13.01

Source: Author's calculation from data collected from WITS, World Bank, UNCTAD

The development of trade resilience among the ASEAN member states has allowed new pressures ranging from geopolitical shifts to regional development. The table highlighting the index of market penetration states how a country's exports reach the global market relative to the world's exports. The high score reveals countries' broader access to foreign markets and a more diversified global presence, whereas lower scores reflect limited dependence on a small number of markets. The results find that India has been scoring a high score with an average moving 30.01, moving from 27.26 in 2010 to over 33 in 2021, compared to other ASEAN member states. Whereas countries Thailand, Malaysia, Indonesia, Singapore, and Vietnam also established relatively strong market penetration, with averages ranging between 13 and 18 during the period compared to other countries. High score values indicate that India has achieved a high score with its extensive market through trade complementarity and reaching product sophistication and deeper participation in value chain integration.

Comparative Analysis of Diversification Strategies

The success of ASEAN through broad trade strategies has allowed it to reframe new trade markets and extend its export basket

with high-end goods. This trade diversification has allowed the involvement of FDI with a view to promoting innovation and technological upgrading across various sectors. Whereas in India, diversification efforts have been progressing on a narrower range of export goods and services, instead requiring a broader expansion into new product categories to enhance overall trade consistency. India's trade focus and development through the development of domestic industries, improving research and development capabilities, will strategically integrate into global value chains, but efforts to identify and develop new competitive advantages in sectors with high growth potential.

The initiatives of trade diversion have allowed a comparative advantage and fostered competition among the trading partners (Purwono et al., 2022). India has been strategically developing the untapped resources, moving beyond traditional strengths to encompass a wider array of advanced manufactured goods and services. This has also prompted the government of India to leverage programmes like "Make in India," "National Policy for Advanced Manufacturing," and "Atmanirbhar Bharat," which will support foreign direct investment and deepen integration within global value chains (Reddy & Sasidharan, 2023). India's development in infrastructure has enhanced seamless trade flows and reduced logistical costs, thereby enhancing overall competitiveness in the global market (Kulkarni et al., 2021). Moreover, support from government institutions with encompassing regulatory frameworks and ease of doing business has been shown to positively contribute to bilateral trade, and results in underscoring the complementary relationship between the regions (Wani & Yasmin, 2023).

Policy Recommendations

Based on the comparative analysis of India and ASEAN economies with integrating trade indicators, it was found that for India, there is a need for a multidimensional policy approach to boost export diversification, market dispersion, and economic complexity within the existing trade regulations and market. So, based on the empirical findings, India should develop in promoting products that are technologically intensive rather than traditional exports. The implementation of product-linked

initiatives through research and development should be allowed and facilitated. For inclusion in deeper GVC participation in ASEAN, India's tariff plans of reducing imports, reframing the customs regulations, and cross-border linkages should be introduced. India should also modify the global production networks as per domestic industry norms. Facilitating global standards and modern manufacturing, improved logistics through multimodal transport corridors should be channelized. Enhancing the modern trade participation Act East policy framework should be revised with special connectivity through the India–Myanmar–Thailand Trilateral Highway and Mekong connectivity projects. India should follow the ASEAN model of trade policy, which will enable simplifying trade-related regulations, promoting export facilitation mechanisms across the region. Keeping in track with digital advancement, India must invest in digital infrastructure, with a view to promoting Industry 4.0, according to the adoption among MSMEs, which will facilitate e-commerce and cross-border digital trade. Most importantly, the development of Human resources with the requirement of supply chain management and upgrading the existing skills with the requirements of modern export industries of ASEAN will increase productivity and enhance upgrading.

Conclusion

It can be concluded that India and ASEAN economies, with the diversification of products, provide significant prospects by reshaping the economy through economic complexity and export market penetration. But ASEAN trade integration, along with all member states, has achieved a new framework in global production through the expansion of industrial policies. Whereas India is strengthening its trade policies through policy initiatives and aiming to increase product manufacturing. But the result is that India is lagging where ASEAN economies in technological capability and value-chain integration. The findings reveal that through the improvisation of technology, institutional quality, and regional trade participation, India can reposition itself in the global market. The study found that India needs to focus more on active policies like the ASEAN, which emphasizes innovation, diversification through GVC participation. By adjusting and realigning trade strategies, India

can achieve more resilient, inclusive, and sustainable trade growth in the evolving Indo-Pacific economic landscape.

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6

Production and Export Status of Handloom Industry in India

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Abstract

The handloom industry is a crucial abstract of the rich cultural heritage of India. The sector is significant from the view point of its production, export and employment potential. The paper intended to analyze the production and export performance of handloom industry in India. The paper is based on secondary data and used a Compound Annual Growth Rate technique to analyse the data. It is found that growth rate of handloom production has increased but its share in total textiles production has declined. It is also observed that export value of handloom product registered a negative growth. It may suggest use of information technology like social media and other digital methods to sell at national and international markets.

Keywords: Handloom Industry, Production, Export, Growth Rate

Introduction

The handloom industry is a crucial abstract of Indian cultural heritage and civilization. The handloom weaving and spinning are old as Harrapa Civilization. It has periodically been enveloped in crisis particularly since British rules in India. The

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industry account for 7 per cent of industrial output, 2 per cent of India's GDP and 12 per cent of countries' exports (Ministry of Textiles, 2020). In India, the handloom industry is based on a large number of artisanal skill-based enterprises that contributed 11.79 per cent of total textile production in 2019-20 and this sector employed 35.22 lakh handloom workers in the same year (Ministry of Textile, 2020). The sector is also important in terms of export earnings. Indian textile and handloom products are exported to more than 100 countries around the world, and in 2019-20, the export earnings of the handloom sector amounted to Rs. 2248.33 Crore (Ministry of Textile, 2021). The top five major export markets of Indian handloom products are the USA, UK, Spain, Italy and Germany (HEPC, 2022).

The growth rate of handloom cloth production was negative from 1995-1996 to 2004-2005, but it was positive from 2005-2006 to 2013-2014. During this time, the share of handloom cloth production fell gradually. From 2009-10 to 2012-13, handloom fabric exports increased gradually; however, this trend reversed in 2013-14. It is also observed that the United States and the European Union are the most important destinations for the Indian handloom export market (Kumar, 2015, Kumar & Naidu, 2015).

Ballasa and Lafay comparative index are the common measures to analyze the export performance of a country. A study (Singh & Gautom, 2019) examines the export performance and competitiveness of traded handloom products of India. It is observed that handloom commodities such as silk, cotton, carpet and other textile floor covering and made-up textile products set are considered to be the most competitive in the international market. In terms of export, the RCA (Revealed Comparative Advantage) of silk has decreased over the year, whereas the RCA of silk and wool has increased in the case of import. It concludes that silk, wool, cotton, and specific woven fabrics provide the country with a strong comparative advantage and a high degree of specialization.

The removal of Multi-Fibre Agreement (MFA) has an impact on the export performance of the textile industry in India. A study considered two sub-periods as the pre-MFA period from 1990-2004 and the post-MFA period from 2005-2012 for examining the

impact of MFA on textile industry. It is found that compound annual growth rate of textile export as well as sub-sector export in India are higher during pre-MFA period compared to post-MFA period. The manmade textile export recorded highest compound annual growth rate, followed by cotton textiles in post-MFA. It is noted that the USA was the largest export market destination for Indian textile products during the post-MFA period (Manoj & Muralidharan, 2016).

Meeting international quality standards, knowledge of buyers, eco-friendly products, government support, strategic partnership, and building brand image are identified most significant prerequisites for success of export market of Indian handloom products, in a study used exploratory qualitative investigation and a multiple regression model to examine the determinants of the export market of Indian handloom products. It is also noted that while fabric exports are declining, value-added items such as floor covering, apparel accessories, and made-up sets are the most appreciative of handloom exports (Zohair, 2018). A similar study (Kumar et al., 2010) in Pondicherry, found that export market of handloom product depends on domestic demand and promotional strategy of handloom product.

Objective: The present paper attempt to analysis current status of handloom industry in India. More specifically, the paper intended to examine production and export performance of handloom industry in India.

Data Sources and Methodology

The study is primarily based on secondary data. The sources of data are Various Annual Report, Ministry of Textile, Government of India and Handloom Census Report of India, 2009-10 and 2019-20. The paper also considered different research papers and working reports for the study. Compound Annual Growth Rate (CAGR) has been used for the purpose of analysis and following exponential function form for computing the CAGR

$$Y = ab^t e^{at} \quad (1.1)$$

Where, y = production, a = intercept, b = coefficient.

The equation (1.1) was transformed into log liner form and written as;

$$\ln Y = \ln a + t \ln b + u_t \quad (1.2)$$

After estimation of equation (1.2), the CAGR was computed as

$$g = (b - 1) 100 \quad (1.3)$$

Where,

g = CAGR in per cent per annum, b = Anti log of $\ln b$

Result and Discussions

Status of Production

The cloth production by handloom sector has been showing an increasing trend over the years. Figure 1 shows that handloom cloth production increased from 5493 million square metres in 2003-2004 to 7990 million square metres in 2017-18. The handloom fabrics production registered a CAGR of 2.24 per cent during the period 2003-04 to 2017-18.

In India, more than three fourth of cloth production are the powerloom sector, accounting nearly 77.6 per cent of total cloth production during the year 2017 (Export-Import Bank of India, 2018). The handloom is the second largest cloth producing sector after powerloom. The share of handloom fabrics production to total production in India from 2003-04 to 2017-18 are shown in Figure 2. It is shows that share of handloom fabrics production were declined from 16.2 per cent in 2003-04 to 11.8 per cent in 2017-18. Thus, it is noticed that share of handloom fabrics production trend is declining, however, the fabrics/ cloth production by the sector has been showing an increasing trend during the same period. It is mainly due to rapid growth of power loom sector.

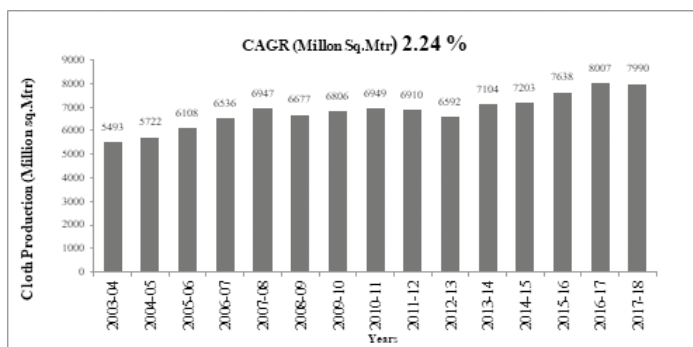


Figure 1 Growth of Handloom Production in India during 2003-04 to 2017-18

Source: Annual Reports, Ministry of Textiles, 2008-09 and 2017-18

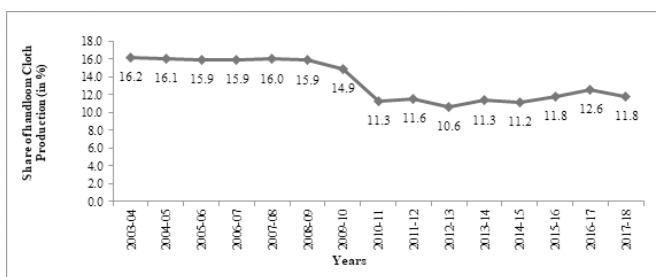


Figure 2 Share of Handloom Production to total Textiles Production in India

Source: Annual Reports, Ministry of Textiles, 2008-09, 2017-18

Note: Total Cloth production includes Handloom, Powerloom and Mill sector. Hosiery, Khadi and wool are not considered.

Status of Export

India is the second largest handloom product exporter in the world (Export-Import Bank of India, 2018). The export value of handloom products is INR. 1987.6 Crore in 2021-22. The CAGR of export value of handloom product registered a negative growth with -3.14 per cent during 2012-13 to 2021-22.

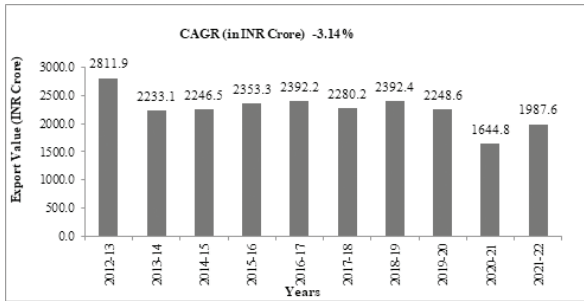


Figure 3 Export value of Indian Handloom Products

Source: Handloom Export Promotion Council (https://www.hepcindia.com/page/export_scenario)

The major exported products of Indian handloom sector are carpets, mats and mattings, rugs, bedsheets, cushion cover and other handloom articles. All the exported handloom products of India are categories into four groups namely fabrics, floor covering, clothing accessories, and made-ups (Table 1). In 2012-13, the export value of made-ups products was INR. 2066.7 crore and it constitutes 73.50 per cent of total exported value of handloom product in the country. In 2021-22, the export value of floor covering INR 931.91 crore and it is constituted 46.89 per cent of total export. The export share of made-up products also constituted 45.47 per cent of total export. So, these two products groups are largest Indian handloom export products. Among the four categories of products, export values of fabrics and floor covering increased and clothing accessories and made-ups was declined from 2012-13 to 2021-22.

Table 1 Export of Handloom Products: Category Wise Value

Handloom Product Categories	Details of products	2012-13		2021-22	
		Export (INR Crore)	Share (in %)	Export (INR Crore)	Share (in %)
Fabrics	Sarees, Handkerchief, Dhoti, Casement, Lungis, Terry Towelling, other woven fabrics	52.05	1.85	107.67	5.42

Floor Covering	Carpets, Rugs, Mates, cotton Durries, Mates and Matings	619.14	22.02	931.94	46.89
Clothing Accessories	Scarves of Silk, Gloves, Mitters and Mitts of Handloom	74.01	2.63	44.17	2.22
Made-ups	Bed linen, Table linen, Bed sheet, Pillow cover, Napkins, Table cloths, other furnishing articles etc.	2066.7	73.50	903.84	45.47
Total		2811.9	100	1987.62	100

Source: Handloom Export Promotion Council https://www.hepcindia.com/page/export_scenario

Indian handloom products are exported to many countries in world. The USA, UK, Spain, France, Italy, Germany, Australia, UAE, Netherland and Japan are the top ten export destination of Indian handloom products (Table 2). These top ten countries together constituted 69.43 per cent and 75.53 per cent of world export of Indian handloom products in the year of 2017-18 and 2021-22 respectively. In 2017-18, the USA was the leading export destination of Indian handloom product with value of export being INR 596.23 crore. UK was second largest export destination of Indian handloom products with 7.39 per cent of world export.

Table 2 Top 10 Export Destinations of Handloom Products from India

Country	2017-18		2021-22	
	Export Value (INR Crore)	Share (%)	Export Value (INR Crore)	Share (%)
USA	596.23	26.15	783.91	39.44
UK	168.46	7.39	170.45	8.58
Spain	136.65	5.99	103.67	5.22
France	105.23	4.62	88.11	4.43

Italy	116.21	5.10	84.46	4.25
Germany	114.84	5.04	78.77	3.96
Australia	74.82	3.28	69.93	3.52
UAE	107.43	4.71	44	2.21
Netherland	88.26	3.87	40.11	2.02
Japan	74.71	3.28	37.84	1.90
Sub total	1582.84	69.42	1501.25	75.53
Other Countries	697.31	30.58	486.37	24.47
World Export from India	2280.15	100	1987.62	100

Source: Handloom Export Promotion Council (HEPC) (https://www.hepcindia.com/page/export_scenario)

In the year of 2021-22, the USA continued to be first ranked of export destination for Indian handloom products, and its share increased from 26.15 per cent in 2017-18 to 39.44 per cent in 2021-22. The UK (8.53 per cent) and Spain (5.22) continued to second and third largest export market of Indian handloom product respectively. The other export destination in 2021-22 includes France (4.43), Italy (4.25), Germany (3.96), Australia (3.52), UAE (2.21), Netherland (2.02) and Japan (1.90).

Conclusion and Policy Recommendation

Despite handloom industry has been faced different crisis and challenges in various periods; the sector has stood the test of time and has kept the great tradition alive nowadays. It is observed that despite the share of handloom production to total textile production has been declined, the growth of handloom fabrics production registered a positive growth rate. Indian handloom products are exported to many countries and contributes significant amount of foreign exchange to the nation. It is also observed that export value of handloom product registered a negative growth. Hence, it is suggested that the policymakers may take initiatives to establish government market hubs for handloom products in different states and may create online

marketing channels and use of information technology like social media and other digital methods to sell at national and international markets.

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7

Women Empowerment with Special Reference to the Tiwa Women Community of Assam

Dr. Malobika Sarmah* & Dr. Simi Borah**

Abstract

Gender gap is a significant problem, especially in developing states like Assam. Though Assam is free from some social evils to some extent, like – dowry system, female feticide etc., other forms of gender discrimination do exist in Assam, like low female literacy rate, gender-based violence etc. The Tiwa tribe is one of the significant tribes of Assam. Not unlike most tribal communities, the main issues of the Tiwa women are an interesting mix of women from diverse socio-economic backgrounds. There are a sizeable number of Tiwa women who in spite of the government schemes and facilities for development, have remained in a position of insecurity, exclusion and poverty due to a number of financial barriers especially lack of opportunities because of financial constraints. There are also a smaller number of Tiwa women who have emerged with better education, a strong political awareness and financially well-being and association with various commercial enterprises like ATWA to contribute to the development of the community. The paper is an attempt to address the Tiwa women community belonging to different groups and explore ways how this disempowered section of the society can be transformed into making them empowered.

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Keywords: *Women, Gender, Tiwa tribes, Financial Inclusion, Jon Bil Mela.*

Introduction

Women empowerment refers to liberation of women from the grips of social, political and economic discrimination within the society. It does not refer to exalting women or subjugating the male section of the society. Rather it refers to establishing equality between the two genders. Women empowerment and gender equality are interconnected concepts. The objective women empowerment is to achieve gender equality on the social, economic and political ground. Due to the patriarchal society, women have struggled for equality for centuries. Concern for building a gender equal society has been gaining importance due to the inferior status of women in relation to men has been observed in almost all aspects of life. Gender equality will be achieved when there will be no division of roles and responsibilities on the basis of gender, where both the genders realize their full potentiality. It is a fact that there are biological differences between men and women due to which in some respects they are not equal. But such differences must not cast a negative impact on the living conditions of women. They must be given equal share in social, political, economic spheres of life. Our patriarchal societies frame norms and standards from male perspectives, which often goes against the sentiments of women living within that society. According to United Nations Development Fund for Women (UNIFEM), there are seven principles of women empowerment. They are – Establishing high level corporate leadership, ensuring equality of all at workplace, achieving health, safety and well-being of all women and men, promoting education, training and professional development, implementing enterprise development, supply chain and marketing practices that empower women, promote equality through community initiatives and maintain transparency, measuring and reporting accurately. Constitution of India also provides provisions for women empowerment. For example, article 16, which states about equality of opportunity for all citizens in matters relating to employment, Article 39 (a) directs the policy towards securing for men and women equally the right for an adequate means of livelihood.

Again, Gender gap is a significant problem, especially in developing states like Assam. Though Assam is free from some social evils to some extent, like – dowry system, female feticide etc., other forms of gender discrimination do exist in Assam, like low female literacy rate, gender-based violence etc. According to Assam Human Development Report 2014, the overall human development of women, in general, is less than that of the men by 14 percent. In response to these issues, the Assam government has launched various initiatives aimed at promoting gender equality and women empowerment like, Mukhyamantrir Nijut-Moina Asoni, Mukhyamantrir Mahila Udyamita Abhiyaan, and Orunodoi Scheme etc. But still women empowerment is a challenging issue in Assam. Differences in literacy rate is a major challenge in securing women empowerment, in Assam, there is a huge difference between men and women, regarding literacy rate in Assam. According to the census report 2011, against 77.85% of men literacy rate, women literacy rate is 66.27 %. Again, there is disparities of literacy rate between urban and rural areas of Assam. Whereas the male and female literacy rate in urban areas of Assam are 75.40% and 60.05%, Urban areas of Assam reported to have 91.81% of male literacy rate against 79.85% of women literacy rate. Without education women lost their self-esteem as they have to depend on male members. Due to which violence and exploitation against women upsurge too. Poverty is another challenge, in a comprehensive report released by NITI Aayog, Though Assam has shown a significant decline in its poverty headcount ratio, dropping from 36.97% in 2013-14 to 14.47% in 2022-23, it still has the highest percentage of multidimensional poverty among all the states in the country. Because of such a scenario, number of girls drop outs increases. Girls have to leave their ambitions due to the poor conditions of their family.

Objective of the Study

The objective of the paper is to study a cross section of women from the Tiwa Community residing in and around Morigaon district of Assam and to explore ways how the disempowered section of the society can be transformed into making them empowered.

Methodology

The methodology adopted in this paper is based on secondary data i.e. books, research papers, research articles published in journals etc. The present study is descriptive as well as analytical in nature.

Discussion

Introducing the Tiwa Community

Assam has many different communities like – Rabha, Boro, Miri, Karbi, Ahom, Moran, Chutia, Tiwa etc. There are different linguistic, ethnic and religious differences among the diverse communities living in the state. The Tiwa tribe is one of the significant tribes of Assam. With the publication of *Lalung (Tiwa) Buranji* (2023), it is possible to have a firm grasp of the socio-economic and political profile of the Tiwa tribal community. A point highlighted in chapter one of the book is the observation that the tribal communities of Assam are a homogenous entity coming under the Tibeto-Burman group of languages. A similar observation was made earlier by the anthropologist, Professor Emeritus B.M. Das (2015) an eminent authority of the North East tribes among others. In an essay titled “Oxomor Jonojatiyo Xongskriti” (Tribal Culture of Assam), Professor Das observes that it is meaningless to project the tribal communities of Assam separately but only as a homogeneous entity of Assam. He defines the tribal communities of Assam in terms of those communities who inhabit within the political boundary of Assam though there may be a few of the communities who may have been living on the other sides of the boundary of the state.

Professor Das states that in terms of language, these tribal communities may broadly be divided into two groups: the Austric and the Siam-Chin groups. The Austric communities include the Khasi and Jaintia groups inhabiting in the bordering state of Meghalaya though there are villages within the boundary of Assam where these languages are spoken. The other group called the Siam-Chin group is important for us at this point. Linguists have divided the Siam Chin group into four groups out of which one of them is Tibeto-Burmese which again has the following three sub-groups namely, Tibeto-Himalayan,

Assam Burmese and a few Sub-groups of North Assam. Among these three, the Assam Burmese sub-group is the largest sub-group of tribal communities inhabiting in Assam. This group includes the Bodo, Kuki-Chin and Naga groups among others. Das specifically states that the tribal communities that belong to the Bodo linguistic group include Kachari, Rabha, Garo, Lalung (Tiwa), Dimasa etc. This account of the tribal communities of Assam places the Tiwa community in its proper context.

Of late, there has appeared a number of well-known research works carried out on different aspects of the Tiwa community by a number of prestigious institutions. Among them, Assam Institute of Research for Tribals and Scheduled Castes (AIR), Anundoram Borooah Institute of Language, Art and Culture (ABILAC), a few Universities of Assam are a few of the institutions carrying out research on the tribal communities. One of the works that is of immediate relevance for this study is Raktim Patar's *The Tiwa Ethnohistory* (2021) that addresses important issues of the origin, migration and traditional beliefs of the Tiwa community. In the Introduction to the book, Patar traces the origin of the Tiwas by stating their Indo-Mongoloid descent belonging to the Bodo family of the Tibeto-Burman branch of the Sino-Tibetan speech family which ties up with the observations made by Professor Das (2015) and lately, the *Lalung (Tiwa) Buranji* (2023).

It is appreciated that Chapter One of *Lalung (Tiwa) Buranji* (2023) traces the descent of the Tiwa community in the broader context of the Tribes of Assam. In the chapter, reference is made to the excellent historical research of Dr Dambarudhar Nath⁶ on the existence of a kingdom in Doboka area belonging to the "Tifras" which Dr Nath believes to be a term that refers to the Tiwas. Understandably, in the absence of proper dates or years, the specificity of the claim is not argued here.

In this context, one can refer to the views put up in *Lalung (Tiwa) Buranji* by the historian Rajmohan Nath who makes a reference to a Tiwa King named Hetok, though here too the date is rather not specific. But the interesting point made is that the Tiwas led an agrarian community life, cultivating paddy, hunting wild fowls and deer and by and large had set up villages where they lived in harmony.

Introducing the Tiwa Women Community

Not unlike most tribal communities, the main issues of the Tiwa women are an interesting mix of women from two diverse socio-economic backgrounds identified as 'A' and 'B' below:

- (A) There are a sizeable number of Tiwa women who in spite of the government schemes and facilities for development, have remained in a position of insecurity, exclusion and poverty due to a number of financial barriers especially lack of opportunities because of financial constraints.
- (B) There are also a smaller number of Tiwa women who have emerged with better education, a strong political awareness and financially well-being and association with various commercial enterprises like ATWA to contribute to the development of the community.

Having roughly identified two groups of women, the social picture that emerges is that one of the major focal areas is girls' education in the few towns and villages of Morigoan district and Kamrup rural district including parts of Nagoan district where the Tiwa population is concentrated. The happy sign is that vast area has large numbers of schools and colleges. A focus area of women empowerment is education. This could include:

- (a) Parental and Community involvement. The lead should come from the District's Elementary Education Officers and the Inspectors of schools in order to provide opportunities to individual families and communities for these children in the schools--- starting from the Anganwadi level to the level of higher education.
- (b) State government agencies like SCERT and department of education together with that the Tiwa Autonomous Council need to collaborate with parents in order to provide free education to the children. Besides rural schools must be provided the authority to adjust school routine to make it flexible so that girl children can help at home and still attend school.
- (c) There should be sufficient women teachers to create healthy climate and to remove the superstitious believe that prevail among certain tribal communities against education for the girl child.

- (d) The infrastructures of school must be regularly supervised by concern authorities to ensure availability of hygienic toilets exclusively for girls along with safe drinking water and use of sanitary napkins and their disposal.
- (e) Most importantly there should be provisions for teacher guardian meets, meetings between parents and the managing committee of respective schools.
- (f) Many schools have tried up a project on visit of identified teachers to the home of their students in order to obtain the much-needed feedback on home environment and the competence of the learner.

Another focus area of Tiwa women empowerment is vocational education whose primary objectives is to introduce the learners to the world of work so as to enable families to be financially self-sufficient. Vocational education in this case would include:

- (a) **Cattle rearing for milk and milk products.** Besides domestic consumption, the milk and the milk products, usually curd, are sold to milk men who sell them in the nearby townships or restaurants.
- (b) **Goat rearing.** Most households rear goats mainly to be sold to the visiting butchers for its meat. Mutton is in great demand not only in the local markets but outside the local regions in the weekly markets. Goats are often purchased by butchers for sale in the nearby towns including Guwahati.
- (c) **Pork farming:** Another big market that the Tiwas support is pork. Piggery farming is a profitable enterprise for the Tiwa families. There is a big market for pork and the Tiwa women take full advantage of the situation.
- (d) **Chicken and duck farming:** Chicken and duck and broiler farming along with pigeons are other means of economic growth of the Tiwa household especially the women. The birds and the eggs of the hen and the duck are collected by retail sellers in the weekly market that is held throughout the district on different days. Broiler is another addition to the economic growth of the Tiwa household considering that there is a great demand for broiler chicken in the towns and villages of the region.
- (e) **Bee keeping:** Bee keeping is another avenue for economic growth among the Tiwa women. Quite a number of

informants had informed me on the demand for local honey as against the honey coming from outside.

- (f) **Mushrooms:** Of late, mushroom growing has been a new area that Tiwa women have been taking interest, though presently on a minor scale.
- (g) **Weaving and tailoring:** The area which is the strongest point of the Tiwa women that contributes to their economic strength is weaving as well as tailoring. Almost every household has handlooms and some of them have developed weaving into a cottage industry. The woven items not only make the women self-sufficient in clothes but also provide substantial income to the Tiwa women.

The above list is coverage of the domestic producer of the Tiwa household that have been contributing to the economic growth of the community. But the area which is the strongest point of the Tiwa women that contributes to their economic strength is weaving and to some extent, tailoring. Almost every household has handlooms and some of them have developed weaving into a cottage industry. The woven items not only make the women self-sufficient in clothes but also provide substantial income to the Tiwa women.

Fishing and Fish Farming

It was also noted that besides agriculture and weaving, two other areas namely, fish farming and fishing have the potentiality of economic development of the Tiwas. From government records (ESA), it is seen that there are 112 beels and fisheries in Morigaoin district covering an area of 2,824 hectares. Besides, there are 15,986 ponds covering an area of 3,029.65 hectares besides 132 derelict water bodies or swamps covering an area of 203.53 hectares. But, more than anything else, Morigaoin is endowed with water bodies in the form of three rivers namely Kopili, Kolong and Kiling, all three being rich in fish supplies to the district. It was learnt that the State Government had launched a number of schemes/ activities under State Owned Priority Development (SOPD) which covers

- Fish and fish seed farming
- Fishery extension service by engaging Matsya Mitras and providing marketing and transport including setting up retail outlets

- Constructing new individual ponds and community ponds.

Both men and women of the community participate in this enterprise. It is not surprising therefore, that almost every Tiwa woman has a bank account and Adhar Card. Illiterate women take the help from the other members of the family in bank work. These facilities have enhanced the need for education among the Tiwas women.

In addition to individual pursuits in fish farming, there are collective pursuits among which collective fishing is one. Collective fishing is often seen as a grand cultural event among the Tiwas and the local television channels telecast the events with a running commentary on the traditional festivities of the event. It is difficult to say how much do the collective fishing enterprises add to the overall economy of the plain Tiwas; but it is a fact that it provides a lot of entertainment and fun to the young men and women who love to look forward to these occasional events besides reasserting their love and respect to tradition.

Empowerment of Women Through SHGs

Empowerment of women is closely linked with socio-economic development or qualitative improvement of the standard of living. It has now been firmly established that the organizations known by the name of Self Help Groups (SHG) has contributed in a big way towards the empowerment of Tiwa women. SHGs are small financial organizations promoted by the government with the aim of supporting the needy women with loans to carry out their economic activities like agriculture, farming and so on. The SHGs have played an important role in making the women financially empowered to carry out economic activities. These organizations have motivated women to make small savings regularly and mutually contribute to a common fund to meet emergency needs.

The SHGs have also motivated women to start small enterprises irrespective of their educational background. The interested women have been members of SHGs and have received monetary loans for the accomplishment of economic activities like

- Agriculture work
- Poultry farming
- Live-stock rearing
- Tailoring
- Weaving etc.

It has been noted that financial support from SHGs has played an effective role in the empowerment of women especially by making the women self-reliant. They have pan cards, Adhar cards and bank accounts. By being able to operate bank accounts either on their own or with support from their friends and relatives, there has been an overall improvement in the quality of their lives. Their association with SHGs have

- Increased their level of income. The women have become more active in their work that generates income like for example, weaving, growing vegetables and so on.
- Enhanced their saving habits by making use of their SHG membership and bank accounts
- Enabled women to understand the importance of repaying loans rather than being defaulters of payment that affects monetary transactions,
- Made them aware of the various government schemes for economic development. They prefer to make full use of these government schemes.

As a tool for economic improvement, SHGs have also played a positive role in removing poverty on the one hand and addressing issues of rural development on the other. This realization had made the Tiwa women immensely dependant on SHGs.

Conclusions

Jon Beel Mela and other markets and Trade fairs are some of the places that provide researchers with opportunities to interact with Tiwa women and children accompanying their mothers. These interactions provide information on the way of life of the rural people where parents prefer to engage their girl children to domestic work more than sending them to school. One becomes convinced that socio-economic empowerment

must begin with school education. By sending girl children to school and ensuring that there is no drop out, parents would be playing a very important role in socio-economic development of their children. A survey of the items displayed for sale during the season reflects a number of points where economic empowerment ought to occupy the topmost priority among the Tiwa women. January is the season of abundance of oranges, pineapples, papaya and other produce of the season. Both the sides of the National Highway are crammed with temporary stalls for sale of these items for passing motorists. The sale period is rather short. This is a crucial area that the women community can take up for economic empowerment. Village communities can possibly organize women's self-help groups. These groups would be empowered with skill-based training on fruit processing, developing dairy products, and need based cottage industries among others. Again, there is ample scope of support from the Block officers and village communities in areas like facilitating bank loans and providing sales outlets of the produced item that would give the mela market a better account of the local produce displayed for sale. Economically, the Tiwa women are seen as moving ahead in the direction of economic empowerment. They have come a long way from a situation where empowerment for all women is a distant dream. Today it is seen that most of the Tiwa women are economically well-off. They have been enjoying equal economic rights as evident from the rights to inheritance of paternal property, rights to earn an income through their own efforts like weaving, poultry farming and so on. They also enjoy equal opportunities in matters of economic empowerment. All Tiwa Women's Association (ATWA) and more especially, Self Help Groups (SHGs) and other financial organizations including the banks play an important role in the venture of development. This venture would bridge the gap between Group A and Group B of the Tiwa women identified at the beginning of this paper. The so-called barriers of development would be considerably minimized for the creation of a better society.

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8

Agricultural Modernization and its Impact on Indigenous Farming Systems and Human Health: A Case Study of Morigaon District, Assam

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Abstract

This study investigates the Agricultural Modernization Index (AMI) across six villages in Morigaon district, Assam, to assess the impacts of modernization on farming communities and traditional practices. Through comprehensive field surveys involving 168 participants, the research reveals significant variations in modernization levels, with Bhumuraguri ranking highest (AMI 95.77) and Dayang lowest (AMI 26.13). The health implications of agricultural modernization are alarming, with 90 respiratory cases, 40 liver and kidney problems, 24 allergic reactions, 8 neurological symptoms, and 6 other health issues documented among participants. Gender disparities in health outcomes show males experiencing higher rates of respiratory problems (43.5%) compared to females (35.1%), while females show greater vulnerability to neurological symptoms (21.6% vs 3.8%). Traditional farming practices demonstrate superior sustainability, climate resilience, and biodiversity conservation compared to modern monocropping systems. The study identifies critical challenges including knowledge erosion, policy neglect, economic pressures, and cultural homogenization threatening indigenous agricultural wisdom. Recommendations

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include establishing seed banks, integrating TEK-based curricula in education, providing economic incentives for traditional farmers, strengthening research documentation, and creating supportive policy frameworks to revive and preserve traditional ecological knowledge for sustainable agricultural futures.

Keywords: *Traditional Ecological Knowledge, Agricultural Modernization Index, Indigenous Farming, Sustainable Agriculture, Pesticide Health Impacts, Biodiversity Conservation.*

Introduction

More than half of the world's pesticide use takes place in Asia, and India ranks twelfth globally while standing third in Asia after China and Turkey (Nayak, P. et al, 2021). For instance the overuse of pesticides in rice cultivation has sparked serious concerns about potential threats to human health (Bhoi et al., 2025). The Green Revolution of the 1960s fundamentally transformed Indian agriculture, introducing high-yielding variety (HYV) seeds, chemical fertilizers, and pesticides that dramatically increased crop productivity. However, this transformation came at the cost of traditional ecological knowledge (TEK) systems that had sustained communities for millennia. Indigenous agricultural practices, characterized by crop diversity, natural pest management, and sustainable resource utilization, were rapidly replaced by chemical-intensive monocropping systems. This shift has resulted in severe environmental degradation, including soil fertility loss, water pollution, groundwater depletion, and unprecedented biodiversity decline. The genetic erosion of native crop varieties has reduced agricultural resilience to climate variability and pest outbreaks. Simultaneously, prolonged exposure to chemical pesticides has created serious health hazards for both farmers and consumers, leading to metabolic diseases, cardiovascular disorders, respiratory problems, and neurological symptoms. Small-scale farmers face increasing economic instability due to high input costs, fluctuating market prices, and growing dependence on external inputs, pushing many into debt cycles. The socio-cultural fabric of rural communities has also suffered, with traditional agricultural rituals, local weather forecasting methods, and community seed-sharing practices gradually

disappearing. This erosion of cultural heritage represents not just a loss of knowledge but a disconnection from sustainable ways of life. Given the mounting challenges of climate change, environmental degradation, and food security, there is an urgent need to revive and integrate indigenous agricultural wisdom with contemporary sustainable farming practices for holistic rural development.

Objectives of the Study

1. To assess agricultural modernization levels using the Agricultural Modernization Index (AMI) across study villages in Morigaon district, Assam
2. To examine the health impacts of pesticide, use and chemical-intensive farming on rural communities
3. To document indigenous agricultural practices and analyze their benefits for sustainability and climate resilience
4. To identify challenges and barriers in preserving and continuing traditional ecological knowledge
5. To recommend comprehensive strategies for integrating TEK with modern sustainable agricultural practices

Methodology

This study was conducted in Morigaon district, Assam, covering six villages (Majarbari, Kalmoubari, Bhumuraguri, Kahibari, Hatimukh, and Dayang) across three revenue circles (Morigaon, Mikirbheta, and Mayong). The sample comprised 168 participants selected through systematic random sampling. The Agricultural Modernization Index (AMI) was calculated using the formula: $AMI = \frac{\sum X_j}{(Q \times N)}$, where X_j represents the individual sum of weight of all indices, Q denotes the maximum score of all criteria rated, and N indicates the number of individuals. AMI scores were categorized as Low (\leq Mean-

SD), Medium (Mean \pm SD), and High (\geq Mean+SD). Primary data collection was conducted through structured field surveys in 2023, focusing on farming practices, input usage patterns, health status assessments, and household expenditure patterns. Data analysis involved descriptive statistics, cross-tabulation, and comparative analysis to understand relationships between modernization levels and various outcome variables.

Discussion

Agricultural Modernization Index Results

The Agricultural Modernization Index analysis reveals significant variations across the six study villages. Bhumuraguri achieved the highest AMI score of 95.77, ranking first, followed by Kalmoubari (95.00, Rank 2) and Majarbari (93.93, Rank 3). These villages, located in Mikirbheta and Morigaon revenue circles respectively, demonstrate high levels of modern agricultural practices adoption. Kahibari ranked fourth with an AMI score of 81.67, categorized as moderate modernization. In contrast, villages in the Mayong revenue circle showed significantly lower modernization levels, with Hatimukh (29.11, Rank 5) and Dayang (26.13, Rank 6) falling into the low AMI category. The distribution of 168 respondents across categories shows 37 in the low AMI category, 105 in medium, and 27 in high categories. Regional variations in modernization levels can be attributed to factors including proximity to agricultural extension services, infrastructure development, market accessibility, and government scheme implementation. Villages with better road connectivity and institutional support demonstrate higher adoption of modern inputs, while remote areas maintain more traditional practices due to limited access to modern agricultural technologies and services.

Table 1 Overall Agricultural Modernization Index

Revenue Circle	Village	Low	Medium	High	Total	Mean AMI Score	Dimension	Rank
Morigaon	Mejarbari	5	20	3	28	93.93	High	3
	Kalmoubari	8	15	5	28	95.00	High	2
Mikirbheeta	Bhumuraguri	6	18	4	28	95.77	High	1
	Kahibari	4	21	4	28	81.67	Moderate	4
Mayong	Hatimukh	6	15	7	28	29.11	Low	5
	Dayang	8	16	4	28	26.13	Low	6
	Total	37	105	27	168			

Source: Field Survey, 2023

Health Impacts of Agricultural Modernization:

The correlation between agricultural modernization and health problems presents alarming findings. Pesticide-induced disorders encompass multiple systems including metabolic diseases, cardiovascular disorders, respiratory diseases, digestive system problems, neurological symptoms, and endocrine disorders. High AMI areas demonstrate 104 illness cases, with respiratory problems being most prevalent (64 cases), followed by liver and kidney problems (21 cases), allergic reactions (13 cases), neurological symptoms (2 cases), and other health issues (4 cases). Medium AMI areas recorded 43 total cases with different distribution patterns: 21 respiratory, 7 liver/kidney, 9 allergic reactions, 5 neurological symptoms, and 1 other health issue. Interestingly, low AMI areas showed 21 cases with liver and kidney problems being most common (12 cases), followed by respiratory issues (5 cases), allergic reactions (2 cases), neurological symptoms (1 case), and other health problems (1 case). The total health burden across all categories reveals 90 respiratory problems, 40 liver and kidney issues, 24 allergic reactions, 8 neurological symptoms, and 6 other health conditions among the 168 participants. This data clearly demonstrates that higher levels of agricultural modernization correlate with increased respiratory health problems, likely due to greater pesticide exposure during application and residual contact.

Table 2 Occurrence of Long-term Illnesses Among the Participants

AMI	Proportion of category in sample	Respiratory Problem	Liver and Kidney Problems	Allergic reactions	Neurological symptoms	Others
Low	21	5	12	2	1	1
Medium	43	21	7	9	5	1
High	104	64	21	13	2	4
Total	168	90	40	24	8	6

Source: Primary Data, 2023

Gender Disparities in Health Impacts

Gender-based analysis reveals significant disparities in health impact patterns between males and females. Among 131 male participants, respiratory problems affect 57 individuals (43.5%), liver and kidney problems affect 31 (23.7%), allergic reactions affect 37 (28.2%), neurological symptoms affect 5 (3.8%), and other health issues affect 1 (0.8%). Female participants, totaling 37, show different vulnerability patterns: 13 experience respiratory problems (35.1%), 9 have liver and kidney problems (24.3%), 3 suffer allergic reactions (8.1%), 8 experience neurological symptoms (21.6%), and 4 have other health issues (10.8%). These patterns indicate that while males face higher absolute numbers and rates of respiratory and allergic problems, likely due to greater direct exposure during pesticide application and fieldwork. This suggests that males are more prone to different diseases than females because a higher number of males are engaged in farming practices.

Table 3 Gender-wise Distribution of Patients

Gender	Respiratory Problem	Liver and Kidney Problems	Allergic reactions	Neurological symptoms	Others	Total
Male	57 (43.5%)	31 (23.7%)	37 (28.2%)	5 (3.8%)	1 (0.8%)	131
Female	13 (35.1%)	9 (24.3%)	3 (8.1%)	8 (21.6%)	4 (10.8%)	37
Total	70 (41.7%)	40 (23.8%)	40 (23.8%)	13 (7.7%)	5 (3%)	168

Note: Data in parentheses are percentages. Source: Primary Survey

Economic Impact of Illness Caused by Chemical-Intensive Farming Practices

In the figure 1 clearly illustrates the change in monthly household consumption expenditure before and after illness caused by chemical-intensive agricultural practices. Before illness, the highest share of expenditure was on food (₹3,500), followed by clothing (₹1,500) and housing (₹1,600). After illness, a drastic shift in spending pattern is observed. Expenditure on health rises sharply from ₹1,000 to ₹4,300, indicating the heavy financial burden of medical treatment. Similarly, loan repayment increases significantly from ₹700 to ₹5,600, reflecting the need to borrow money to meet healthcare and other essential expenses. Transport costs also rise due to frequent hospital visits

and travel for treatment. On the other hand, spending on food, clothing, education, recreation and other non-essential items decreases noticeably after illness. This change highlights severe economic stress and declining living standards among farming households. Thus, chemical-intensive agricultural practices not only affect farmers' health but also lead to substantial economic losses and increased indebtedness.

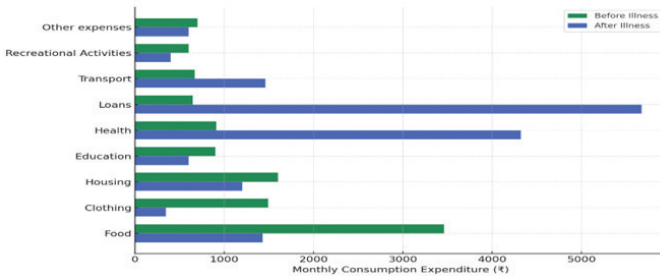


Figure 1 Average monthly consumption expenditure of household

Sourc : Primary survey, 2023

Drawbacks of Agricultural Modernization

The interaction among agricultural activities, chemical pollution, and climate change leads to multiple intertwined challenges for the environment, human health, and food systems across the world (Iqbal et al., 2025). Pesticides are a key part of modern farming, and when applied correctly they help improve both the quality and the yield of agricultural produce (Rafiei & Kioumars, 2024; Saini et al., 2025). The widespread pesticide use has helped maintain high and stable crop yields, it has also posed serious problems for soil health (Duan et al., 2025). The excessive use of chemical fertilizers and pesticides in the pursuit of agricultural modernization has triggered many negative impacts that undermine long-term sustainability. Moreover, the shift from traditional mixed farming systems to modern monocropping has caused severe biodiversity loss and genetic erosion of native crop varieties, reducing agricultural resilience to pests, diseases, and climate variability. Environmental degradation manifests through soil fertility depletion due to continuous chemical inputs, widespread water pollution from

pesticide and fertilizer runoff, and groundwater depletion from intensive irrigation practices. Economic instability has intensified as farmers face escalating input costs for seeds, fertilizers, pesticides, and machinery, while market price fluctuations create unpredictable income streams, pushing many small-scale farmers into persistent debt cycles. The increased dependence on external inputs has eroded farmer autonomy and traditional self-sufficiency, making communities vulnerable to supply chain disruptions and market manipulations. Health hazards from prolonged chemical pesticide exposure affect both farmers through direct contact and consumers through food residues, causing acute and chronic health problems across multiple physiological systems. Climate vulnerability has increased as modern systems prove less adaptive to climatic variability compared to traditional practices that evolved over centuries to cope with local environmental conditions. Most significantly, socio-cultural displacement has occurred through the loss of agricultural rituals, traditional weather forecasting knowledge, community seed-sharing practices, and intergenerational knowledge transmission, representing an irreplaceable erosion of cultural heritage and collective wisdom.

Benefits of Traditional Farming Practices

Traditional farming practices offer numerous advantages that align with contemporary sustainability goals. Environmental sustainability is achieved through practices that enhance soil health, maintain natural fertility cycles, and minimize ecological damage through organic matter incorporation and biological pest control methods. These systems demonstrate exceptional adaptation to local environmental conditions and climatic variability, having evolved over generations to optimize productivity within specific ecological niches. The low-cost nature of traditional methods makes them accessible to small-scale farmers, requiring minimal external inputs and relying primarily on locally available resources like cow dung manure, neem-based pesticides, and indigenous seeds. Climate resilience is a hallmark of traditional systems, as they incorporate diverse crops, water conservation techniques, and stress-resistant varieties that can withstand weather extremes and climatic fluctuations. Biodiversity preservation occurs

naturally through mixed cropping systems that maintain genetic diversity, support beneficial insects and soil microorganisms, and preserve native crop varieties with unique nutritional and adaptive properties. Cultural heritage preservation ensures continuity of indigenous knowledge systems, maintaining community identity and traditional ecological wisdom. Natural fertilizer dependence eliminates chemical residues in food products, reduces environmental contamination, and maintains soil biological activity essential for long-term fertility. These integrated benefits demonstrate that traditional practices provide holistic solutions addressing environmental, economic, social, and cultural dimensions of sustainable development.

Indigenous Agricultural Systems Across India

India's diverse agro-ecological zones have fostered numerous indigenous agricultural systems adapted to local conditions. Andhra Pradesh features dryland agricultural and farming systems practiced by tribes including Korra, Killo, Swabi, and others, emphasizing water conservation and drought-resistant crops. Arunachal Pradesh showcases sophisticated systems like the Panikheti system, Apatani valley cultivation, Zabo farming, Alder-based farming, Bun cultivation, and the innovative bamboo drip irrigation system that efficiently delivers water to crops in hilly terrain. Assam's traditional practices include shifting cultivation (jhum) and double transplanting methods developed by Boro, Dimasa, Chutia, and other tribal communities. Chhattisgarh employs the Kharri Method, Lahec Method, mixed cropping, and Utera cropping systems that maximize land productivity while maintaining soil health. Goa's Kumeri system represents sustainable shifting cultivation with systematic felling, vegetation burning, and seed planting without plowing. Gujarat's tribal communities practice intercropping, agri-horti systems, pasture management, and silvipastoral systems that integrate crops, trees, and livestock. Haryana focuses on integrated tillage, weed management, and pest control practices that minimize external inputs while maintaining productivity. These diverse systems collectively represent a vast repository of ecological knowledge that has sustained communities across varied climatic and topographic conditions for millennia.

Integrating Indigenous Knowledge for Sustainable Development

Sustainable resource management draws from innovations like Johads in Rajasthan for water harvesting, stepwells (Baolis) in Gujarat for groundwater management, and Gharats (traditional Himalayan watermills) in Uttarakhand for renewable energy. Education and capacity building integrate traditional astronomy and navigation knowledge, local medicinal plant usage, and phytoremediation strategies into contemporary curricula. Policy and governance frameworks must recognize communities like the Bishnoi who practice organic farming as part of their cultural identity, supporting their methods while scaling successful practices. The Baranaja (12-seed cultivation) system exemplifies innovative solutions that maximize productivity while maintaining genetic diversity, offering models for sustainable intensification that can address food security while preserving ecological integrity.

Challenges

The preservation and continuation of indigenous agricultural wisdom faces multifaceted challenges that threaten the survival of traditional ecological knowledge systems. Knowledge erosion represents the most critical threat, as oral transmission mechanisms weaken due to generational gaps, urbanization, and changing lifestyles. Youth increasingly show reluctance to engage in traditional agricultural practices, viewing them as outdated or economically unviable compared to modern alternatives or non-agricultural career opportunities. Weak research documentation has resulted in limited systematic recording of traditional practices, leaving vast repositories of knowledge vulnerable to permanent loss. Institutional and policy barriers significantly impede TEK preservation through neglect in policy frameworks that favor modern agricultural approaches, insufficient institutional support for traditional practitioners, and poor integration mechanisms between indigenous knowledge and modern scientific systems. Economic pressures create additional obstacles through the domination of foreign food products in markets, stagnant pricing for indigenous crop varieties compared to high-yielding

variety seeds, and limited market access for traditional produce. Cultural factors including globalization-driven cultural erosion, homogenization of agricultural practices, and loss of community values that traditionally supported knowledge sharing further compound these challenges. Technological barriers manifest through limited awareness and training opportunities, creating knowledge gaps that prevent effective integration of traditional and modern approaches. Legal issues surrounding intellectual property concerns and lack of protective frameworks for traditional knowledge expose indigenous communities to exploitation. Mountain agriculture faces particular challenges due to geographic isolation and difficult terrain. The overwhelming influence of global food systems continues to undermine local practices, creating systemic pressure toward standardization and modernization that displaces indigenous agricultural wisdom.

Recommendations

Addressing the challenges facing traditional ecological knowledge requires comprehensive, multi-stakeholder strategies that integrate preservation, documentation, education, and policy interventions. Strengthening research and documentation initiatives through systematic recording of TEK, establishing academic research programs focused on indigenous practices, and creating digital archives accessible to communities and researchers represents a foundational priority. Establishing local seed banks and knowledge centers managed by communities ensures preservation of native crop varieties while serving as hubs for knowledge exchange and capacity building. Introducing TEK-based curriculum integration from primary through university levels will ensure intergenerational knowledge transmission while validating traditional practices through formal education systems. Providing economic incentives including price support mechanisms for organic and indigenous produce, targeted subsidies for traditional farmers, and certification programs that add value to traditional products can make indigenous practices economically competitive. Consumer awareness campaigns promoting indigenous crop varieties and highlighting their health and environmental benefits will create market demand that supports traditional

agriculture. Encouraging community-based agroforestry and home garden initiatives will revive mixed farming systems that integrate multiple crops, trees, and livestock for enhanced sustainability. Policy integration requires government schemes that incorporate TEK principles, legal frameworks protecting traditional knowledge rights, and institutional mechanisms facilitating collaboration between traditional practitioners and modern agricultural scientists. Capacity building through targeted training programs for youth in indigenous methods, combined with mentorship opportunities connecting elders with younger generations, will ensure knowledge continuity. Developing market linkages through direct farmer-consumer networks, fair trade mechanisms, and value chain development for traditional products will create economic viability that supports the continuation of indigenous agricultural practices.

Conclusion

This comprehensive study reveals that agricultural modernization has precipitated severe ecological imbalance, biodiversity loss, and soil degradation while intensifying economic vulnerability through escalating input costs and persistent debt cycles. The health implications are alarming, with pesticide use resulting in widespread respiratory, liver, kidney, and neurological disorders, displaying significant gender-based disparities in health outcomes. Socio-cultural erosion has systematically weakened traditional knowledge transmission systems, threatening millennia of accumulated wisdom. However, indigenous practices demonstrate superior sustainability, cost-effectiveness, climate resilience, and biodiversity conservation compared to chemical-intensive modern methods. The urgent need for revitalizing traditional ecological knowledge requires integrating indigenous wisdom with contemporary science, implementing supportive economic incentives, strengthening systematic documentation efforts, and establishing comprehensive policy frameworks that recognize and protect traditional agricultural knowledge for ensuring sustainable agricultural futures and rural community resilience.

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9

Financial Inclusion and SHG Financing under NRLM: Evidence from Northeast India with Special Reference to Assam

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Abstract

The National Rural Livelihoods Mission (NRLM) has emerged as a flagship programme aimed at strengthening Self-Help Groups (SHGs) and ensuring their access to institutional finance through Revolving Fund (RF), Community Investment Fund (CIF), and SHG-bank linkage. The present study examines the performance of financial inclusion under NRLM in Northeast India with special reference to Assam. Based on secondary data collected from official NRLM sources, the study analyses inter-state variations in RF, CIF, and bank loan coverage among SHGs and further evaluates district-level disparities within Assam. The findings reveal wide regional and intra-state inequalities in SHG financing. While states like Tripura and Assam show relatively strong performance, other northeastern states lag behind due to infrastructural and institutional constraints. In Assam, although overall progress in SHG financing is noticeable, significant district-level disparities persist. The study concludes that despite notable achievements, NRLM's financial inclusion outcomes require stronger institutional support, consistent funding, improved banking outreach, and targeted interventions in backward districts to ensure equitable and sustainable financial empowerment of rural women.

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Keywords: *Financial Inclusion, National Rural Livelihoods Mission (NRLM), Self-Help Groups (SHGs), Revolving Fund (RF), Community Investment Fund (CIF), Assam.*

Introduction

Financial inclusion has emerged as a central pillar of inclusive economic development, particularly in developing economies like India where a significant proportion of the population remains dependent on informal financial systems. Access to affordable, timely, and adequate financial services enables the poor to smooth consumption, avoid exploitative debt traps, manage risks, and invest in sustainable livelihood activities. Repeated access to credit not only strengthens household resilience but also promotes asset creation, enterprise development, and long-term poverty reduction. Recognizing this, financial inclusion has been accorded high priority in India's development strategy, especially for rural and marginalized communities (Singh et al., 2017).

The Reserve Bank of India (RBI) defines financial inclusion as the process of ensuring access to appropriate financial products and services needed by all sections of society, particularly vulnerable and low-income groups, at an affordable cost in a fair and transparent manner (Kumar, A., Pal, R., & Pal, R., 2019). In this context, the Self-Help Group (SHG) Bank linkage programme has emerged as one of the most effective institutional mechanisms for promoting financial inclusion in rural India.

The National Rural Livelihoods Mission (NRLM), launched in 2011, represents a paradigm shift in India's approach to rural poverty alleviation by placing financial inclusion, livelihood promotion, and institutional strengthening of the poor at the core of its strategy. The mission aims to systematically mobilize rural poor into SHGs, federate them at village and higher levels, and ensure their sustainable access to financial services, technical support, and market linkages. Under NRLM, financial inclusion is operationalized through multiple interventions such as opening of savings accounts, provision of Revolving Fund (RF), Community Investment Fund (CIF), interest subvention on bank loans, and universalization of micro-insurance to mitigate life, health, and asset-related risks. Central to the NRLM's

financial inclusion and investment strategy is prioritizing the poor as preferred clients within the banking system and actively mobilizing bank credit for them (NRLM Implementation Plan, 2012).

The role of the bank starts immediately after the inception of the programme. The banks open savings accounts for all the programme beneficiaries, including SHG and their federation and provide a full range of banking services like credit, savings and remittances. Apart from the basic banking services, NRLM provides Revolving Fund (RF) and Capital Investment Fund (CIF) to the institutions of the poor in order to strengthen their institutional and financial management capacity and build a track record so that mainstream bank finances can be attracted (Singh et al., 2017). To cover basic consumption and initial production needs, ASRLM offers SHGs a Revolving Fund support of at least Rs. 10,000 and up to Rs. 15,000 each SHG. Within a year of the RF, the SHGs receive the CIF, which is determined by the group's quality, internal loans, micro investment plans, and savings management records. Through the VOs, ASRLM distributes the CIF to the SHGs. The CIF fund acts as catalyst capital and the VOs have the flexibility to distribute funds for various need or requirements with the consent of the group members (Singh et al., 2017).

Despite the strong institutional framework of NRLM, the performance of financial inclusion initiatives exhibits considerable regional and inter-state variations. Nowhere is this disparity more evident than in the North Eastern Region (NER) of India. While some states have made significant progress in SHG mobilization, fund utilization, and bank linkage, others continue to lag due to institutional weaknesses, administrative bottlenecks, and infrastructural constraints (Das & Sarma, 2025).

Assam, being the largest and most populous state in the Northeast, occupies a pivotal position in the implementation of NRLM in the region. The Assam State Rural Livelihoods Mission (ASRLM) has achieved notable progress in mobilizing SHGs, disbursing RF and CIF, and promoting SHG–bank linkage. However, within the state itself, substantial district-level disparities persist in terms of access to funds and bank credit, indicating uneven institutional capacity and variations

in implementation efficiency (Nagayya, D., & Rao, B. A., 2015).

Against this backdrop, the present study attempts to examine the performance of financial inclusion under NRLM in Northeast India with special reference to Assam. The study specifically analyses the inter-state variations in the disbursement of Revolving Fund, Community Investment Fund, and access to bank loans among SHGs, and further investigates the district-level performance of financial inclusion initiatives in Assam. By identifying regional and intra-state disparities, the paper seeks to generate policy-relevant insights for strengthening the financial inclusion architecture of NRLM and ensuring more equitable access to institutional finance for rural poor, particularly women SHGs.

Objectives of the Study

1. To examine the overall status and inter-state variations of financial inclusion under NRLM in Northeast India.
2. To assess the performance of financial inclusion initiatives under NRLM in Assam with special reference to RF, CIF, and SHG–bank linkage at the district level.

Methodology

The present study is based on a **descriptive and analytical research design**, aimed at examining the status and performance of financial inclusion under the National Rural Livelihoods Mission (NRLM) in Northeast India with special reference to Assam. The study relies exclusively on **secondary data**, collected from authentic and official sources such as the **NRLM official website, Ministry of Rural Development (Government of India), RBI reports, Assam State Rural Livelihoods Mission (ASRLM) publications, and related government documents**. In addition, relevant research articles, books, working papers, and policy reports have been consulted to develop the conceptual framework of the study.

The **spatial coverage** of the study includes all the **Northeastern states of India for inter-state analysis**, while a **detailed district-level analysis is confined to Assam**. The **temporal scope** spans multiple years to capture the trend in the disbursement of Revolving Fund (RF) and Community Investment Fund (CIF)

and to assess year-wise variations in financial support to Self-Help Groups (SHGs).

For data analysis, **simple statistical tools such as percentages, growth rates, and trend analysis have been used** to examine the performance of SHGs in terms of receiving RF, CIF, and bank loans. Tabular and graphical methods have been employed for effective presentation and interpretation of data. The study also adopts a **comparative approach** to highlight inter-state and inter-district variations in financial inclusion outcomes. Based on the analytical findings, suitable inferences and policy suggestions have been drawn.

Need and Significance of the Study

Financial inclusion is a crucial instrument for poverty reduction, livelihood generation, and women's empowerment. Despite several policy initiatives, a large section of the rural poor in India remains excluded from formal financial systems. In this context, the National Rural Livelihoods Mission (NRLM) plays a vital role in promoting SHG-based financial inclusion through Revolving Fund (RF), Community Investment Fund (CIF), interest subvention, and SHG-bank linkage. The North Eastern Region (NER) faces unique challenges such as difficult terrain, scattered settlements, and limited banking infrastructure, leading to uneven NRLM outcomes across states and districts. Assam, as the largest state in the region, exhibits significant district-level disparities in SHG access to institutional finance, reflecting uneven institutional capacity and financial outreach.

This study is significant as it assesses the performance of financial inclusion under NRLM from both regional and district perspectives, highlights inter- and intra-state inequalities in SHG financing, and aids policymakers in identifying backward areas requiring targeted interventions. It also contributes to the limited empirical literature on rural finance and livelihood promotion in Northeast India.

Results and Discussions

This section presents and discusses the empirical findings of the study on the performance of financial inclusion under the National Rural Livelihoods Mission (NRLM) in Northeast India

with special reference to Assam. The analysis is carried out at three levels i.e. inter-state comparison among the northeastern states, temporal trends in Revolving Fund (RF) and Community Investment Fund (CIF) disbursement in Assam, and district-level variations within the state. The discussion primarily focuses on the extent of SHG coverage under RF, CIF, and bank linkage, and highlights the regional and intra-state disparities in access to institutional finance. The results are interpreted in the broader context of NRLM's objectives, regional developmental constraints, and policy implementation challenges, with a view to drawing meaningful insights for strengthening financial inclusion and SHG-based livelihood promotion.

Though financial inclusion is one of the core components of NRLM, interstate variations can be observed in the current status of financial inclusion initiatives under NRLM. Even in the state of North East India huge differences can be detected in terms of financial inclusion goals.

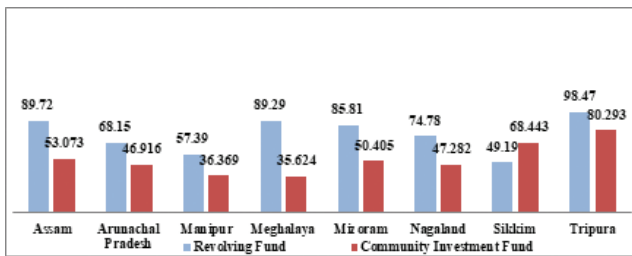


Figure 1 Percentage of SHGs RF and CIF in NE States

Source: NRLM's Official Website

Figure 1 reveals substantial disparities in the percentage of SHGs that received Revolving Funds and Community Investment Funds across states in Northeast India. Tripura leads with the highest percentage of SHGs receiving both types of funds (98.47% and 80.29%, respectively), indicating a highly effective allocation strategy. In contrast, Sikkim, while excelling in Community Investment Funds (68.44%), lags significantly in Revolving Funds (49.19%), showing a possible imbalance and discrepancy in resource distribution under NRLM. Assam and Meghalaya display strong performance in Revolving Funds, with Assam

at 89.72% and Meghalaya at 89.29%, but their SHGs receiving Community Investment Fund percentages are less impressive, particularly Meghalaya at 35.62%. Meanwhile, Manipur shows lower engagement across both fund types (57.39% and 36.369%), indicating potential challenges in fund accessibility to SHGs and program implementation. This variation underscores the need for tailored strategies to address regional disparities in North East India and enhance overall financial support to SHGs in different states under NRLM.

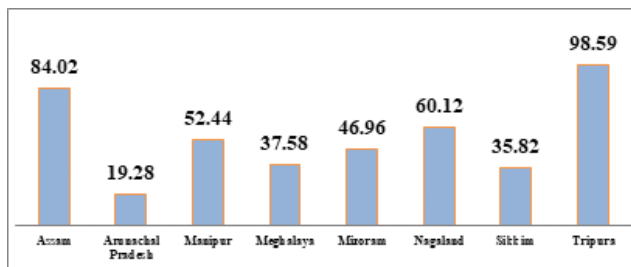


Figure 2 Percentage of SHGs Availed Bank Loan in NE States

Source: NRLM's Official Website

Figure 2 depicts the percentage of SHGs availing bank loans across Northeast India, highlighting significant variations in access to financial services. Tripura stands out with an exceptionally high rate of 98.59%, indicating robust financial inclusion and effective linkage between SHGs and banking institutions. This is basically due to the effective implementation of the Three-Tier Panchayati Raj System in the state. Conversely, Arunachal Pradesh exhibits the lowest percentage at 19.28%, suggesting considerable barriers to accessing bank loans, potentially due to geographic remoteness and limited banking infrastructure. States such as Assam (84.02%) and Nagaland (60.12%) demonstrate relatively high loan uptake, reflecting satisfactory financial integration, while Meghalaya (37.58%) and Sikkim (35.82%) lag behind, indicating lower financial engagement. Manipur and Mizoram show moderate figures (52.44% and 46.96%, respectively), pointing to a need for enhanced strategies to improve financial linkage.

Examining the performance of ASRLM in terms of Revolving Fund (RF) and Community Investment Fund (CIF) disbursement to SHGs, as well as the percentage of SHGs accessing bank loans, reveals that Assam has performed notably better compared to most other northeastern states in terms of financial inclusion. The year-wise performance of Assam can be comprehensively assessed through the figure provided below.

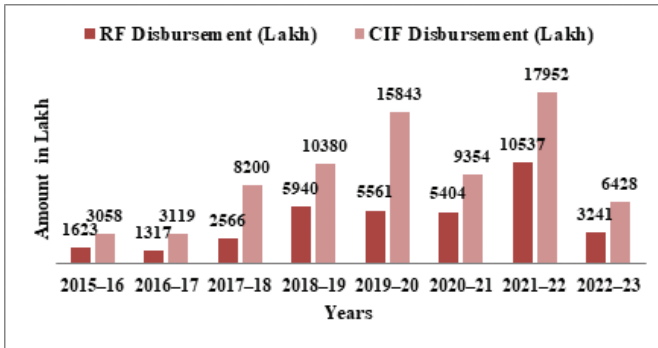


Figure 3 Amount of Revolving Fund and Community Investment Fund Disbursed to SHGs in Assam

Source: NRLM's Official Website

In Figure 3, the data on Revolving Fund (RF) and Community Investment Fund (CIF) disbursed to SHGs over the years reflect significant fluctuations in financial support to SHGs in Assam. The RF allocation shows a dramatic increase from ₹1,623 lakh in 2015-16 to ₹10,537 lakh in 2021-22, highlighting a robust upward trend in funding, though it experienced a sharp decline to ₹3,241 lakh in 2022-23. Conversely, CIF disbursements exhibit a more consistent growth trajectory, rising from ₹3,058 lakh in 2015-16 to ₹17,952 lakh in 2021-22, followed by a notable decrease to ₹6,428 lakh in 2022-23. This variability in both RF and CIF distributions suggests potential fluctuations in policy focus, with recent years demonstrating increased support but also instability, indicating a need for strategic adjustments to stabilize and sustain funding levels for effective SHG development.

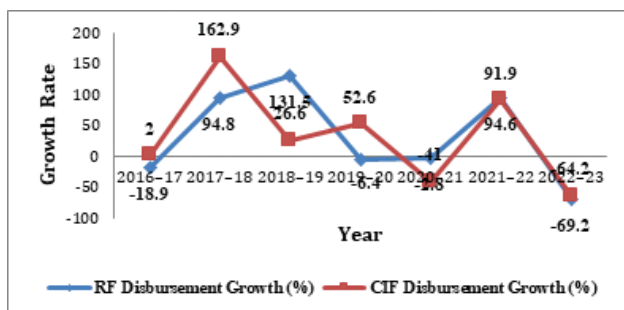


Figure 4 Growth Rates of Year-Wise Disbursement of RF and CIF to SHGs in Assam

Source: NRLM's Official Website

Inconsistent financing patterns are shown in the above figure, which displays notable year-by-year variations in the growth rates of Revolving Fund (RF) and Community Investment Fund (CIF) disbursements to SHGs in Assam. With major peaks in 2017–18 (162.9 percent) and 2021–22 (91.9 percent), CIF grew at faster rates than RF, most likely as a result of focused governmental measures. While RF growth also reached its highest points in 2018–19 (131.5 percent) and 2021–22 (94.6 percent), it also showed more severe drops, including a steeper decline of -69.2 percent in 2022–23. Growth in 2022–2023 was significantly lower for both funds (-64.2 percent for CIF), suggesting potential policy changes or budget cuts. These patterns point to the necessity of steady and equitable support, with a stronger focus on resolving financial difficulties and guaranteeing the long-term viability of SHG projects.

In Assam, if we see the district-level data, variations can be detected in terms of the performance of the DMMU in the financial inclusion component. The table below presents district-level data on SHGs that have received Revolving Funds (RF), Community Investment Funds (CIF), and bank loans.

Table 1 Percentage of Total SHGs Received RF, CIF and Aailed Bank Loan Across Districts

Sl. No.	Name of the Districts	Percentage of SHGs received RF	Percentage of SHGs received CIF	Percentage of SHGs aailed Bank Loan
1	BAKSA	85.54	54.95	78.36
2	BARPETA	87.22	42.14	75.23
3	BISWANATH	86.15	43.43	85.48
4	BONGAIGAON	76.04	54.66	71.95
5	CACHAR	49.19	35.79	64.41
6	CHARAIDEO	80.07	60.79	82.15
7	CHIRANG	73.50	68.06	67.45
8	DARRANG	81.55	43.67	88.85
9	DHEMAJI	77.16	47.74	57.23
10	DHUBRI	58.37	16.99	77.94
11	DIBRUGARH	98.14	60.34	95.69
12	DIMA HASAO	55.00	37.49	59.16
13	GOALPARA	68.02	52.95	83.77
14	GOLAGHAT	87.21	82.92	85.76
15	HAILAKANDI	60.15	40.11	64.76
16	HOJAI	72.15	53.74	82.88
17	JPRHAT	73.69	58.90	80.63
18	KAMRUP	73.04	53.35	90.31
19	KAMRUP METRO	71.23	56.34	55.66
20	KARBI ANGLONG	88.25	54.49	87.36
21	KARIMGANJ	63.15	30.21	65.23
22	KOKRAJHAR	81.37	54.35	85.07
23	LAKHIMPUR	79.15	71.26	72.34
24	MAJULI	62.52	67.48	81.98
25	MORIGAON	97.75	50.82	57.55
26	NAGAON	91.23	70.75	85.92

27	NALBARI	90.31	63.47	78.00
28	SIVASAGAR	85.53	64.83	82.99
29	SONITPUR	74.62	52.76	59.23
30	SOUTH SALMARA	75.53	35.22	25.25
31	TINSUKIA	81.41	71.52	88.54
32	UDALGURI	83.29	45.15	62.87
33	WEST KARBI ANGLONG	68.25	39.76	64.64

Source: NRLM's Official Website

The above table presents a detailed view of the district-wise performance of Self-Help Groups (SHGs) in Assam in terms of receiving Revolving Funds (RF), Community Investment Funds (CIF), and bank loans. Districts such as Dibrugarh (98.14% RF, 60.34% CIF, 95.69% bank loans) and Nagaon (91.23% RF, 70.75 percent CIF, 85.92% bank loans) demonstrate exemplary financial inclusion, with a majority of SHGs benefiting from all three financial services, indicating robust institutional support. On the other hand, districts like Cachar (49.19% RF, 35.79% CIF, 64.41% bank loans) and South Salmara (75.53% RF, 35.22% CIF, 25.25% bank loans) significantly underperform, particularly in the disbursement of CIF and bank loans, which could point to barriers such as weaker SHG networks. Golaghat stands out in CIF distribution (82.92%), reflecting targeted support, while Dhubri struggles with extremely low CIF coverage (16.99%), despite a relatively high percentage of SHGs receiving bank loans (77.94%), suggesting potential inefficiencies in the quality of the SHGs. Districts like Golaghat, Tinsukia, and Karbi Anglong maintain a good balance in the receipt of all three services. In contrast, Dhemaji and Dima Hasao display lower access to bank loans and CIF, highlighting the need for tailored interventions in these regions. Furthermore, districts like Kamrup Metro and Morigaon show a stark contrast between relatively good RF and CIF distribution but lower bank loan access, indicating that while initial funds are available, SHGs in these areas are facing challenges in securing larger financial support from mainstream financial institutions. Overall, while certain districts excel in

providing comprehensive financial services to SHGs, others lag behind.

Conclusion

This study examines the performance of financial inclusion under the National Rural Livelihoods Mission (NRLM) in Northeast India, with special reference to Assam, by analysing the distribution of Revolving Fund (RF), Community Investment Fund (CIF), and SHG–bank linkage. The findings indicate that despite NRLM’s comprehensive framework, significant inter-state and intra-state disparities persist across the region.

At the inter-state level, Assam and Tripura have performed relatively better in SHG financing and bank linkage, while Arunachal Pradesh, Meghalaya, and Sikkim lag due to geographical, infrastructural, and banking constraints. In Assam, RF and CIF disbursements increased notably up to 2021–22, reflecting strengthened policy focus on SHGs; however, sharp declines and fluctuations in 2022–23 reveal instability in financial support.

District-level analysis highlights wide disparities, with districts like Dibrugarh, Nagaon, Golaghat, Tinsukia, and Karbi Anglong performing well, while Cachar, Dhubri, Dhemaji, Dima Hasao, and South Salmara show weaker financial inclusion outcomes. Overall, while NRLM has strengthened financial inclusion and SHG institutions, targeted interventions, improved banking outreach, capacity building, and better fund monitoring are essential to ensure equitable and sustainable livelihood development in Northeast India.

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Pattern and Growth of Migration in North-East India with Special Reference to Assam

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Abstract

This paper examines the patterns, trends, and drivers of migration in Northeast India, with special reference to Assam. The analysis is based on secondary data collected from the Census of India (1991, 2001, and 2011). The findings reveal that the migration in this region has increased from 24.25% in 1991 to 34.1% in 2011. Intra-district migration took the dominant role. Gender pattern shows that it is the males who migrate for employment purposes, while female migration is basically due to marriage. Rural to urban migration shows an increasing trend reflecting urban growth and an increase in the demand for labour. The region receives strong inflows from East India. The study emphasizes the need for balanced regional development and gender sensitive policies to manage the growing and changing migration dynamics in Northeast India.

Keywords: Migration, Northeast India, Census of India, Urbanization.

Introduction

Migration is considered one of the three components of demographic changes, the other two being fertility and mortality. Migration is a change of usual place of residence or a form of spatial mobility of people from one well-defined geographical area to another. This movement is not just a mere shift of

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residence from one place to another, as it is most fundamental to the understanding of continuously changing space content and space relationship of an area. There are some major aspects of which migratory movement takes place. It is a product of the social, cultural, economic, political, or physical circumstances in which individuals and societies find themselves. Due to migration, developing countries have experienced rapid growth of urbanization in the post-World War II period (Saracoglu & Roe, 2004). Movement of people from rural to urban areas on a huge scale helps in industrialization in the urban centres. Migration is also a crucial factor of economic development, which is acknowledged by World Bank's Development Report 2009. Migration is inevitable in the process of economic development (Afsar, 2003; Ballard, 2005). Basically, both these processes are interrelated. One of the important consequences of migration is economic development, and again, economic development further induces migration. According to Lewis, migration is a two-way process. It is a response to economic and social change and equality, and is a catalyst to change for those areas gaining and losing migrants. Broadly, migration can be either international migration or internal migration. There are four streams of internal migration- rural to rural, rural to urban, urban to rural, and urban to urban. Among these four streams, rural to urban migration has significant importance, especially in developing nations. People generally migrate from less-developed rural countryside to more developed urban centres (Bhattacharya, 1993; de Haan, 1997). People normally migrate to urban areas for better economic and non-economic opportunities (Mazumdar, 1987). There are mainly two sets of factors that influence people to migrate from rural to urban areas. One is push factors, and the other set of factors is pull factors. Push factors drive people out of rural areas to urban areas, while the pull factors attract labour to migrate to urban centres. According to Harris-Todaro (1970), there are two sectors in an economy: agricultural and industrial sectors. Agriculture sector persists in rural areas and industrial sector in urban areas. This model concludes that pull factors attract migrants to move to cities with the expectation of getting higher wages

in comparison to the rural wages they get in agriculture. Along with India, agriculture is the dominant sector in Northeast India. A large number of workers are engaged in this sector for their livelihood. But the increasing pressure of population on land has worsened the land-to-man ratio. As a consequence, the problem of disguised unemployment has risen in the rural areas. With the rising problem of unemployment and deprivation, rural people have started to migrate to urban areas in search of better job opportunities. Another important reason for migration is inequality in the distribution of resources in an economy. This economic constraint pushes people out of their rural native place to urban areas in search of livelihood or better economic opportunities. In recent times, migration has been an important topic of discussion. People are migrating from villages to towns, from towns to cities, and from one country to another. Industrialization, along with urbanization, is accompanied by these movements of people from one place to another. From a demographic point of view, migration has influenced the population size, its composition, and distribution. Furthermore, it is most sensitive to economic, political, cultural as well and social factors. Migration takes a major role in the redistribution of population growth. With the increasing importance of the concept of migration, it becomes very important to study the pattern of migration, where rural to urban migration has taken a crucial role. Therefore, identification of the causes of rural to urban migration, their livelihood sources, and their impact on their living standard, the remittances that they send to their home, and how it helps in reducing income inequality these are major concerns of this particular concept.

Following the analysis this paper tries to portray the migration scenario of North East India with special reference to Assam. The paper is divided in three segments. 1st one is introduction followed by discussion. In the discussion section two segments are included – migration in Northeast India and Migration in Assam. After that the paper ended with conclusion.

Methodology

The paper is based on secondary sources of data collected from census of India 1991, 2001, and 2011.

Discussion

Migration in North-East India

Migration has significantly shaped the history of North East India. In prehistoric times, most people from Southeast Asia moved to northeast India. Later, people from the western part also started to move to this land. Migration to this region took place due to the employment opportunities prevailing in tea plantations, the availability of cultivable land, and for some other socio-economic conditions (Bandyopadhyay & Chakraborty, 1999). There prevails a high level of both internal and international migration to North East India. According to Mukherjee (1982), there is substantial in-migration into these states. In 2011, migration flow to this region was 14.9 million, which is 33% of its total population. The flow of migration has increased to 5 million since 2001 census. It reflects that Northeast India has consistently been a major recipient of migrants.

Table 1 shows the intensity of migration in Northeast India by place of birth and place of residence, according to 2011 census. There is minimal difference in migration between these two criteria. In Northeast India, 33% of the population is classified as migrants. Among the states, the highest proportion of migrants, 45% is seen in Arunachal Pradesh. But the mobility of the people in Manipur, Meghalaya, and Nagaland is very low, representing only one-fourth of their population.

Table 1 The Migration Intensity in NE by Place of Birth and Place of Last Residence, 2011

States	Place of Birth		Place of last residence	
	Total Migration	% of total Migration to population	Total Migration	% of total Migration to population
Arunachal Pradesh	612	44.2	631	45.6
Assam	10,394	33.3	10,642	34.1
Manipur	655	22.9	687	24.1
Meghalaya	727	24.5	759	25.6

Mizoram	376	34.3	387	35.3
Nagaland	504	25.5	549	27.8
Tripura	1273	34.6	1299	35.4
Northeast	14,540	32.2	14,955	33.1

Source: Table D-1 and D-2, Census of India, 2011

Table 2 represents the distribution of migrants by streams of migration on the basis of their place of last residence. The table shows that migrants are more mobile within the same district. If we compare the intra-district migration, then we found that Nagaland, Mizoram, and Arunachal Pradesh have a smaller proportion of intra-district migrants in comparison to the other North-Eastern States. Interstate migration is higher in Arunachal Pradesh, followed by Nagaland.

Table 2 Distribution of migrants by streams of migration bases on place of last residence, 2011

States	Intra-district	Inter-district	Interstate		Immi-grants	Total
			Within NE	Rest of India		
Arunachal Pradesh	61.2	15.5	14.9	6.7	1.7	100
Assam	74.2	20.1	1.3	3.3	1.0	100
Manipur	76.9	19.8	1.7	1.2	0.4	100
Meghalaya	74.8	10	9.9	4.3	1	100
Mizoram	54.7	30.6	9.3	2.8	4	100
Nagaland	49.7	29.5	13	6.6	1.2	100
Tripura	65.4	10.7	3.9	2.8	17.1	100
Northeast	71.7	19.2	3.2	3.5	2.5	100

Source: Computed from Table D-2, Census of India 2011

Table 3 analysed the sex ratio of migrants based on place of last residence. It shows the number of female migrants against 1000 male migrants. The dominance of male migration is higher than that of female migrants. Only the dominance of female migration in Assam, Manipur, and Tripura pulled up the sex

Table 3 Sex Ratio (Female/Male) of Migrants, Place of Last Residence, 2011

States	Population	Intradistrict	Interdistrict	Interstate		Immigrants	Total
				Within NE	Rest of India		
Arunachal Pradesh	938	1244	1087	875	631	823	1097
Assam	958	1927	2126	1510	949	1158	1899
Manipur	985	1719	2725	1637	730	1119	1847
Meghalaya	989	841	883	1149	870	911	874
Mizoram	976	1039	1043	753	494	1135	1003
Nagaland	931	1039	982	824	625	732	955
Tripura	960	1921	2196	1518	780	1043	1683
Northeast	960	1746	1894	1127	866	1063	1681

Source: Computed from Table D-2, Census of India 2011

ratio to 1681. In the case of both intra-district and inter-district migration, migration sex ratio is high. It suggests that female-led migration is dominant. This is due to the reason of marriage. In case of intrastate migration, male domination prevails due to employment or livelihood reasons.

Table 4 shows the distribution of migrants to the NE Region from different states of India. It is seen that Assam (42.9%), Manipur (18.1%), Meghalaya (18%), and Nagaland (20.9%) show a strong inflow of migrants from East India. Arunachal Pradesh, Manipur, Meghalaya, Mizoram, and Nagaland receive migrants from other northeastern states. Migration from the other four regions, North, West, Central, and South India, is found to be low.

Table 5 analysed the reasons for migration to Northeast India. A large proportion of migrants, especially from East, South, and Central India, migrated to Northeast India for employment purposes. Education is not a major driver of migration in Northeast India. A significant percentage of people migrated from the East and Central regions to Northeast India due to marriage. Moved after birth is not a major contributor to migration patterns in this region.

Migration in Assam

Volume and Growth Rate of Migration in Assam

Migration has always been a major and controversial issue in Assam. In the table, an attempt has been made to magnify the flow of migrants in Assam over the time period 1991- 2011. The number of migrants in 1991 was 24.25% of the total population. In 2001, it was increased to 25.48%. Again in 2011, it took a drastic jump to 34.10% which is one third of the total population. Analysing the decadal growth rate of migrants, it increases from 25.61% in 1991- 2001 to 56.71% in 2001-2011, more than double in 2011. It reflects that migration flow is increasing in the state.

Table 4 Distribution of Migrants to Northeast States by Regions, 2011

States	North	West	Central	South	East	Northeast	Immigrants
Arunachal Pradesh	2.6	0.4	4.4	1.6	19.7	63.9	7.4
Assam	7.4	0.7	6.4	1.4	42.9	23	18.2
Manipur	8.8	1.7	4.4	2.5	18.1	52.6	11.8
Meghalaya	4.8	0.8	3.1	1.7	18	65	6.6
Mizoram	1.4	0.3	1	1	5.8	63.5	27.1
Nagaland	4.3	0.6	3.9	2.2	20.9	62.5	5.6
Tripura	0.5	0.1	0.6	0.3	10.3	16.4	71.8
Northeast	7.1	0.8	6.4	1.9	41.7	0	42.1

Source: Computed from Table D-2, Census of India 2011

Table 5 Reasons for Migration to the Northeast by Regions, 2011 (in %)

Regions	Work	Education	Marriage	Moved after birth	Moved with household	Others
North	27.8	1.6	18.2	2.8	25.6	23.9
West	21.6	3.1	13.7	2.4	33.3	25.9
Central	32.3	1.1	24	1.5	24.3	16.8
South	33.4	3.9	15.4	1.9	25.6	19.7
East	36.5	0.8	26.2	1.7	19.8	15.1
North-east	24.5	1.3	23.3	1.4	28.1	21.5

Source: Computed from Table D-3, Census of India 2011

Table 6 Volume and Growth of Migration in Assam

	1991	2001	2011
Total population	222.95 (Lakh)	266.55(Lakh)	312.05(Lakh)
Migrants	54.07(Lakh)	67.92(Lakh)	106.44(Lakh)
Decadal Growth Rate	-	25.61%	56.71%

Source: Census of India 1991, 2001, 2011

Types of Migration in Assam: (1991-2011)

In the table first three are the types of internal migration, and last one is international migration. In Assam, internal migration is more than international migration, and among the internal migration, intra-district migration is the highest. Only intra-district migration shows an increasing trend, quite opposite to inter-district, interstate, and international migration trends in Assam. The increasing percentage of intra-district migration during 1991-2011 is from 61.02% to 74.23%. Inter-district migration fell from 25.2% in 1991 to 20.07% in 2011. Interstate migration shows a drastic fall from 8.93% to 4.65% during 1991-2011. International migration is very insignificant in Assam, which fell from 4.76% in 1991 to 1.92% in 2011.

Table 7 Migration by Types in Assam

Types of migrants	1991	2001	2011
Intra-District	3267528 (61.02)	5090650 (74.94)	7899487(74.23)
Inter-District	1353414 (25.2)	1164069 (17.13)	2136020 (20.07)
Inter State	478365 (8.93)	407141 (5.99)	495699 (4.65)
International	254893 (4.76)	130966 (1.92)	110314 (1.03)
All Types	5354200	6792826	10641520

Source: Census of India 1991, 2001, 2011

Distribution of Migrants by Streams of Migration in Assam from 1991-2011

In India pattern of migration is classified into four categories: rural to rural, rural to urban, urban to rural, and urban to urban pattern of migration. Among them, rural to rural migration dominates the other three patterns, followed by rural to rural, urban to urban, and lastly urban to rural migration. from the table, it is clear that rural-to-rural migration fell in 2001, then again increased in 2011; rural-to-urban migration increased in 2001, then slightly fell in 2011. Urban to rural migration fell in 2001 and again rose to 3.55% in 2011, and urban to urban migration increased in 2001, then showed a mild fall in 2011.

Table 8 Migration by Streams of Migration in Assam During 1991-2011

Streams	1991	2001	2011
Rural to Rural	4051345 (79.45)	3886599 (74.17)	6181171 (76.2)
Rural to Urban	549433 (10.77)	674172 (12.86)	894923 (11.03)
Urban to Rural	165783 (3.25)	152126 (2.90)	288552 (3.55)
Urban to Urban	332749(6.53)	527419 (10.06)	746703 (9.20)
All Streams	5099310	5240316	8111349

Sources: Census of India 1991, 2001, 2011

Types of Migration by different streams in Assam

From Table 8, it is clear that rural to rural migration plays the predominant role; the same picture can be seen from Table 8 in all three streams of migration. But the percentage shows a declining trend gradually in all three streams from 1991 to 2001. In case of intra-district rural to rural migration, it fell from 90.17% in 1991 to 81.006% in 2011. Similar images exist in the case of inter-district (66.31% in 1991 to 61.45% in 2011) and interstate (43.33% in 1991 to 35.44% in 2011) rural to rural migration.

Table 8 Types of Migration by different Streams in Assam

Intra District	1991	2001	2011	Inter District	1991	2001	2011	Inter State	1991	2001	2011
R-R	2946562 (90.17)	3114901 (82.06)	4956497 (81.006)	R-R	897501 (66.31)	636646 (59.68)	1224674 (61.45)	R-R	207279 (43.33)	135052 (35.72)	163609 (35.44)
R-U	202242 (6.18)	304954 (8.03)	499599 (8.16)	R-U	215579 (15.92)	237392 (22.25)	395324 (19.83)	R-U	131612 (27.51)	131826 (34.86)	190100 (37.34)
U-R	59840 (1.83)	82795 (2.18)	288552 (4.71)	U-R	70735 (5.22)	44600 (4.18)	105620 (5.30)	U-R	35208 (7.36)	24731 (6.54)	35234 (7.63)
U-U	58884 (1.80)	292824 (7.71)	746703 (12.20)	U-U	169599 (12.53)	148128 (13.88)	267071 (13.40)	U-U	104266 (21.79)	86467 (22.87)	122703 (26.57)

Sources: Census of India 1991, 2001, 2011; D2 table

In case of rural to urban migration interstate migration dominates all the other two streams with 27.51% in 1991 to 37.34% in 2011, which is followed by inter district migration from 15.92% in 1991 to 19.83% in 2011. Intra-district rural-urban migration is the least, with 6.18% in 1991 to 8.16% in 2011. The percentage of interstate rural-urban migration is large. It reflects urbanization process along with growing demand for labour, and in order to fulfil this demand, the labourers make a movement from rural to urban areas.

Urban to rural migration or reverse migration shows a very insignificant growth in all three streams of migration. In the intra-district stream of migration, it increased from 1.83% to 4.71% during 1991-2011. Then, in case of inter-district and interstate migration, the increase percentage during 1991-2011 is from 5.22% to 5.30% and 7.36% to 7.63% respectively. Thus, from the table, it is evident that counter migration is insignificant in Assam.

Urban to urban migration shows a significant growth in interstate stream, where it increases from 21.79% in 1991 to 26.57% in 2011. In case of inter-district and intra-district streams, it increases from 12.53% to 13.40% and 1.80% to 12.20% respectively, during 1991-2011. In inter interdistrict stream, the growth is not as significant as the growth in interstate stream. The increased urban-to-urban migration indicates more urbanization and diversity of work in urban centres.

Conclusion

Migration patterns in Northeast India are mainly shaped by local mobility, gender dynamics, and regional economic factors. Over the decades, the share of migrants has grown substantially. The share of migrants gradually increases from 24.25% in 1991 to over one-third of the total population by 2011. In this movement, intra-district migration plays the dominant role. It shows that migrants find it more convenient to move within shorter distances, preferably the same district. The larger form of migration comes from East India, while limited inflow from the North, West, Central, and South. Looking at the gender pattern, it is found that male-dominated migration is found in employment-related movement, while female-led migration

is prominent at inter-district and intra-district levels. In terms of migration streams, rural to urban migration shows a rising trend reflecting growing urbanization and demand for labour in urban centres.

The policymakers must take initiatives to strengthen local infrastructure and services for migrants who move within the same district. As the flow of rural to urban migration increases so there is a need for better urban planning, affordable housing, and improved transport. For female migrants, a better safety support system and social integration are needed.

States receiving migrants, especially from East India, should also work on skill development, cultural integration, and inclusive labour markets. Improving migration data collection, promoting inter-state cooperation, and ensuring balanced regional development will help manage migration patterns effectively and support sustainable growth across the region.

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Mapping School Education in Assam: Institutions, Participation Rates, and Student Flow Dynamics vis-à-vis the Indian Scenario

Pratiksha Goswami*

Abstract

Breaking intergenerational poverty requires sustained investment in quality early childhood education, which serves as a foundation for lifelong learning and social mobility. For India—home to the world’s largest youth population—the future will depend substantially on its ability to ensure accessible, high-quality learning opportunities for all children. In this context, the present paper provides a comprehensive analysis of the current status and overall landscape of educational institutions in Assam. The state has 33,394 government lower primary schools with an average enrolment of 21 students per school, along with 6,343 upper primary and 4,563 secondary/senior secondary schools. Despite this sizeable institutional network, student retention remains a pressing concern. The dropout rate at the primary level (Classes I–V) is 3.8 percent, rising to 5.0 percent at the upper primary level, and increasing sharply to 17.5 percent at the secondary level (Classes IX–X). The study further reveals a statistically significant negative correlation between female literacy and student dropout rates ($r = -0.483$, $p = 0.006$), indicating that higher female literacy levels are associated with improved student retention.

Keywords: *Enrolment, Transition Rate, Drop Out, Correlation.*

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Introduction

One of the most effective tools to break intergenerational poverty is through investing in quality early childhood education (Heckman). Nobel laureates Banerjee, Duflo, and Kremer, in their experimental study, found that the lack of resources is not the main problem in low-income countries—the real problem lies in teaching. Teaching practices are not sufficient to meet pupils' needs.

Viewing schools as producers of educational services naturally introduces the concept of an **education production function**, analogous to the production functions employed in microeconomic theory. Although education economists acknowledge that the traditional firm-based production model requires modification to reflect the unique characteristics of schooling, they maintain that its fundamental premise—where capital, labour, and other inputs combine to generate measurable outputs—remains highly instructive. As Pritchett and Filmer (1999) argue, this adaptation conceptualizes schools as organizations seeking to maximize educational outputs, such as student learning across multiple domains, subject to budgetary and resource constraints. The education production function therefore serves as the mathematical representation of the relationship between educational inputs and outcomes, providing a foundational framework for contemporary analyses of school productivity (Boissière, 2024).

Ensuring universal access to high-quality education is critical for India's long-term development and for strengthening its position on the global stage in areas such as economic growth, social equity, scientific advancement, national cohesion, and cultural preservation. An inclusive and robust education system represents the most effective means of unlocking the country's vast human potential and translating it into benefits for individuals, communities, the nation, and the international community. As India already has the world's largest youth population, the country's future will depend significantly on its ability to provide these young citizens with meaningful, equitable, and high-quality learning opportunities. In this context, the present paper seeks to offer a comprehensive analysis of the current conditions and overall landscape of educational institutions in Assam.

Review of Literature

Education in rural areas should be perceived as a crucial instrument for enhancing individuals' capabilities and accessibility, thereby empowering them to actively participate in public discourse (**Phukan & Gogoi, 2013**). **Barman (2019)**, in her study, observed that the lack of adequate resources and competent teachers has rendered government policies ineffective in improving the quality of primary education. **Bhagwati and Sarma (2024)** developed a composite index comprising a teacher index, an outcome index, and an infrastructure index for all districts of Assam during the period 2003–2016. Although there exists a strong positive correlation between the number of Higher Educational Institutions (HEIs) and the Gross Enrolment Ratio (GER); however, the association between incremental GER and incremental college density was found to be statistically insignificant (**Kuriakose & Chemparathy**). **Basumatary and Sandhya G. (2018)** concluded that the majority of respondents in their study believed that enhancing the quality of education requires a stronger emphasis on teacher quality. Moreover, factors such as low household income, excessive domestic responsibilities, the distance to educational institutions, and a lack of awareness regarding the significance of literacy were found to significantly influence female illiteracy in the Baksa District of Assam (**Basumatary & Roselin**). In a related study, **Fomby and Musick** examined whether the developmental gains from mothers' total time spent with their children vary depending on the quality of mothers' other investments in their children.

Methodology

This study is entirely based on secondary data obtained from various authentic and reliable sources, including the Statistical Handbook of Assam (2024), UDISE Reports (2023–24 and 2024–25), Assam Agenda 2030, and the Economic Survey of Assam (2024–25). Tables and diagrams have been employed to analyse and present the data effectively. To examine the association between mothers' educational attainment and school dropout rates across all districts of Assam, a correlation coefficient was computed using the Jamovi statistical software.

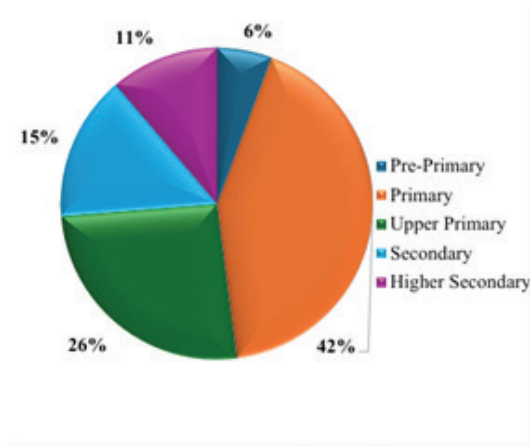
Educational Scenario of India

In ancient India, the system of education was primarily designed to serve the needs of the elite class, with particular emphasis on the education of Brahmin boys. This exclusivity ensured that knowledge and learning remained largely confined to the upper strata of society. During the British colonial period, and continuing until 1947, educational policies further reinforced these elitist tendencies. The colonial administration closely associated academic education with eligibility for government employment, thereby perpetuating social inequality and limiting access to education for the broader population.

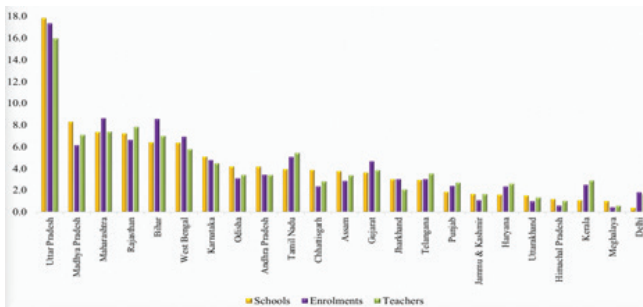
As the twentieth century dawned, many communities beyond the Brahmin elite began to recognize education as an essential pathway to achieving political influence and social advancement. Yet, deep-rooted historical inequalities and the tendency to prioritize higher education over elementary schooling hindered broader access to learning. Consequently, a large section of the Indian population remained illiterate despite the growing awareness of education's importance. (Cheney et al.,2005)

Over the years, India has made significant progress in reducing illiteracy rates by placing greater emphasis on the expansion and improvement of primary education. According to the UDISE+ 2024–25 report, India has approximately 14.71 lakh schools, over 1.01 crore teachers, and nearly 24.69 crore students enrolled from the pre-primary to the higher secondary level, making it one of the largest school systems in the world. According to the National Education Policy (NEP) 2020, a new pedagogical and curricular structure for school education has been introduced. It comprises four stages — **Foundational** (Pre-Primary and Primary), **Preparatory** (Upper Primary), **Middle** (Lower Secondary), and **Secondary** (Secondary and Higher Secondary). This reform replaces the earlier **10+2** system with a more developmentally appropriate **5+3+3+4** structure. As per UDISE+ 2024–25 report, the pre-primary level accounts for 6% of total enrolments, the primary level for 42%, upper primary for 26%, secondary for 15%, and higher secondary for 11%. As the level of education increases, the percentage of enrolment progressively declines, indicating a decrease in the rate of transition from one educational stage to the next.

Within the education system, student enrolment, representing the demand side, should be commensurate with the availability of schools, representing the supply side, across all levels of education. States such as Uttar Pradesh, Madhya Pradesh, Rajasthan, Karnataka, Odisha, Andhra Pradesh, Chhattisgarh, Assam, J&K, Uttarakhand, Himachal Pradesh, and Meghalaya, the percentage of school available are more than percentage students enrolled implying underutilization of available schools leading to suboptimal economy to scale. Where as in States viz., Punjab, West Bengal, Haryana, Gujarat, Maharashtra, Tamil Nadu, Delhi, Bihar and Kerala, the percentage of available schools are significantly less as compared to enrolled students indicating more students per school.



Source-UDISE+2024-25



Source-UDISE+2024-25

The Gross Enrolment Ratio (GER) is a key indicator used to assess the level of participation in education. It represents the total enrolment in a particular level of education—irrespective of the students' age—as a percentage of the population belonging to the official age group for that level. A GER exceeding 100 percent indicates the inclusion of over-aged and under-aged students, thereby reflecting enrolment beyond the official age cohort.

The National Education Policy (NEP) 2020 envisions achieving a 100 percent Gross Enrolment Ratio up to the secondary level by the year 2030. In the Indian context, the GER at the primary level currently stands at 91 percent. Among the states, Meghalaya reports the highest GER at 181 percent, while Madhya Pradesh records the lowest at 76 percent. However, a gradual decline in enrolment is observed as the level of education progresses. The GER at the higher secondary level falls sharply to 58 percent, indicating significant attrition in student participation beyond the primary and upper primary stages. Notably, Chandigarh demonstrates exemplary performance across all levels of schooling, with GERs of 120 percent at the upper primary level, 110 percent at the secondary level, and 107 percent at the higher secondary level. In contrast, Bihar exhibits the weakest performance in terms of enrolment at higher levels of education.

Educational Scenario of Assam:

Under the Assam Agenda 2030, the state has formulated a comprehensive strategy to achieve universal access to quality and inclusive education at all levels by the year 2030. Assam has been diligently implementing the provisions of the Right of Children to Free and Compulsory Education Act, 2009, which ensures that every child between the ages of 6 and 14 years has the right to free, inclusive, and quality elementary education.

At present, Assam has a total of 55,283 schools (including all management), of which 64.87 percent are primary schools, while 16.48 percent, 12.78 percent, and 5.84 percent constitute upper primary, secondary, and higher secondary schools, respectively. This distribution reflects the state's continuing efforts to strengthen the foundational stages of education while progressively expanding access to higher levels.

Just as a building cannot stand firm on an unstable foundation, the edifice of lifelong learning cannot rise without the solid groundwork of primary education. In Assam, there are 33,394 government Lower Primary schools, with an average enrolment of 21 students per school, 6343 upper primary and 4563 secondary/Sr.secondary. Among all districts, Cachar records the highest number of primary schools, both at lower and upper primary level(UDISE+2024-25).

Number of schools and teachers (Government/Provincialised Schools)

Category	Schools	Teachers
Lower Primary	33394	97294
Upper Primary	6343	42476
Total-Elementary	39737	139770
Secondary/Sr. Secondary	4563	68563
G. Total	44300	208333

Source: UDISE+2024-25

Annual Average Drop-out Rate

The annual average drop-out rate reflects the proportion of students who discontinue formal schooling before completing a given stage. The data for 2024–25 reveals significant variations across educational levels and between genders.

At the primary level (Classes I–V), the overall drop-out rate stands at 3.8 percent, with boys (4.7 percent) recording a slightly higher rate than girls (2.9 percent). This relatively low rate indicates the effectiveness of early-grade interventions such as the provision of free textbooks, uniforms, and the Mid-Day Meal Scheme. The marginal gender disparity suggests that measures to promote girls’ education have yielded positive results in the lower grades.

At the upper primary level (Classes VI–VIII), the overall drop-out rate increases to 5.0 percent, with a notable gender gap—7.0 percent for boys compared to 3.2 percent for girls. The higher

dropout rate among boys may be attributed to socio-economic factors such as early engagement in wage labour or family responsibilities, which divert boys from formal education. In contrast, improved female enrolment and retention can be linked to targeted government initiatives, including free bicycle distribution and community sensitization programs encouraging girls' education.

The situation becomes more concerning at the secondary level (Classes IX–X), where the overall drop-out rate rises sharply to 17.5 percent (18.5 percent for boys and 16.7 percent for girls). The escalation at this stage reflects systemic challenges such as limited access to secondary schools in rural and remote areas, increased financial constraints, and the perceived irrelevance of secondary education for immediate livelihood opportunities. This pattern underscores the need for robust retention strategies and strengthened vocational linkages at the secondary stage.

Transition Rate

Transition rates indicate the proportion of students successfully advancing from one educational level to the next. The data from UDISE+ 2024–25 highlights encouraging trends at the elementary stage but points to declining continuity at higher levels.

The transition rate from primary to upper primary education is relatively high at 90.3 percent, with girls (92.8 percent) outperforming boys (87.8 percent). This gendered pattern suggests that state-led interventions—such as the Samagra Shiksha Abhiyan's emphasis on gender parity, infrastructural development, and improved access—have been particularly beneficial in promoting girls' education.

The transition rate from upper primary to secondary level decreases slightly to 87.3 percent, with boys at 84.4 percent and girls at 89.9 percent. Although the rate remains above the national average, the decline indicates emerging challenges in maintaining continuity beyond the compulsory education stage.

A more pronounced drop is observed in the transition from secondary to higher secondary education, which falls to 61.4 percent (62.0 percent for boys and 61.0 percent for girls). This substantial decline suggests that a significant proportion of

students either exit the formal education system or enter the labour force after completing secondary education. Contributing factors may include economic hardship, inadequate higher secondary facilities, and limited career guidance mechanisms at the school level

Annual Average Drop-out Rate

Year	Primary			Upper Primary			Secondary		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
2024-25	4.7	2.9	3.8	7.0	3.2	5.0	18.5	16.7	17.5

Transition Rate

Year	Primary to Upper Primary			Upper Primary to Secondary			Secondary to Hr. Secondary		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
2024-25	87.8	92.8	90.3	84.4	89.9	87.3	62.0	61.0	61.4

Source-UDISE+2024-25

Children generally spend a substantial amount of time with their mothers during their formative years; therefore, mothers play a particularly significant role in shaping their overall development (Fomby & Musick,2018). An educated mother tends to be more aware and conscious of her child’s educational needs and progress. In our analysis of the association between female literacy and student dropout rates at the primary level across 31 districts of Assam, we found a negative correlation between the two variables. Specifically, the correlation coefficient was $r = -0.483$ with a $p\text{-value} = 0.006$, indicating that higher levels of female literacy are associated with lower student dropout rates. This suggests that as women become more educated, they are better able to recognize the importance of education and ensure their children’s continued participation in schooling. However, the strength of the correlation, while meaningful, is moderate rather than strong, implying that dropout rates are shaped by a range of additional factors. These may include household economic conditions, access to school infrastructure, quality of teaching, socio-cultural norms, child labour pressures, and the availability of educational support services. A comprehensive understanding of dropout behaviour therefore requires considering these broader socio-economic and institutional determinants alongside female literacy levels.

The Government of Assam has undertaken a series of comprehensive initiatives aimed at increasing the Gross Enrolment Ratio (GER) and reducing school dropout rates across the state. Under the Samagra Shiksha Abhiyan (SSA), free textbooks were distributed to 41,51,498 learners enrolled in Classes I to VIII during the academic year 2023 (Economic Survey, Assam). In addition to this, free uniforms are provided to all students from Classes I to VIII to promote inclusivity and minimize the financial burden on economically disadvantaged families. To enhance the quality of science education, the Government of Assam has entered into Memoranda of Understanding (MoUs) with IIT Guwahati and Dibrugarh University under the SSA framework. These collaborations aim to strengthen pedagogical practices, curriculum design, and capacity building among science educators. The Mid-Day Meal Scheme constitutes another vital component of the state's educational interventions. It not only addresses nutritional deficiencies among schoolchildren but also contributes significantly to increased enrolment, attendance, and retention rates in primary and upper primary schools. In an effort to further minimize dropout rates, particularly among girl students, the government has introduced the Free Bicycle Scheme. This initiative seeks to alleviate transportation challenges faced by students in rural and remote areas, thereby facilitating regular school attendance. Moreover, to systematically assess and enhance the quality of school education, the Government of Assam launched the "Gunotsav" initiative. This comprehensive evaluation mechanism grades schools on multiple parameters, including scholastic and co-scholastic performance, community participation, institutional management, and overall contribution to educational development. The findings from Gunotsav serve as a valuable feedback mechanism for continuous improvement in the school education system.

Conclusion

Economic growth is closely linked to expanding employment opportunities and promoting entrepreneurship-oriented skill education from an early age. The National Curriculum Framework–Foundational Stage (NCF-FS) addresses this by emphasizing Foundational Literacy and Numeracy (FLN) as a

core 21st-century skill. In line with this vision, the Government of Assam launched **NIPUN AXOM** to ensure FLN for all children up to Grade 3 by 2026–27. Despite improvements in enrolment, regular attendance remains a challenge. To address this, **Shiksha Setu** was introduced to monitor student and teacher attendance and reduce absenteeism. However, dropout rates remain high, particularly among economically disadvantaged and rural children, due to poverty, limited access to quality education, and reliance on child labour. Recognizing these challenges, Assam has shifted its focus towards improving both enrolment and retention through targeted initiatives and special programmes for marginalized groups, aiming to ensure inclusive and sustained access to education as a pathway out of poverty.

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Female Employment in North East India: Insights from Periodic Labour Force Survey

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Abstract

Female participation rate in economically productive activities are very essential driver and outcome of economic growth and development of a country. Female employment rate is historically been lower in India. Female Labour Force Participation rate and Workforce Participation Rate show a wide range of differences among the different states and UTs of India. Therefore, it is important to analyze female employment scenario from a regional perspective considering large regional diversity of India. Studying region-wise data on female employment separately shows the usually hidden inequalities that national average figures failed to represent. In this paper, we discussed the different female employment related indicators of 8 states of North East India. The study will be primarily based on the recently published annual report of Periodic Labour Force Survey 2023-24. The official data reveals the fact that Female Labour Force Participation Rate and Workforce Participation Rate are higher in most of the North East Indian states than all India average. Women's employment participation decisions are determined by wide varieties of factors. In this paper, we also discussed about some distinct determinants of female employment such as education and social groups in India in general and in North East India in particular.

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Keywords: *Education, Female Labour Force Participation Rate, Female Workforce Participation Rate, Social groups, Periodic Labour Force Survey.*

Introduction

Women around the world continue to suffer from many drawbacks in many spheres of the society specially in economic sphere. Although, satisfactory progress made in reducing gender differences in many aspects of the society, access to economic opportunities is limited for women till this date. Social Scientists and researchers have been favored the study of labour market by gender wise. Because gender differences and discrimination are very prevalent in labour market Worldwide and accordingly females are the worst victims of this labour market discrimination and hence gap exists between the participation rate of men and women in the labour force worldwide.

The relationship between female participation in the labour market and socio-economic development is complex in nature and it varied widely country wise. However, the labour force participation rate plays a very essential role in determining socio-economic development. Female participation rate in economic activity and accessibility of decent employment opportunities are very essential driver and outcome of economic growth and development and it is a key to promote inclusive growth, financial inclusion and achieve the Sustainable Development Goal etc. which is very crucial discussion in present economic literature and policy making process.

The Female Labour Force Participation Rate (FLFPR) is historically been lower in India. Post reform era of Indian economy, which is characterized by high rate of growth, the economic participation of women is showing a contradictory picture of whole growth dynamism. If we emphasized on data after reform phase, we have seen that the all India level male LFPR (according to usual activity status) ranges between 55 to 60 percent between the time periods of 1993-94 to 2011-12, correspondingly female LFPR ranges (according to usual activity status) between 30 to 40 percent only in that same period as per data of different rounds of Employment and Unemployment Survey (EUS) published by National Sample

Survey Organization (NSSO). In 2011-12, NSSO conducted last round (68th round) of EUS. In 2017-18, NSSO launched the Periodic Labour Force Survey (PLFS) in 2017-18 which provide annual and quarterly labour market estimates of India.

Women's employment participation decisions are outcome of wide varieties of factors and it is complex in nature as compared to men. Female Labour market participation decisions are driven by necessity and individual preference on the one hand and family and social preferences on the other. Economic, social, cultural, demographic factors are accountable for the labour force participation decision of women. Literatures provide different determinants of female labor force participation such as education attainment, fertility rate, unemployment rate, wage rate, social and cultural norms, historical perspective etc. (Bhalla and Kaur 2011, Rangarajan et al. 2011, Kannan and Raveendran 2012, Abraham 2013, Klasen and Pieters 2015, Mehrotra and Parida 2017)

Also, Female Labour Force Participation Rate and Workforce Participation Rate show a wide range of differences among the states/UTs of India (Gulati 1975). In fact, the Female Labour Force Participation rate and Workforce Participation Rate varies among the states of the same regional belt (Masood and Ahmad 2009, Samantray 2011). Therefore, it is important to analyze female employment scenario from a regional perspective considering large regional diversity of India. The North Eastern region of India consist of 8 states namely Assam, Arunachal Pradesh, Nagaland, Mizoram, Meghalaya, Manipur, Tripura and Sikkim. We all know that population of NER consist of heterogeneous elements of different castes, races, languages and culture. So, it is important to discuss the different indicators of female employment rate in different states of North East India separately from the all India rates. The official data reveals the fact that Female Labour Force Participation Rates (FLFPR) are higher in most of the NER states than all India average.

In this paper, we will analyze the Female Labour Force Participation Rate and Female Workforce Participation Rate in 8 states of North East India. Not only employment rate, the status of employment is also a crucial matter of discussion. A large share of female employment in India remains in the

informal sector with very low rate of earning, social security and opportunities. So, in this paper, we will also discuss distribution of female workers among various status of employment in 8 states of North East India. Since the neo classical economists to present time, education had been considered as one of the key determinants of women's entering the labour market. So, it has become a 'stylized fact' in literature worldwide that if we desire to achieve the goal of greater participation of women in the labor force, education should be considered as a primary policy option. In this paper, we will discuss the role of education in shaping the labour market outcome for women with special focus on North East India. Female employment is also extensively dependent on the country's non-economic characteristics. That is why women's employment decisions are more complex in nature as compared to male employment participation decision. Women's participation in the labour force is greatly influenced by their social and religious norms. Occupational segregation by gender is very prevalent in society mainly due to these social and religious factors. In this paper, along with education, we will discuss about women's participation in the labour market by social groups with special focus on North East India. Our analysis will be primarily based on the most recent annual report of Periodic Labour Force Survey (PLFS) 2023-24 published by NSSO. We will also use data from the previous rounds of NSSO's EUS and previous annual reports of PLFS in our analysis.

Objectives

1. To study the nature and rate of female labour force participation in 8 North Eastern states of India.
2. To study the nature and rate of female workforce participation which is termed as Worker Population Ratio (WPR) in PLFS in 8 North Eastern states of India.
3. To analyze the distribution of female workers among various status of employment in 8 states of North East India.
4. To explore about education as a determinant of female labour force participation in 8 states of North East India
5. To analyze about social group as a determinant of female labour force participation in 8 states of North East India.

Female Labour Force Participation Rate in North East India in Recent Time: Insights from Annual Periodic Labour Force Survey 2023-24

The Female Labour Force Participation Rate of 8 states of North East India is presented in the table 1 as reported in the annual report of PLFS 2023-24. The survey respondents are of 15 years and above in the PLFS. But in this table, we presented labour force participation data of female belonging to the age group of 15 to 59 which is regarded as working age by the International Labour Organization. For better and comparative understanding, we include the all India rate of FLFPR in the table. Also, the rural-urban divide is an important aspect in case of female participation in labour market in India. The dynamics and conditions of rural employment is different from urban employment in India. That is why, we presented the rural FLFPR and urban FLFPR separately in our table.

Table 1 Female Labour Force Participation Rate (in %) According to Usual Status(ps+ss)² for Each State of North East India (aged 15-59)

States	Rural female	Urban female	Total female (R+U)
Arunachal Pradesh	73.3	48.2	68.9
Assam	55.3	34.8	52.8
Manipur	52.9	50.5	52.2
Meghalaya	79.2	50.9	74.3
Mizoram	48.7	45.3	47.1
Nagaland	71.3	54.3	66.3
Sikkim	77.9	34.6	68.4
Tripura	56.8	36.1	52.9
All India	51.2	31.2	45.2

Source: Annual Report of Periodic Labour Force Survey 2023-24

2 “The labour force according to the usual status (ps+ss) is obtained by considering the usual principal status and the subsidiary status together. The estimate of the labour force in the usual status (ps+ss) includes (a) the persons who either worked or were seeking/available for work for a relatively long part of the 365 days preceding the date of survey and also (b) those persons among the remaining population who had worked at least for 30 days during the reference period of 365 days preceding the date of survey”(PLFS 2023-24).

The FLFPR is highest in the state of Meghalaya followed by Sikkim and Nagaland in case of rural area. The rural FLFPR is lowest in Mizoram among all the 8 states of North East India. In case of urban area, FLFPR is highest in Nagaland and lowest in Sikkim. In case of overall FLFPR, it is highest in Meghalaya and lowest in Mizoram. Also, urban FLFPR is substantially lower than rural FLFPR in almost all states of North East India. But, the FLFPR rate of all 8 North Eastern states is higher than the national FLFPR rate.

Worker Population Ratio (Workforce) in North East India in Recent Time: Insights from Annual Periodic Labour Force Survey 2023-24

Labour force of a country includes all those persons in the working age who are employed or willing to work. On the other hand, workforce consists of persons who are engaged or employed in economically productive work and excludes those who are willing to work but could not find one. The workforce is presented by the indicator called 'Worker Population Ratio (WPR)' in the PLFS. WPR is defined as the percentage of employed persons (workers) in the total population. The female WPR of 8 states of North East India according to PLFS 2023-24 presented in the table 2.

Table 2 Female Worker Population Ratio (in %) According to Usual Status(ps+ss³) for Each State of North East India (aged 15-59)

States	Rural female	Urban female	Total female (R+U)
Arunachal Pradesh	69.8	39.4	64.4
Assam	53.2	30.5	50.5
Manipur	49.2	44.8	47.9
Meghalaya	73.7	40.1.	67.8

3 "The workforce in the usual status (ps+ss) is obtained by considering the usual principal status and the subsidiary status together. The workforce in the usual status (ps+ss) includes (a) the persons who worked for a relatively long part of the 365 days preceding the date of survey and (b) the persons from among the remaining population who had worked at least for 30 days during the reference period of 365 days preceding the date of survey." (PLFS 2023-24)

Mizoram	48.1	43.4	45.9
Nagaland	66.6	47.8	61.1
Sikkim	76.5	32.2	66.8
Tripura	56.1	34.4	52
All India	50	28.8	43.7

Source: Annual Report of Periodic Labour Force Survey 2023-24

The female WPR is highest in Sikkim in case of rural area followed by Meghalaya and lowest in Mizoram. The female WPR in case of urban area is highest in Nagaland and lowest in Assam. The urban female WPR is considerably lower than rural female WPR in almost all states of North East India. The rural-urban gap is lower in the state of Mizoram and Manipur compared to other states. The female WPR is also higher for all the 8 states of North East India as compared to the all India female WPR as per the data of PLFS 2023-24.

Distribution of Female Workers of North East India by Status of Employment

Women's work participation is heavily skewed towards the informal sector and self-employment. Such employment in informal sector and self-employment is under paid and often lack formal contracts, social security and labour protection. Many structural and socio-economic factors limit women's choice of employment and women's ability to transition from informal self-employment and casual works into stable, formal employment. So, in this part of our analysis we will discuss about the distribution of female workers of North East India among different broad status of employment.

The PLFS report categorized workers in usual status (ps+ss) are into three broad categories according to their status in employment. These broad categories of status in employment of the workers are: 1) self-employed, 2) regular wage/salaried employee and 3) casual labour. Within the category of self-employed, two sub-categories have been made as follows: a) own account worker and employer and b) unpaid helper in household enterprises. The data of female workers according to their status of employment in 8 states of North India is presented

in table 3 in case of rural female and in table 4 in case of urban women.

Table 3 Percentage Distribution of Workers (in %) According to Usual Status(ps+ss) by Broad Status in Employment in North East India (Rural female)

States	Own account worker/ employer	Helper in household enterprises	All self employed	Regular wage/ Salaried	Casual Labour
Arunachal Pradesh	57.5	35.6	93.1	6.4	0.5
Assam	49.9	27.4	77.3	15.2	7.5
Manipur	67.2	22.5	89.7	9.7	0.7
Meghalaya	50.4	13.9	64.3	11.6	24.1
Mizoram	52.5	42	94.5	5.5	N/A ¹
Nagaland	57.2	28.4	85.6	13.7	0.7
Sikkim	36.8	39.4	76.1	22.5	1.3
Tripura	35.8	35.4	71.2	8.2	20.7
All India	31.2	42.3	73.5	7.8	18.7

Source: Annual Report of Periodic Labour Force Survey 2023-24

Table 4 Percentage Distribution of Workers (in %) According to Usual Status(ps+ss) by Broad Status in Employment in North East India (Urban female)

States	Own account worker/ employer	Helper in household enterprises	All self employed	Regular wage/ Salaried	Casual Labour
Arunachal Pradesh	43.7	15	58.7	39.6	1.7
Assam	35.5	13.4	48.9	47.9	3.2
Manipur	61.3	15.8	77	22.4	0.6
Meghalaya	27.9	5.6	33.4	49	17.6
Mizoram	55.3	19.8	75.1	24.4	0.5
Nagaland	62.5	5.8	68.3	30.6	1.1
Sikkim	17.8	26.4	44	55.4	0.5
Tripura	35	17.2	52.2	33.9	13.9
All India	28.5	13.8	42.3	49.4	8.3

Source: Annual Report of Periodic Labour Force Survey 2023-24

In case of rural female, the percentage of female in ‘own account worker’ category is considerably high in all states of North East India. Higher dependence of population of North East India on agriculture and allied services in rural area could be the possible explanation of higher share of female workers in self-employment category. The percentage of female workers belonging to ‘regular wage and salaried’ category is significantly lower in rural area of North East India. In urban area, the share of female workers in ‘regular wage/salaried’ category is higher as compared to rural area. But except for Sikkim, the share of female workers in ‘regular wage/salaried’ category in urban area is still lower in North Eastern states than the national rate. This whole discussion shows the high degree of informalization of female workforce in North East India.

Female labour force participation in North East India by Level of Education

Does education increase the possibility of a woman’s participation in the labor force in India? The data on female education suggest that the LFPR “should be” a lot higher in India than it is. But the reality is something different.

Let us see now the recent available database of female labour force participation by education level for North East India from the most recent periodic labour force survey.

Table 5 Female Labour Force Participation Rate (in %) of Female Aged 15 years and Above According to ‘Usual Status (ps+ss) for different highest level of education in North East India (Rural female)

States	Not literate	Literate/Up to Primary	Middle	Secondary	Higher Secondary	Graduate	Postgraduate and above
Arunachal Pradesh	79.2	85.9	56.7	51.3	52.3	92.6	63.5
Assam	52.9	63.6	48.2	40.7	45.2	57.4	86.5
Manipur	49.2	59.1	51.6	34.7	38.6	71.3	95.7
Meghalaya	73.3	88.7	65.8	59.7	67	92	98.2
Mizoram	26.5	40.4	53.1	33.8	20.8	69.8	N/A
Nagaland	49.7	88.4	63.4	61.4	65.2	76.4	66.5
Sikkim	81	89.1	76.6	50.9	66	90.5	97.3
Tripura	40.2	60.5	53.2	30.1	23.1	43.4	82.1
All India	54.7	56.8	43.6	34.8	30.6	40.7	58.4

Source: Annual Report of Periodic Labour Force Survey 2023-24

Table 6 Female Labour force participation rate (in %) of female aged 15 years and above according to usual status (ps+ss) for different highest level of education in North East India (Urban female)

States	Not literate	Literate/Up to Primary	Middle	Secondary	Higher Secondary	Graduate	Postgraduate and above
Arunachal Pradesh	39.3	49.8	31.4	33	43.6	81.4	88.5
Assam	39.2	34.4	22.8	19.8	25.7	41.3	69.7
Manipur	29.8	54.1	48.9	41.8	38.6	50.8	74.9
Meghalaya	29.3	60.5	43.4	27.1	31.6	60.5	91.2
Mizoram	9.9	25.8	46.7	24.4	32.4	65	73
Nagaland	23	48.2	51.2	44	47.3	76.1	89.9
Sikkim	10.5	22.5	28.9	34	40.6	52	79.9
Tripura	23.1	43.2	25.3	21	21.3	37.1	64.5
All India	29.9	32.1	24.1	17.9	15.8	36.6	47.9

Source: Annual Report of Periodic Labour Force Survey 2023-24

The FLFPR by education level in 8 North Eastern states shows a scattered pattern. However, some distinctive observations can be drawn from the data presented in table 5 and table 6. One distinguishing fact is that FLFPR by education level is different for rural and urban area. FLFPR is higher among illiterate and marginally literate women in rural area as compared to urban area in all states of North East India. The FLFPR among highly educated women (Graduate and above) is comparatively lower in urban area as compared to rural area in North East India. It shows the lack of availability of employment opportunities in urban areas of North East India. These facts draw our attention towards generation of formal and informal urban employment in North East Indian states.

Female Labour Force Participation in North East India by Social Groups

The issues related to women's work and employment is different and complex in nature from those of male workers due to social and cultural factors. In India, cultural and religious norms have significantly impact women's decision to participate in the labour market, their choice of type of employment and on their mobility related decision in labour market. Social and cultural norms basically operate through religion and caste and generally discourage women to opt for paid work opportunities and confined them within the boundary of care economy. Marriage gap and motherhood gap in female labour force participation are greatly relevant in Indian society. These gaps are basically determined and strengthen by cultural and social norms. Cultural and social norms are associated with labour force withdrawal of women specially of those belonging to household having higher social and economic status.

Not only decision of participation in labour force, choice of type of employment of women also greatly influenced by social and cultural norms. Lack of autonomy of women to take work related decision is very prevalent in Indian society and on behalf of women; male members of the household take the work-related decisions of women. These social and cultural norms strengthen occupational segregation. As a result, women are concentrated in few occupations considered as socially acceptable. This

indirectly resulted in underutilization of women's productive efficiency.

Studies also explained that regional differences in the female labour force participation in India, also can be attributed to these cultural and social factors. The low female participation in the North India seems to reflect strong cultural and religious factors in that region (Sorsa et al. 2015) On the other hand, higher participation of women in labour force in most of the states of North Eastern Region can be greatly attributed to favorable gendered cultural and social norms in that region. North East Indian Region consist of heterogeneous elements of different castes, races, languages and culture. The region accounts for one of the greatest concentrations of tribal population of the country. If we analyzed, it from broader perspective we will see that work participation in NER states with hilly regions and those greatly inhabited by tribal communities are much higher than rest of the part of India. It is a well-known fact that the role of women is more substantial and male oppression is comparatively lesser in tribal communities. Also, some tribes of the North East Indian states follow a matrilineal social system. So, it is interesting to analyze FLFPR by social groups in North East India. Due to unavailability of data about states-wise FLFPR by social group in the annual report of PLFS 2023-24, we will not be able to provide details data about FLFPR by social groups in 8 states of North East India. Analyzing the unit level data of PLFS can provide detail information about the FLFPR by social groups in different states of India. But this is out of the scope of this research paper.

Conclusion

A region-wise discussion of female employment in India is important as it highlights inter-state and regional variations in women's participation in paid and productive work that national averages often conceal. Differences in socio-cultural norms, economic structures, and demographic characteristics across states significantly influence female employment outcomes. This paper examines key female employment indicators across eight North Eastern states and discusses major determinants of female employment in India in general and

the North East in particular. The analysis underscores the need for state-specific policies, as North Eastern states continue to lag in infrastructural development, which constrains women's engagement in economic activities. Inadequate transport and household infrastructure—such as LPG, water supply, and electricity—intensifies women's unpaid work burden and limits their participation in paid employment. Strengthening public provision of such infrastructure is therefore essential. Additionally, promoting skill development, entrepreneurship, and traditional competencies in handicrafts, handloom, and agriculture can enhance female labour force participation in the region.

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Tracking Scholarly Output and Online Engagement on Digital Economy Growth (2020–2024): A Bibliometric and Altmetric Investigation Using Dimensions AI

Sumona Duari*

Abstract

This study examines research trends in the digital economy from 2020 to 2024 using bibliometric and altmetric analysis. Results show growth in publications, rising from 85 in 2020 to 575 in 2024, with major contributions from the field of business, economic development, and information sciences. Significant collaborative authors include Jose Arturo Garza-Reyes and Parida Vinit. Parida Vinit is the most productive with 12 publications. The United Kingdom emerged as the leading contributing country, and Aston University recorded the highest citation impact with 4,209 citations. Altmetric findings revealed strong online attention, with the article “Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy” receiving the highest Altmetric Attention Score 2.3k. While limited to data from Dimensions and tools such as VOSviewer and R package Biblioshiny, the study provides understanding of research growth, influence, collaboration, and public engagement in the digital economy.

Keyword: Digital Economy, E-Commerce, Digital Financial Services, Fintech, Digital Transformation, AI Economy.

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Introduction

Digital economy refers to economic activities that connect individuals, businesses, devices, data, and operations through digital technology. It depends on digital technologies, online transactions, and has a wide impact on reshaping traditional businesses (Javaid et al., 2024). The digital economy looks after economic development, new job creation, innovation, and increased productivity. Digitisation helps both developed and developing countries. In developed countries, it helps increase productivity, support innovation, and improve global business. It also facilitate public services like transport and energy through digital tools. With strong internet and 5G, these countries build smart cities and industries. The *Digital Economy Report 2024* focuses on the urgent need for environmentally sustainable and inclusive digitisation. Digital technologies require a large number of raw materials, energy and water, and the disposal of devices is harming the environment. Data centres, ICT networks and devices consume about 6%-12% of the world's electricity. Developing countries face an environmental burden without economic benefits. They export raw materials and import expensive digital products.

The concept of digital economy refers to an economy where technology like computers, smartphones, the internet, apps, and online platforms changes the way business operates and how people access these services. Bukht and Heeks (2018) define it as "that part of economic output resulting primarily from digital technologies with a business model based on digital goods or services". Over time, the concept grew to include online platforms, e-commerce, digital infrastructure, and use of ICT in traditional industries that form the idea of broader digitized economy (Heeks, 2017). It has three-tire scopes. First the core digital sector that includes industries that make digital products and services, like computers and software. Narrow scope includes the core sector plus businesses that depend mainly on digital technologies like online platforms and digital services. Broad scope includes all other sectors that use digital tools to improve their work, such as agriculture, manufacturing, health, education, and transport. Digital transformation affects many industries because they are now using digital tools to

work better. In shopping and business, online platforms help companies reach more customers. Service industries use online systems to provide quick and easy support. Governments also use digital services to make processes simple for the public.

Akhtar et al. (2023b) show through a bibliometric study that global research on digitalization and innovation is rapidly expanding. Studies on economic development similarly find that digital tools enhance growth, business efficiency, and socio-economic progress (Al-Zoubi, 2024). Research on entrepreneurship also highlights how digital technologies support new business models (Samudra, 2023). Using VOSviewer, Akhtar et al. (2023c) analysed over 1,500 publications on the digital economy and social media analytics, while Fei (2024) mapped influential authors, institutions, and research trends in digital economy studies. Together, these works demonstrate the value of bibliometric tools in examining large scholarly datasets. Mishra et al. (2025) note India's emergence as a leading digitalized economy, and Chen and Xing (2025) show how China leverages digitalization—especially AI and big data—to promote economic growth, innovation, and sustainability.

Although research on the digital economy is increasing, there are still important gaps. First, there is no single definition to measure the digital economy. Different researchers use different approaches. Second, much of the existing literatures use data only up to 2019. This leaves significant digital growth that happened after COVID-19. Bibliometric studies are helpful because they analyse large collections of research papers to show trends, leading authors, citations, countries, and organisations. They help identify what areas are well studied, and research gaps still exist. In addition to this, Altmetric Scores are also important because they capture the social and real-world impact of publications through blogs, tweets, news coverage, and policy documents. Altmetrics add value by showing how widely research is discussed and used beyond academic citation. The ASS is an automated index that shows how much online attention a research paper receives. It gives different weights to sources. For example, news mentions count more than tweets. The score is calculated by adding these weighted mentions, with rules to prevent the score from becoming too large. (*Altmetric Attention Score*, n.d.)

Research on the digital economy remains fragmented across multiple disciplines such as economics, information systems, business, and technology. A systematic review of existing research is important to understand publication trends, major contributors, and research gaps (Kruljac, 2021). To address this, the present study uses both bibliometric and altmetric analysis to examine digital economy research published between 2020-2024. Tools such as VOSviewer and Biblioshiny from R Studio are used to study growth patterns, collaboration network, and thematic development.

Objectives of the Study

1. To analyse the publication patterns related to the Digital Economy within the selected time period.
2. To identify the most influential authors, organisations, and countries contributing to research in the field of Digital Economy.
3. To examine collaboration networks among authors, institutions, and countries.
4. To explore co-citation and bibliographic coupling networks.

Methodology

The present study used bibliometric analysis, a statistical method that examines the number of publications and their citations in a particular research area. This helps researchers to understand publication trends, identify leading authors and institutions, and future research opportunities in the field (Garfield, 1979). The study also uses Altmetric analysis to measure the online visibility of research beyond academic citations.

Search Strategy

Data for the present study were collected in November 2025 from the Dimensions AI database. Dimensions is a research platform developed by Digital Science that provides a complete view of global research. It uses AI to show information on publications, grants, patents, policy documents, and datasets. The platform helps users to analyse trends, track research impact, and identify collaborations across the entire research lifecycle (Dimensions, 2025).

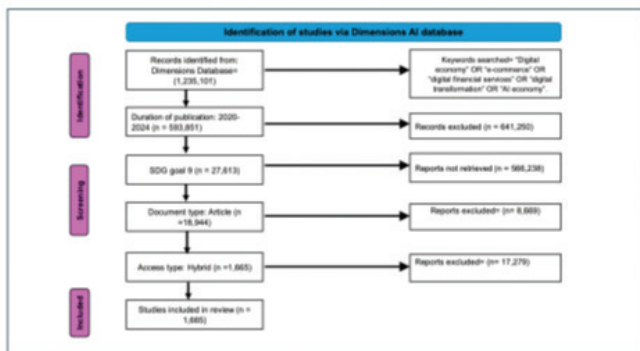


Fig. 1 Searching procedure following PRISMA 2020.

Fig. 1 shows that a preliminary literature search was conducted in the Dimensions AI database using the following search string: "Digital economy" OR "e-commerce" OR "digital financial services" OR "digital transformation" OR "AI economy". The initial search retrieved a total of 1,123,101 documents. When applying the year filter 2020–2024, the number of publications reduced to 593,851, indicating a significant growth of research in the last half decade. Out of these, 27,613 were identified are related to Sustainable Development Goal (SDG) 9 Industry, Innovation and Infrastructure. 18,944 of them were Articles. Out of this, 1,665 are available in open access (hybrid) mode, enabling free scholarly availability. The selected 1,665 items were extracted in .csv file format for further analysis. The study uses data only from the Dimensions database, so some relevant papers from other sources may be missing. The analysis is based on publication and citation numbers, which may not show the full quality or impact of research.

Results

Subject-wise distribution of research publication:

Fig. 2 shows that most research on the Digital Economy comes from the field of Commerce, Management, Tourism and Services, with 900 publications, indicating high interest in business and economic development. The next major areas are Information and Computing Sciences (372) and Engineering (262), showing a strong focus on technology and innovation.

Other fields like Human Society (185) and Economics (154) also contribute significantly. However, some areas, such as Health Sciences, Biological Sciences, and Education, have very few publications, which means research on the digital economy in these disciplines are still limited.

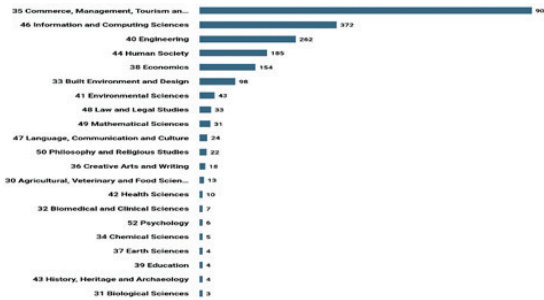


Fig. 2 Subject-wise distribution of research publication (2020-2024)

Source: Authors' own work

Annual growth of research publications

Fig. 3 presents the annual growth of research publications on the Digital Economy between 2020 and 2024. The quantity of publications has shown a continuous upward trend throughout these years. Research output started with around 85 publications in 2020, increased significantly to 210 in 2021, then rose further to 335 in 2022, and 465 in 2023. The maximum number of publications was recorded in 2024 (approximately 575), indicating a strong and growing academic interest in the digital economy field.

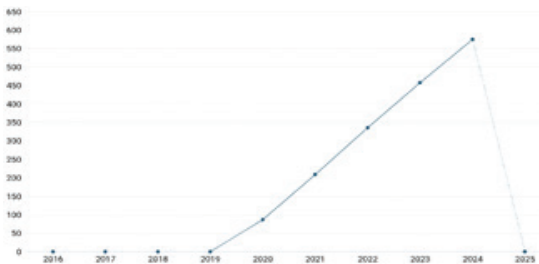


Fig. 3 Number of publications published in each year

Source: Authors' own work

Co-authorship and Influential Authors

Table 1 Top 20 Influential author

Author	Documents	Citations	Total link strength
Arranz, Carlos F.A.	4	158	8
Arroyabe, Marta F.	6	187	10
Chatterjee, Sheshadri	5	251	8
Chaudhuri, Ranjan	4	193	7
De Arroyabe, Juan Carlos Fernandez	7	299	10
De Mattos Nascimento, Daniel Luiz	4	151	2
Despeisse, Mélanie	6	357	6
Donbesuur, Francis	5	68	3
Garza-Reyes, Jose Arturo	10	381	2
Ghobakhloo, Morteza	7	945	5
Gupta, Shivam	5	115	6
Iranmanesh, Mohammad	5	661	5
Johansson, Björn	6	357	6
Nasiri, Mina	4	258	11
Parida, Vinit	12	1551	0
Rantala, Tero	3	256	9
Saunila, Minna	5	264	12
Sivarajah, Uthayasankar	5	563	5
Ukko, Juhani	6	337	12
Zahoor, Nadia	5	102	3

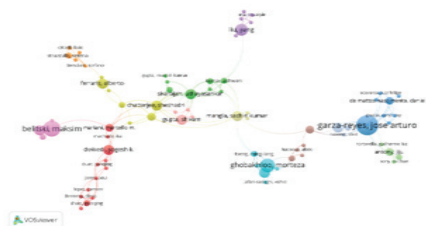


Fig. 4 Co-authorship analysis

Source: Authors' own work

The data in Fig. 4 represents the co-authorship network of researchers working on the Digital Economy between 2020–2024. The analysis includes **100 active researchers**, forming **112 collaborative links** and **257 total co-authorship relations**, grouped into **35 clusters**. Each coloured cluster shows authors who frequently collaborate, where the **size of the node** indicates publication volume and **line thickness** shows collaboration strength. Central and highly collaborative authors include **Jose Arturo Garza-Reyes, David Bruce Audretsch, Yogesh Kumar Dwivedi, Parida Vinit, Ghobakhloo Morteza, Adomako Samuel B, and Ukko Juhani**. The distribution of multiple clusters reflects diverse research groups globally, showing that digital economy research is expanding through broad collaborative networks rather than being dominated by a single group. Overall, the co-authorship structure demonstrates a dynamic and interconnected scholarly community advancing the field.

The analysis of leading authors as shown in Table:1 is based on bibliometric data which shows that Parida, Vinit is the most productive researcher with 12 publications, while Ghobakhloo, Morteza demonstrates the highest influence reflected by 945 citations. In terms of research collaboration, Saunila, Minna, Ukko, Juhani, and Nasiri, Mina exhibit the highest Total Link Strength, representing strong co-authorship relationships within the research community. This suggests that collaboration plays a key role in generating impactful research in this area.

Citation analysis

The co-authorship network in Fig.5 shows multiple collaborative clusters within the research domain. The largest and most interconnected groups are led by Garza-Reyes, Jose Arturo and Parida, Vinit, indicating their central influence in collaborative publications. Ghobakhloo, Morteza, though having high citation impact, reveals fewer collaborative links. The clusters reflect diverse research teams, highlighting strong academic partnerships and knowledge sharing within the field.

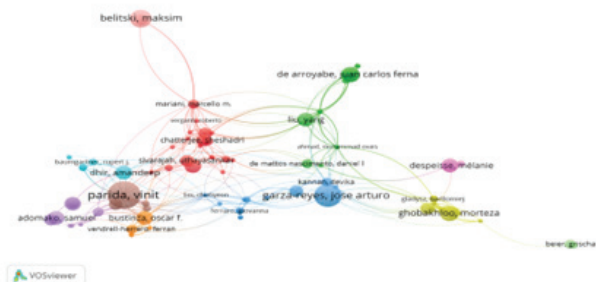


Fig. 5 Top 100 Author citation

Source: Authors' own work

Bibliographic Coupling

The country collaboration map in Fig. 6 identified that the United Kingdom is the leading contributor in this particular research area, having highest number of publications and the strongest international research connections. Italy, Sweden, Germany, Australia, China, and the United States also show important roles and form strong collaborative networks. Although India has fewer documents than some other countries, it has established a high number of citations, showing that its research is meaningful and influential. Overall, the map indicates that this field involves active global cooperation, and several countries are working together to produce impactful research.

Table 2 Top 10 countries having highest citations

Country	Documents	Citations	Total link strength
Australia	91	5003	32814
China	177	5940	31318
Finland	85	5755	31997
Germany	151	6158	32758
India	76	7060	28116
Italy	188	7333	55272
Spain	109	4187	31582

Sweden	102	6275	38433
United Kingdom	315	17415	87095
United States	132	5995	32087



Fig. 6 Bibliographic coupling of countries

Source: Authors' own work

Influential Organizations

Fig. 7 represents that Aston University recorded the highest citations (4,209), followed by Swansea University (4,047) and the University of Bradford (3,889), indicating their strong research influence. Meanwhile, the University of Derby showed the lowest citation count (470), reflecting notable variation in institutional research impact.

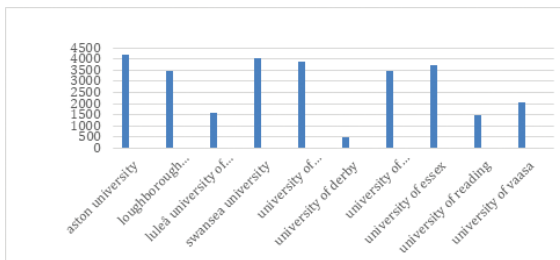


Fig. 7 Highly influential organizations with citation count

Source: Authors' own work

Altmetric Attention Score of Top 10 Publication
Table 3 Altmetric Attention Score of top 10 publication

Title	Author	Citation	ASS	Mendeley readership
Brexit, trade and UK advanced manufacturing sectors: a Midlands' perspective	Bailey, D., De Propris, L., De Ruyter, A., Heame, D., & Ortega-Argiles, R.	13	189	57
The influence factors of innovation networking formation based on ERGM: Evidence from the smart medical industry	Lu, C., & Li, B.	14	181	45
Blockchain innovations and the contribution of the intergovernmental organizations	Katuu, S.	7	179	37
From the post-industrial prophecy to the de-industrial nightmare: Stagnation, the manufacturing fetish and the limits of capitalist wealth	Moraitis, A.	18	129	26
Democratizing ownership and participation in the 4th Industrial Revolution: challenges and opportunities in cellular agriculture	Chiles, R. M., Broad, G., Gagnon, M., Negowetti, N., Glenna, L., Griffin, M. a. M., Tamm-Barrera, L., Baker, S., & Beck, K.	91	118	290
Digital twin of electric vehicle battery systems: Comprehensive review of the use cases, requirements, and platforms	Naseri, F., Gil, S., Barbu, C., Cetkin, E., Yarimca, G., Jensen, A., Larsen, P., & Gomes, C.	137	109	341
African agency in ICT infrastructure provider choice: Navigating access to foreign finance and technology	Arnold, S.	10	108	32
Towards a Theory of Serendipity: A Systematic Review and Conceptualization	Busch, C.	91	106	189
Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy	Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., Duan, Y., Dwivedi, R., Edwards, J., Eirug, A., Galanos, V., Ilavarasan, P. V., Janssen, M., Jones, P., Kar, A. K., Kizgin, H., Kronemann, B., Lal, B., Lucini, B., . . . Williams, M. D.	2.3k	105	7900
The philanthrocapitalism of Google News Initiative in Africa, Latin America, and the Middle East – Empirical reflections	Munoriyarwa, A., De-Lima-Santos, M., Mesquita, L., & Elega, A. A	10	104	27

The analysis of the top publications in the area reveals notable variations between traditional academic impact, represented through citation counts, and online attention as reflected in the Altmetric Attention Score (AAS) and Mendeley readership. The article “Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy” by Dwivedi et al. stands out with an exceptionally high citation count (2.3k) and the highest Mendeley readership (7,900), indicating strong scholarly influence. However, it records a relatively moderate AAS of 105, suggesting that although widely cited academically, its public or social media visibility is comparatively lower than expected. In contrast, papers such as Bailey et al. (AAS 189) and Lu & Li (AAS 181) demonstrate higher online attention compared to their citation levels (13 and 14 respectively), highlighting the rapid public engagement and policy relevance of topics like Brexit and smart medical innovation despite limited scholarly citations. Similarly, Katuu (AAS 179) and Arnold (AAS 108) show significant digital attention despite modest citation performance, pointing to strong societal interest and early-stage academic uptake. Meanwhile, Naseri et al. and Busch display balanced academic and social recognition through high Mendeley readership, signalling sustained research utility and engagement. Overall, the results illustrate that AAS and citation counts do not always move in parallel, underscoring the importance of integrating bibliometric and altmetric indicators to capture both academic influence and broader societal attention within digital economy related research.

Discussion

The analysis of digital economy research from 2020–2024 shows that publications are distributed across several disciplines, with the largest share in **business and economic development**, followed by Information and Computing Sciences reflecting its interdisciplinary nature. The annual output increased steadily from 85 publications in 2020 to 575 in 2024, indicating growing research interest. Co-authorship analysis highlighted strong collaboration, which include **Jose Arturo Garza-Reyes, David Bruce Audretsch, Yogesh Kumar Dwivedi, Parida Vinit, Ghobakhloo Morteza, Adomako Samuel B, and Ukko**

Juhani emerging as influential authors. Citation analysis shows that Parida, Vinit is the most productive researcher with 12 publications, demonstrating significant academic influence. Bibliographic coupling identified United Kingdom is the leading contributor in this research area, with the highest number of publications. Aston University recorded the highest citations (4,209). The altmetric analysis of the top publications revealed that article “Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy” achieved the highest Altmetric Attention Score 2.3k, showing high online engagement. Overall, combining bibliometric and altmetric indicators provided a clear picture of research growth, collaboration, influence, and public attention in the digital economy field.

Conclusion

The present study studied research trends using bibliometric methods to analyse publication growth, authorship patterns, influential sources, citation structures, organizational contributions, and altmetric attention. The analysis was conducted using data exclusively from the Dimensions database and visualization tools such as VOSviewer and Biblioshiny, which may limit the completeness of the results due to the exclusion of other major databases like Scopus and Web of Science. The findings highlight key areas of active research along with gaps that require further investigation. Despite this limitation, the study contributes to understanding the intellectual scenery and provides a useful roadmap for researchers and policymakers to strengthen collaborative efforts and enhance research visibility.

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14

Riverine Ecology and Linguistic Change: A Study of Language Distribution and Ethno-Linguistic Diversity along the Burhi Dihing Floodplain of Tinsukia District, Assam

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Abstract

The Burhi Dihing River, a major tributary of the Brahmaputra in Upper Assam, traverses a varied landscape that has historically acted as a pathway for cultural and linguistic exchange. This research examines the relationship between the river's geographic characteristics and the distribution and development of the languages spoken by the tribal communities residing in its floodplain. Utilizing a linguistic-geographical framework, the study investigates how migration triggered by the river, changes in settlement patterns, and communication among tribes have impacted linguistic adaptation and transformation among the Deori, Mising, Tiwa, and Sonowal Kachari groups. The research is grounded in field observations, surveys of village-level languages, and geospatial mapping of linguistic areas from Dihingmukh to Charaideo. The results show that geomorphic alterations particularly channel movement and displacement due to flooding, significantly influence patterns of bilingualism, language contact, and the slow integration into Assamese, the regional common language. The findings illustrate that the Burhi Dihing floodplain serves not only as a physical watershed but also as an evolving linguistic ecosystem where geography,

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movement, and culture converge. The study highlights the importance of integrating geographical and linguistic perspectives to understand language dynamics in the riverine regions of Northeast India.

Keywords: *Riverine Geography, Linguistic Change, Burhi Dihing Floodplain, Bilingualism, Language Contact.*

Introduction

Language serves as an essential manifestation of human culture, and its development is significantly influenced by geographical factors. The field of linguistic geography, as noted by Trudgill (1983), examines how spatial and environmental factors shape the distribution, variation, and spread of languages. Within this framework, riverine landscapes have historically acted as both pathways and barriers to linguistic engagement. Rivers define not only physical landscapes but also provide avenues for cultural exchange, migration, and the formation of identity (Joseph 2004). In Northeast India, known for its exceptional ethnic and linguistic diversity, the link between fluvial geography and language dynamics offers a rich area for scholarly exploration. Assam, which is traversed by the powerful Brahmaputra and its many tributaries, has long been a geo-linguistic mosaic (Sharma 2012).

The Burhi Dihing River, which begins in the Patkai hills and flows through the districts of Dibrugarh and Charaideo, exemplifies the interplay between environment and ethnicity. Its floodplain supports communities such as the Deori, Mising, Tiwa, and Sonowal Kachari—tribes that predominantly belong to the Tibeto-Burman linguistic family (Grierson 1903; Goswami 2014). Over the years, these groups have adapted their settlement patterns, cultural practices, and languages in response to the rhythm of the Burhi Dihing. Nevertheless, the river's geomorphological instability—evident in channel shifts, silt buildup, and frequent flooding—has repeatedly uprooted communities and altered linguistic borders (Sarma & Phukan 2010). These environmental challenges have promoted bilingualism, lexical borrowing, and a gradual shift towards Assamese, which serves as the regional lingua franca (Baruah 2020).

Research Objectives and Questions

How does the riverine environment shape linguistic distribution? What patterns of language change are visible in the floodplain communities?

Methodology

The study used a mixed-method approach that combined field observation, village-level language documentation, and GIS-based mapping of language areas from Dihingmukh to Charaideo. We analysed phonetic data and social language factors with ecological-linguistic frameworks (Haugen, 1972; Fill & Mühlhäusler, 2001) to examine the link between changes in landform and language adaptation among tribal groups.

Statement of the Problem

The Burhi Dihing floodplain in Upper Assam exhibits rapid landform changes that disrupt settlement patterns. This affects the linguistic continuity of indigenous tribes such as the Deori, Mising, Tai-Phake, and Moran. Environmental instability, especially flooding and shifting river channels, has caused people to relocate, hindered communication between tribes, and led to gradual assimilation into Assamese (Baruah, 2020). Despite its rich linguistic heritage, this region has not been thoroughly studied in relation to ecology and language. It needs an investigation into how river dynamics affect language use, transmission, and identity.

Area of the Study

The study area includes the Burhi Dihing floodplain in Tinsukia District, Assam. It stretches from Dihingmukh to Charaideo in the Upper Brahmaputra Valley. This region features fertile alluvial plains, shifting river channels, and frequent floods. These natural elements shape its ecology and settlement patterns. The area is home to various ethnic communities, such as Deori, Mising, Tai-Phake, Moran, and Matak. Their languages show a close connection to the river environment. Thus, the Burhi Dihing serves as both a geographical corridor and a linguistic landscape** of cultural adaptation and ecological influence.

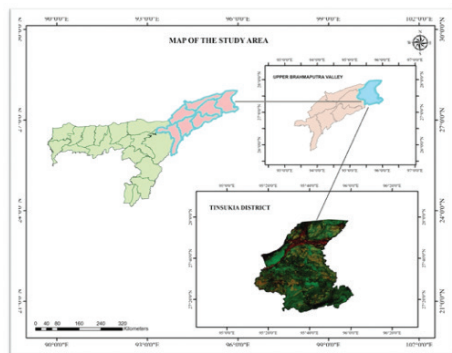


Fig. 1 Study area map

Significance of the Study

The investigation into linguistic ecology and diversity within the Tinsukia District reveals a distinct pattern in which diverse cultural, environmental, and social influences shape a *multilingual landscape* in the Upper Brahmaputra Valley. As one of the most ethnically and linguistically diverse districts in Assam, Tinsukia hosts indigenous communities such as the Mising, Singpho, Tai-Phake, and Moran, as well as various migrant linguistic groups. Exploring this diversity through the lens of linguistic ecology (Haugen, 1972; Fill & Mühlhäusler, 2001) allows for insight into the role of language within its ecological and socio-cultural context. This research is essential for documenting languages of endangered tribes, evaluating *inter-generational language transmission*, and examining the dynamics between dominant and minority language systems. Moreover, it sheds light on how the socio-economic challenges, migration, and educational policies influence language preservation and their evolution.

At the regional level, it enriches ongoing discussions on linguistic sustainability in Northeast India, supporting national research on multilingualism and governance (Debbarma, 2025; Ranjan, 2021). Additionally, the findings contribute to the formulation of inclusive language preservation strategies that align with India's goals for linguistic diversity, ensuring that smaller indigenous languages do not disappear amidst swift cultural and environmental transformations.

Review of Literature

Linguistic ecology, a concept put forth by Haugen (1972), perceives language as an integral element of a vibrant ecosystem shaped by its speakers, cultural behaviours, and surroundings. Subsequent studies by Mühlhäusler (1996) and Fill & Mühlhäusler (2001) broadened this viewpoint, highlighting the interplay between sociocultural and environmental elements that support or threaten linguistic diversity. Research conducted in India (Pattanayak, 1981; Annamalai, 2001) has emphasized the coexistence of various linguistic systems and their significance in fostering cultural pluralism. On a national scale, Brass (2005) and Fishman (1991) investigated the impact of language policies on ethnic identity and socio-political activism, while Ranjan (2021) and Debbarma (2025) analysed the governance hurdles of linguistic inclusion within India's federal landscape.

At the regional level, researchers such as Baruah (2005) and Tikhir (2024) have highlighted the precarious circumstances facing numerous Tibeto-Burman and Tai languages in Northeast India, underscoring the *need for language documentation and revitalisation initiatives*. Ethnographic studies by Bhattacharya (2010) and Nongbri (2016) have shown how linguistic variations mirror historical migration trends and socio-ecological adaptation in the Brahmaputra Valley. Globally, Crystal (2000) and UNESCO (2003) cautioned that globalisation, educational policies, and digital marginalisation jeopardise small languages, leading to linguistic uniformity.

Despite this, there has been little focus on localised linguistic ecosystems like Tinsukia, where multi-ethnic interactions, migration, and language contact generate unique instances of code-mixing and language shift.

Discussions and Results

The Burhi Dihing Plains in Tinsukia District, an essential component of the Upper Brahmaputra Valley, showcase an extraordinary blend of riverine ecology and linguistic variety. The riverine ecosystem—characterised by shifting river courses, fertile alluvial regions, and recurrent flooding—has historically promoted multi-ethnic habitation and cultural mixing. The diversity of languages in this area indicates both adaptation

to the environment and a continuous pattern of migration over centuries. The geographic spread of ethnic-linguistic groups like the Deori, Tai-Phake, Moran, and Matak illustrates a connectedness between *river-based livelihoods* and *linguistic environments*.

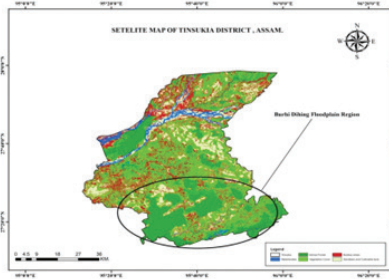


Fig. 1 GIS-based Satellite map of the study area; Burhi Dihing Floodplain of Tinsukia.

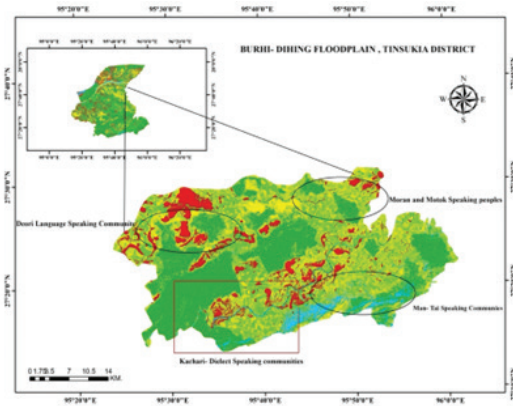


Fig. 2 Aerial mapping of Language zones on the Burhi Dihing floodplain region, Tinsukia).

The Deori language, belonging to the Tibeto-Burman family, is predominantly found along the tributaries of the Brahmaputra and the Burhi Dihing. Speakers of Deori, especially from the Dibongiya and Tengaponiya groups, reside near riverbanks, ensuring the continuity of their language through rituals and religious customs (Deori, 2025). Their affinity for riverine settings highlights the ecological factors—such as water availability,

fertile land, and ritualistic beliefs—that influence the geography of language. However, the rise of Assamese- and English-medium educational institutions has led to a gradual linguistic shift from Deori to Assamese, reflecting broader national trends of decline in minor languages (Debbarma, 2025; UNESCO, 2009). In a similar vein, the Tai-Phake language, which was once strong across nine villages in Tinsukia and Dibrugarh, is now critically endangered, with fewer than 2,000 speakers remaining (Devi, 2020). Historically, the proximity to rivers has supported Tai-Phake communities such as Namphake, Barphake, and Tipam. Nevertheless, ecological displacement due to floodplain erosion and migration has hindered the transmission of the language. The situation of the Tai-Phake community exemplifies *hydro-linguistic vulnerability*, showing how environmental instability can directly jeopardise small-language environments.

Conversely, the Moran and Matak communities exhibit advanced stages of linguistic assimilation. Research on Moranmèse morphology (Moran, 2017) and Matak ethno-dialect phonetics (Gogoi, 2020) indicates



structural convergence with Assamese, reflecting significant language-induced hybridisation. These groups, once speakers of Tibeto-Burman languages, now predominantly communicate in Assamese as their primary language, retaining only remnants of their original phonetic and syntactic characteristics. This illustrates what Brass (2005) describes as “ **linguistic acculturation under ecological pressure.**”

From an ecological-linguistic viewpoint, the Burhi Dihing Basin strongly exhibits a pattern of “*linguistic corridor.*” Activities such as trade, agriculture, and flooding-related displacement encourage language interaction, borrowing, and code-mixing. The blending of Tai, Bodo-Garo, and Indo-Aryan language features shows a multilingual landscape shaped by river influences. This diversity continues through ongoing

interactions between people and the river. However, threats to this balance come from modernisation, population declines in rural areas, and government-driven language policies.

The research indicates that the river's ecology and the variety of languages in Tinsukia are connected. The valley's hydrological cycle supports both agricultural practices and the area's cultural and linguistic identities. To protect these small linguistic ecosystems, it is crucial to work on language documentation, ecological conservation, and inclusive educational policies. As Debbarma (2025) points out, linguistic diversity is essential for the ecological resilience of the Brahmaputra system, where preserving languages is as important as maintaining the landscape itself.



Fig.2 Celebrating Poi-sangken Festival by the Tai Phake Tribe.



Fig.3 Celebrating Ali: Aye:Li: Gang festival by the Mising tribe.



Fig. 4 Traditional dress and house of the Deori tribe of the Upper Brahmaputra Valley.



Fig. 5 Traditional house of the Tai Phake community of Namphake village.



Fig. 6 Traditional Mising *Chang-Ghar*.

Phonetic Diversity and Similarity among the Communities of the Burhi Dihing Plains

The Burhi Dihing Plains in Tinsukia district host a rich linguistic environment. The Moran, Matak, Deori, and Tai-Phake communities live together in this shared ecological and cultural area. Although they differ in ethnicity and language, these groups show notable phonetic similarities. These similarities stem from centuries of language contact, cultural exchange, and geographic proximity.

The Moran community's language is a member of the Bodo branch of the Tibeto-Burman family. It retains and adapts phonetic elements in its sound system. Moran (2017) points out those common Moran-Assamese expressions like *nejang* (from Assamese najaw, meaning "don't go") and *nidung* (from nidiu, meaning "don't give") have nasal vowel extensions and consonant harmony. The use of alveolar nasals /n/, velar nasals /ŋ/, and open front vowels /a/, /e/isa mark of a proto-Moran language. On the other hand, the Matak community, noted by Gogoi (2020), shows Tai-Mongoloid phonetic characteristics within an Assamese framework. For instance, they often replace Assamese x or s with h (like xagun becoming hagin, meaning "vulture"; xatya to hatya, meaning "truth") and shorten or drop vowels (as in Jāgoi to Jāge).

The frequent use of nasal velar endings, such as '*khālong*' (meaning "have eaten") and '*jāng*' (meaning "to go"), shows a link to Tai phonology, which features nasalised final consonants and vowel nasalisation. There are phonetic similarities across these communities due to the influence of Assamese, which acts as a linguistic link. The Moran and Matak dialects both use the glottal fricative/h/ and the alveolar stops /t/ and/d/ in similar ways. They also share a tendency toward vowel harmony, seen in words like *pāile* (meaning "if possible") and *koibole* (meaning "to do"). This pattern of phonetic convergence arises from ongoing multilingual interactions among the Moran, Matak, and even Tai-Phake speakers. Additionally, reduplicated expressions such as *tekteki* (meaning "talkative") and *ukhel-khel* (meaning "uproar"), common in Moran speech, have similar forms in Matak, highlighting shared phonological traits influenced by both Tibeto-Burman and Tai characteristics. In conclusion,

the phonetic diversity of the Burhi Dihing plains is vibrant, ranging from native Tibeto-Burman sounds to mixed Assamese phonemes. Beneath this variety lies a phonetic connection formed through living together. Inter-tribal communication, settlement along rivers, and shared oral traditions created a unique linguistic environment of convergence rather than separation.

The Burhi Dihing Plains in Tinsukia district host a culturally and anthropologically rich linguistic environment. The Moran, Matak, Deori, and Tai-Phake communities live together in this shared ecological and cultural area. Although they differ in ethnicity and language, these groups show notable phonetic similarities.

Conclusion

The research shows that the Burhi Dihing floodplain acts as both an ecological and linguistic corridor. Environmental processes influence cultural and language development. The area's instability encourages interaction among different languages, leading to changes in pronunciation and shifts in language among local groups. Protecting these delicate linguistic ecosystems requires combined efforts in environmental conservation, language documentation, and the creation of inclusive policies (Debbarma, 2025; UNESCO, 2003). In the end, maintaining language diversity is closely linked to preserving the riverine environment that supports it.

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15

Handloom Heritage in Assam: An Overview

Himadri Lekharu*

Abstract

The handloom sector in India is a significant unorganized economic activity, renowned globally for its unique techniques. It is the largest cottage industry with 28 million looms, providing substantial rural employment to around 3.52 million people. The sector is low in capital requirements, eco-friendly, and adaptable. In Assam, the handloom sector is crucial for the state's economy and cultural heritage, known for textiles like Muga, Eri, and Pat silks. Historically, weaving in Assam was supported by royal patronage and remains significant today. Assam is a major silk producer, contributing significantly to India's handloom output and employing a large rural workforce, primarily women. The sector supports economic sustainability, social stability, and cultural preservation.

Keywords: Handloom, Cultural Heritage, Employment, Assam.

Introduction

The handloom sector in India is one of the largest unorganised economic activities. Indian handloom artisans are globally renowned for their unique techniques in hand spinning, weaving, and printing. The handloom industry is the largest cottage industry in the country, with 28 million looms. It is also the second-largest employment provider in rural

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regions, employing around 3.52 million people in direct and allied activities. The handloom sector has several advantages, including being less capital-intensive, eco-friendly, and having lower power consumption, as well as the ability to adapt to market conditions. The Indian handloom industry contributes to nearly 15% of the nation's cloth production and includes 28.2 lakh looms, supporting 31.44 lakh families and employing 35.22 lakh workers. Among these workers, 26.74 lakh are handloom workers and 8.4 lakh are allied workers. Of the 35.22 lakh handloom workers, 73.2% (25.77 lakh) operate independently, 6.3% (2.23 lakh) are part of cooperatives, and 19.4% (6.84 lakh) work under master weavers. Notably women constitute 72.29% of this workforce. The sector employs 26.73 lakh weavers directly and indirectly. In the fiscal year 2022, exports of handloom products from India reached USD 266.88 million. India exports handloom products to more than 20 countries worldwide. (4th All India Handloom Census, 2019–20).

The handloom sector of Assam is renowned for its unique traditional textiles, including Muga, Eri, and Pat silks, and the culturally significant Gamocha. The handloom sector in Assam is an essential part of both the state's economy and its cultural heritage. This sector is known for producing beautiful, intricate designs and preserving traditional weaving techniques. The Golden thread Muga Silk and Eri Silk have worldwide demand. This sector is very much important for providing livelihood to thousands of weavers, especially women in rural communities, ensuring economic sustainability and social stability. Weaving is deeply rooted with Assamese cultural practices and showcases the region's rich heritage. This sector is the second largest employer next to the agricultural sector which provides larger employment, especially for women in rural areas.

In rural areas of Assam, weaving is a common activity among women that makes handloom an integral part of the state's economy. The handloom sector plays a crucial role in the socio-economic fabric of rural communities in Assam and is a significant source of livelihood for rural Assamese people. Assam's rich cultural heritage includes over 100 tribes, each with unique dress styles, designs, and colours, resulting in a wide variety of traditional attire (Saikia, 2011). In Assam along with other states

of North East India, sericulture has been a traditional livelihood activity for centuries and therefore the creation of garments from natural silks like Endi (Eri), Muga, and Pat is deeply embedded in Assamese society. The handloom industry in Assam not only generates income but also provides meaningful employment opportunities for the impoverished and marginalised segments of the population. The art of weaving, passed down through generations, is particularly mastered by Assamese women, who produce stunningly intricate designs on their looms.

Objectives & Methodology

This article aims to provide a comprehensive overview of the handloom sector in Assam, focusing into its historical significance, current scenario and future prospects.

Historical Significance of Handloom Sector in Assam

From ancient times, Assam has been renowned for producing exceptionally high-quality silk. The three main types of Indian silk—Endi (Eri), Muga, and Pat—are closely associated with Assam. While the names Pat (Pattaja) and Endi (Eranda) originate from Sanskrit, Muga is uniquely Assamese. It is believed that Assam was known even during the time of the Ramayana as a land of “cocoon rearers.” The art of silk weaving and spinning has long been regarded as one of the highest achievements for Assamese women. Nearly all expressions of excellence attributed to Assamese women can be linked to their skill in spinning and weaving. When a marriage proposal is made, the first question often asked about the bride is whether she knows ‘buwa-kota,’ meaning whether she is proficient in spinning and weaving. (Barua, 1951).

Before the Ahom rule was established in 1228 A.D., handloom weaving in Assam was primarily practised by tribal communities and low-caste Hindus (Tantis). The Arthashastra references various textile commodities in ancient Assam (Barua, 1996), and texts like the Harsa Charita and Kalika Purana mention the use of fine cotton garments in this region (Assam State Gazetteer, Vol. I, 1999). Handloom items were integral to festivals and societal functions, and village weavers and spinners played a crucial role in the local economy. The art of weaving cotton

cloth was highly developed in ancient Assam, with the Tantis, a distinct professional caste, being involved in weaving. However, with the advent of Ahom rule, the handloom industry gained prominence and evolved into a respected craft. Under the patronage of the Ahom kings, it became a symbol for the Assamese people (Mandal, 2020)

During the Ahom kingdom, wearing silk garments was primarily a privilege of the wealthier and higher stratum of society. Ahom kings and other high-ranking individuals of Ahom Kingdom adorned themselves with garments made from a special variety of Muga silk known as 'Mejankari Silk,' which was considered superior to the common golden Muga. The Ahom kings established a dedicated administrative system to oversee the cultivation of silkworm feed plants, the rearing of silkworms, the reeling of silk yarn, and the weaving of silk fabrics. Due to royal encouragement and patronage, spinning and weaving became an indispensable profession in every Assamese household. The social status of Muga silk culture was extremely high, and the practice of rearing silkworms, reeling, and weaving Muga silk was more prevalent than other types of silk. (State Handloom Policy Document, Assam 2017). Momai Tamuli Barbarua, a powerful minister of Ahom Kingdom, mandated that every woman spin a certain amount of yarn before sunset (Handique, 2010). Ahom queens, such as Sarbeswari konwari, the queen of Siva Singha, established weaving schools to train local girls in the art of weaving and designing cloth. At that time, the professional weavers who were engaged in weaving activities, supplying fabrics to the royal family were compensated with rent-free lands and other state benefits. Additionally, some weavers sold their products in the market (Barua, 1951; Handique, 2010). The significance of weaving is also reflected in mediaeval Assamese literature. From the 14th century onwards, writers like Madhava Kandali frequently mentioned weavers, primarily silk weavers, in their works. Ananta Kandali, a prominent 16th-century writer, referenced silk weavers like Madhukara Atai and Kesava Doloi as key inspirations for his writings (Sarma, 2001). The great social reformer Sri Sankardeva is said to have produced a large cloth piece for Koch king Naranarayana, depicting scenes from the early life of Lord Krishna, known as Brindavani Bastra, the fragments of it, are currently preserved in several museums

around the world including Victoria and Albert Museum in London.

The Treaty of Yandabo in 1826 ended nearly six hundred years of Ahom rule. With the establishment of British rule, the handloom industry in Assam lost much of its significance as the Indian market became dominated by inexpensive, mill-made foreign textiles. Initially, traditional yarn and cotton were produced domestically, but gradually, this homemade yarn was replaced by foreign-made yarn. The commercial potential of Assam's silk varieties—Endi (Eri), Pat, and Muga—was recognized by the British from their early interactions with the Ahom kingdom (Goswami, 2017). During the colonial period, Assam's handloom products were traded in regional, national, and international markets. Muga silk threads worth Rs. 13,973, Rs. 58,220, and Rs. 53,889 were exported to Bengal in the years 1832-33, 1833-34, and 1834-35, respectively. The total export value of silk from Assam in the years 1882-83 and 1897-98 was Rs. 204,930 and Rs. 366,310, respectively (State Handloom Policy Document, Assam, 2017).

The handloom sector in Assam saw organised development after the formation of the Handloom Weavers' Cooperative Society under the Assam Cooperative Societies Act, 1949 (Act of 1951). This led to the creation of a three-tier cooperative system, consisting of the Apex Level Society, Regional/District Level Society, and Primary Weavers Cooperative Society (Directorate of Handloom and Textile, Assam). Furthermore, the State Department of Sericulture and Weaving, the All India Handloom Board, and the All India Silk Board have taken initiatives to develop the handloom industry in Assam. As a result of these government efforts and policies, the industry has received a new lease on life and has started to make significant progress.

Before 1983, Assam did not have a separate department dedicated to handloom and textiles. However, in July 1983, the Directorate of Handloom & Textiles was established following the recommendations of the Sivaraman Committee to promote the development of the handloom and textile industry (Directorate of Handloom and Textile, Assam).

Present Scenario of Handloom Sector in Assam

Production Scenario

Assam, the third-largest state in India in terms of silk production, produces four varieties of silk i.e Eri, Muga, Mulberry, and Tassar. In 2022-23, Assam produced 211 metric tons of Muga silk and 5487 metric tons of Eri silk. The state produces about 85 percent of the world's Muga silk and 62 percent of India's Eri silk (Central Silk Board, 2023).

Table 1 Amount of Raw Silk Production (in Metric Tonnes)

Name of the Product	2021-22	2022-23
Mulberry Silk	25	22
Vanya Silk	5676	5698
Tassar	0.007	0.009
Eri	5465	5487
Muga	211	211

Source: All India Handloom Census 2019

The handloom sector in Assam not only reflects the rich cultural heritage of the state but also contributes significantly to India's overall handloom production. The following table presents a detailed overview of the percentage contribution by Assam to the total production of various handloom products. It highlights the state's dominance in certain categories and its substantial presence in others.

Table 2 Major Handloom Products of Assam

Name of the Product	Percentage contributed by Assam to total production
Silk Sarees	7.8
Shawls, Mekhela-Chador, Loi, Stole, Scarf, Muffler	77.4
Angavastram, Dhote, Sarong, Lungi	42.6
Towel, Napkin, Duster, Gamocha	72.4
Durris, Rugs, Mats	12.7
Dress Material (Salwar, Kameez), Suiting, Shirting, Long Cloth	23.6

Bedsheet, Furnishings, Blanket	26.8
All others including surgical bandage	27.5

Source: All India Handloom Census 2019

In Assam, 7.97 lakh handloom worker households, representing approximately 26.7 percentages of all such households, weave products such as shawls, mekhela-chador, loi, stoles, scarves, and mufflers. Assam is the leading state in producing these items, accounting for 77.4 percent of the total production.

Additionally, 4.91 lakh handloom worker households in Assam, which is about 16.5 percent of all such households, weave products like towels, napkins, dusters, and gamochas. Assam, along with West Bengal, dominates the production of these items, jointly accounting for 84.4 percent of the country's total production.

Furthermore, 1.01 lakh handloom worker households in Assam, or roughly 3.4% of the total, produce bedsheets, furnishings, and blankets. Given that Assam has the largest number of looms and weavers; it stands out as the leading state for handloom-based home décor production.

Employment Scenario

The handloom sector in Assam plays a pivotal role in the state's employment landscape. Assam accounts for the highest number of looms (12.49 lakh) and handloom workers (12.84 lakh) in India (All India Handloom Census, 2019-20). A significant portion of this workforce consists of women, who are involved in weaving and other related activities. This sector not only provides employment but also supports income generation in economically disadvantaged regions, helping to alleviate rural poverty and unemployment.

Table 3 No of Weavers

Type	Male		Female		Transgender	
	Weaver	Allied	Weaver	Allied	Weaver	Allied
Rural	75136	27592	1021349	142165	120	161
Urban	451	910	10368	5625	4	0
Total	75587	28502	1031717	147790	124	161

Source: All India Handloom Census, 2019-20

This distribution highlights the importance of the handloom sector in providing substantial employment opportunities, especially for women in rural regions. According to the Handloom Weaver Information System, Office of the Development Commissioner (Handloom), Ministry of Textile, Government of India, the three districts of Assam namely Kamrup, Barpeta and Sivasagar have the highest number of weavers.

Table 4 Trends in the Number of Weavers and Looms in Assam (in lakh)

Details	2019-20	2009-10	1995-96	1987-88
No of Weavers	12.84	14.01	11.96	17.16
No of Looms	12.49	11.12	13.22	14.09

Source: 1st, 2nd, 3rd & 4th All India Handloom Censuses

The table illustrates a dynamic handloom sector with significant changes in both the number of weavers and looms over the past few decades. The fluctuations in the number of weavers and looms could be attributed to various factors including economic shifts, technological advancements, market demand, and policy changes affecting the handloom industry.

Economic Significance of Handloom sector in Assam

Employment Generation: The handloom sector is a major source of employment in Assam, with around 14 lakh weavers, representing approximately 65% of India's handloom workforce. This sector provides livelihoods to a significant portion of the rural population. Furthermore handloom weaving is labour-intensive, involving a large number of individuals, including weavers, spinners, and allied workers. This aspect makes it a crucial sector for rural employment.

Income Generation: Handloom weaving serves as a primary or supplementary income source for many rural families. The sector's income generation capacity supports household economies and contributes to poverty alleviation. By enhancing production and diversifying products, the handloom sector has the potential to significantly uplift the economic status of rural communities of Assam.

Cultural Heritage and Tourism: Handloom products of Assam, such as Muga and Eri silk, are integral to the state's cultural heritage. The preservation of traditional weaving techniques and designs contributes to maintaining cultural identity. Moreover traditional handloom textiles attract tourists and contribute to the state's tourism industry. Craft fairs, exhibitions, and heritage tours highlight the significance of Assamese handloom, boosting local tourism-related revenues.

Contribution to State Economy: The handloom sector contributes significantly to Assam's local economy through the production of textiles like Mekhela Chador, Gamocha and various silk products. This local production supports the state's economic stability and growth. The sector generates considerable market value, both domestically and internationally. Although exports are limited, there is potential for increased contribution to the state's GDP through expanded export activities.

Diversification and Innovation: The sector's ability to diversify products, including garments, accessories, and home furnishings, enhances its economic impact. Expanding the product range can tap into new markets and increase economic returns. Incorporating modern technology while preserving traditional methods can boost productivity and economic efficiency, leading to enhanced economic contributions.

Sustainability and Environmental Benefits: The handloom sector reliance on traditional, low-energy production methods aligns with sustainable practices. Its eco-friendly nature enhances its appeal in global markets focused on environmental sustainability. The sector's reliance on natural fibres supports local agriculture, contributing to the overall sustainability of rural economies.

Conclusion

In Assam, handloom weaving is deeply intertwined with the state's culture and heritage. Women play a significant role in this sector. The sector is crucial for employment generation and the socio-economic development of Assam. It has gradually evolved to meet market demands through commercial production. The state hosted 779 handloom demonstration circles, covering 18,650 villages. An initiative by the Directorate of Handloom

& Textiles, Assam, was launched to directly procure handloom items from indigenous weavers through a dedicated online portal under the state flagship scheme “SWANIRBHAR NARI (SNN)” without involving middlemen. The Handloom Research and Designing Centre (HRDC) under the Directorate continues to provide support in design, pattern, weaving, and dyeing, with a focus on eco-friendly natural dyes. Additionally, a three-tier cooperative system operates in the state, aiming to develop the handloom sector in an organised manner. This system includes one apex cooperative federation, eight regional/district-level cooperative societies, and 1,777 primary weavers’ cooperative societies at the grassroots level.

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16

Transition in Women's Economic Livelihood Practices Among the Bodo Community of North East India

Viva Rani Narzary*

Abstract

The economic activities of Bodo women in North East India reflect a dynamic blend of traditional practices and emerging modern engagements. Historically, Bodo women have sustained their households through diverse occupations, including agriculture, animal husbandry, weaving, fishing, sericulture, and the production of rice beer (zou). These forms of work have long served as both cultural markers and vital components of the household economy. With the spread of education, greater urban exposure, and expanding market access, new occupational spaces have emerged for Bodo women, ranging from government and private-sector employment to entrepreneurship.

Consequently, a gradual shift from traditional subsistence livelihoods to modern income-generating roles has become evident. Nevertheless, conventional practices persist alongside modern occupations, signifying a balance between continuity and transformation. This study examines this transition by drawing on secondary literature, highlighting the evolving nature of Bodo women's livelihood strategies and their contributions to socio-economic progress.

Keywords: Bodo Women, Livelihood, Modernisation, Traditional Economy, North East India.

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Introduction

The North-East region of India is a mosaic of diverse tribal and non-tribal communities. Assam, in particular, serves as a remarkable example of this cultural and ethnic diversity, being home to numerous groups with distinct identities. Among them, the Bodo community is recognised as one of the prominent indigenous groups of Assam, belongs to the Tibeto-Burman linguistic family and represents one of the earliest settled tribes in North East India. The Bodo kingdom was known as *Bod*, which is supposed to mean 'homeland'. (Brahma, 1998)

Traditionally, Bodo women have been integral to both domestic and communal spheres, participating actively in agriculture, weaving, livestock rearing, fishing, and food processing. Their contributions to sowing, weeding, and harvesting reflect a gender partnership that has historically characterized Bodo agrarian life. Weaving, in particular, has held both economic and symbolic significance, serving as an expression of feminine artistry, identity, and self-reliance. Through their craftsmanship and agricultural labor, women have consistently ensured the stability of household economies.

In recent decades, however, the livelihood practices of Bodo women have experienced notable transformation. Expanding education, exposure to urban environments, and the influence of modern markets have diversified women's economic roles. Increasingly, they engage in employment across government and private sectors, education, entrepreneurship, and other service-oriented domains. These shifts indicate a broader socio-economic transition from subsistence-based to income-oriented occupations.

In this evolving context, Bodo women navigate the intersection of tradition and modernity—embracing new forms of work while safeguarding cultural heritage. The present study seeks to explore this process of adaptation and transformation in women's economic livelihoods within the Bodo community.

Objective

1. To identify and describe the traditional livelihood activities undertaken by Bodo women.

2. To analyse the impact of modernisation and education on the transformation of women's economic structures.

Methodology of the Study

The study's methodology is descriptive and relies exclusively on secondary data sources. Information has been compiled from scholarly books, academic journals, and published articles and a booklet.

Bodo women and livelihood in the family economy

The role and activities of women in the family are often seen as minor but their contribution to running the household cannot be ignored. Bodo women traditionally have strong skills in preparing and processing food. Traditional fish preservation techniques, such as *Napaam* (naa-fish, paam – grinded ladoo), continue to generate market income, symbolising women's enduring contribution to household economies. Another product is *Kharoi*, an alkaline substance used in Bodo cooking. It is made by burning leaves of black dal (sobai), banana tree or the fibre of the coconut fruit. This traditional soda, or Alkaline Kharoi, is used in the preparation of curries such as *sobai* curry, *ondla*, *narzi* Curry, *lafa* curry, etc. (Islary, 2020). Recently, kharoi/khardwi received the Geographical Indication (GI) Tag, highlighting its cultural and economic importance. (A booklet on Geographical indications of Northeast states of India, 2024 edition)

Items like *Napaam*, *Kharoi*, and dried fish have regular demand in the market and continue to provide income. The women's role in the livelihood and economic life of the Bodo community has been important and visible since ancient times.

Bodo women in agriculture economy

Agriculture constitutes the primary economic foundation of the Bodo community. Traditionally agrarian, the Bodos depend on cultivation as the core of their rural livelihoods. Within this system, women play an indispensable role in every stage of agricultural activity—from soil preparation to post-harvest management. While men generally make decisions about land and crop selection, women undertake the major labour-intensive tasks, including sowing, weeding, harvesting, threshing, and storage. (Endle, 1911) mentioned that during cultivation,

Kachari women cooked food and served all the workers in the field. Traditional cultivation methods such as jhum (shifting cultivation) have long been practised in Bodo society, though sedentary farming is now more common in alluvial plains locally referred to as *Hamasa*. The Bodos cultivate various rice varieties, including *Maisali*, *Aijong*, *Jhwsa*, *Bawa*, and *Maibra* (sticky rice). Among these, *Maibra* is the most favourite among the Bodo people and is essential in *Domasi* (Harvesting festival). The agricultural cycle is deeply intertwined with religious and cultural customs. Before sowing begins, a ritual is conducted in which the senior woman of the family offers betel leaves and areca nuts to the deity *Mainao* (the goddess of wealth), seeking blessings for fertility and good harvests. (Islary, 2020)

Post-harvest tasks—such as husking, winnowing, and grain storage—are managed primarily by women, who preserve the yield in traditional granaries (*Bakhri*). Beyond subsistence, women also play a key role in marketing surplus agricultural produce. Their active participation in local markets (*bazar*) highlights the enduring contribution of women to both household and community economies. Thus, Bodo women continue to serve as vital agents in maintaining agricultural sustainability and family welfare.

Bodo women in sericulture and weaving

Sericulture and weaving are essential components of the Bodo cultural and economic system. For generations, women have dominated these crafts, which provide both economic independence and cultural continuity. Silk rearing—particularly of Eri (Endi), Muga, and Mulberry varieties—has traditionally been a household-based occupation. Women manage the entire process, from nurturing silkworms to spinning and weaving the finished product.

The village of Sualkuchi, located on the banks of the Brahmaputra River and often described as the “Manchester of Assam,” remains a prominent center for silk weaving.

Here, women artisans have sustained the sericulture industry for centuries (Basumatary, Status and role of Bodo women in the Northern part of the Brahmaputra valley in Assam (1919-2003)). The activity’s eco-friendly nature and low investment

requirements make it an accessible and stable source of income for rural women.

Traditionally, Bodo women wove all the necessary clothing for their families, including Dokhona (traditional attire), Aronai (long scarf), Gamocha, Eri Chadar, and Sii-Maa (bed cover). Weaving has long been referred to as both a daily necessity and a symbol of feminine skill. As Endle (1911) observes, a Kochari woman could weave about half a yard of cloth in a day if she worked without interruption. A Bodo woman who did not know how to spin or weave was considered unskilled and regarded as aouluri (good for nothing) and held in low regard by the society which shows the cultural importance of weaving in Bodo life (Basumatary, Status and role of Bodo women in Northern part of Brahmaputra valley in Assam (1919-2003)). The Dokhona, most distinctive garment of Bodo women, is admired for its vivid colours and complex patterns such as Agor Geder, Aghor Gwlwi (small and large motifs), Gwmw, Gwtang, and Bato Gab, often in shades of yellow, blue, and parrot green. Special ornamented Dhokonas, such as *Dhokona Thawsi*, are worn by brides and *Bwirathis* (attendants) during weddings. Different varieties of Dhokonas are known by names that reflect their motifs and colours, such as Pharaoh Magon (pigeon's eye), Daotu Koro (dove's head), Moider Agan (elephant's footprint), Besor Bibar (mustard flower), Dingkia Bibar (fern flower), Akahi (blue), Bidun (plain yellow), Gwmw Burwi (old yellow), Gwja (red), and Daorai Mwkreb (peacock's eye). These clothes are woven in beautiful combinations of orange, yellow, and sky blue. Bodo dokhona, woven by Boro women, has also received Geographical Indication. There are more than 47 types of designs used in making a dokhona, which is referred to as *agor* in the Bodo language (A booklet on Geographical indications of Northeast states of India, 2024 edition).

In contemporary times, weaving has evolved into a market-oriented enterprise. Supported by cooperatives and government schemes, many women now operate small weaving units or boutiques that sell Dokhona and other traditional fabrics. This shift from domestic weaving to entrepreneurial production signifies both economic modernization and the preservation of indigenous identity.

Bodo women in Fishing & Rice beer production

Fishing and rice beer production represent two other traditional economic activities that continue to hold social and cultural significance in Bodo life. Fishing, often performed individually or in groups, remains a popular subsistence and leisure pursuit. According to Endle (1911), on certain prearranged occasions, women from a village or sometimes from several neighbouring villages come together to fish along particular streams that may extend several miles. Women employ various simple indigenous tools crafted from locally available materials such as *zakhai* (triangular bamboo basket), *Kobai* (fish pots) and the *palha* (circular bamboo fishing trap) to catch fish in rivers, ponds, and streams (Endle, 1911)

Fish preservation, particularly through drying and fermenting, has long provided additional income opportunities for women. The sale of dried fish in local markets remains common, supporting household finances and maintaining dietary traditions.

Similarly, the brewing of rice beer—known locally as *zou* or *jhumai*—is an integral part of Bodo cultural life. Prepared mainly by women, this beverage plays a vital role in social and religious ceremonies. The brewing process involves creating a fermenting agent, *Emao*, made from rice husk and local herbs (jack tree, bhetai plant, poison fern), which is then used for fermenting boiled rice. This mixture helps in fermentation and gives the rice beer its unique flavour and aroma. (Endle, 1911) notes that rice beer is generally harmless and can be consumed in large quantities without strong intoxicating effects. Rice beer is traditionally consumed to welcome a guest with pork (*oma bedor*) during festivals, weddings, and ceremonies, and during rituals, *jhumai* or *zou* is offered to the god and goddesses. *Zou* also carries medicinal and social value (Brahma, 1998)

In recent years, several women have turned this traditional beverage into a small-scale commercial enterprise and aim to gain a strong foothold in the market. This trend highlights how customary skills can evolve into sources of sustainable income (Islary, 2020). From the above line, we can see that both fishing

and rice beer production continue to embody the dual essence of Bodo women's livelihoods—upholding cultural heritage while enabling economic empowerment.

Bodo women in livestock farming

Livestock rearing has long been a central pillar of the Bodo household economy and remains one of the most stable income-generating practices for rural families. Women play a pivotal role in managing livestock such as pigs, goats, poultry, ducks, cattle, and buffaloes. Traditionally, these activities have been pursued to meet household food requirements, but over time they have evolved into important sources of supplementary income. Women are primarily responsible for daily livestock management, including feeding, cleaning, and healthcare. Among the Bodos, animal rearing has cultural as well as economic significance. For instance, pigs (*oma*) and poultry are often used during religious ceremonies and social functions, linking women's domestic responsibilities with community traditions.

Historical accounts, such as Endle's (1911) observation of livestock abundance in Kachari villages, highlight the longstanding importance of animal husbandry within Bodo society. Women's engagement in cattle and pig rearing demonstrates their central role in ensuring household sustainability. Even under financial constraints, many women continue these practices through informal support networks and small community-based loans known as *Adi lanai* (borrowing livestock for rearing).

Although milk consumption was once discouraged due to cultural beliefs, it has recently gained acceptance as a commercial commodity. Bodo women, in particular, manage milk production and sales, further strengthening their contribution to rural markets. Poultry rearing also remains common, with chickens and ducks providing a steady supply of meat and eggs. Women typically hold ownership rights over domestic livestock, to the extent that men must seek permission before selling or consuming animals. Livestock farming thus represents both an economic and symbolic domain through which Bodo women maintain household resilience and assert agency in family decision-making (Islary, 2020).

Bodo Women's Participation in Business and Service Sectors

The forces of modernisation and education have significantly altered the economic landscape of the Bodo community. Once confined largely to agricultural and domestic work, women have progressively expanded their participation in the formal economy. Education, in particular, has enabled access to government employment, private sector jobs, and entrepreneurial opportunities. (Basumatary, Bodo women in workforce in Bodoland, 2021).

A growing number of educated Bodo women are employed as teachers, administrative personnel, and officers in government and non-governmental organizations. This transition has enhanced their financial independence and elevated their social status. As Dr Radhakrishnan observed, educated women not only contribute economically but also play transformative roles in shaping social and moral values.

In addition to formal employment, Bodo women are increasingly active in small-scale business ventures. Many operate weaving cooperatives, tailoring units, and local enterprises such as beauty parlours, eateries, or small trading establishments.

Others engage in self-employment through microfinance initiatives, participating in local markets as vendors of vegetables, fish, meat, and handmade crafts (Islary, 2020)

The growth of women-led entrepreneurship in Bodoland demonstrates how economic diversification has become a catalyst for empowerment. Although disparities remain in job representation and access to resources, these developments reflect an ongoing process of socio-economic transformation. Bodo women's involvement in multiple sectors highlights their ability to integrate traditional skills with modern opportunities, reinforcing their agency within both the household and community spheres.

Conclusion

The transition in women's economic livelihoods within the Bodo community encapsulates a broader narrative of resilience, adaptation, and empowerment. Traditionally, Bodo women

played a crucial role in sustaining their families through practices such as agriculture, weaving, sericulture, livestock farming, fishing, and rice beer production. These activities not only ensured household sustenance of Bodo women but also preserved cultural identity and community cohesion. The economic contribution of Bodo women has always been integral to the family economy, where their skills, labour, and knowledge supported both domestic life and local market.

The advent of education, modernization, and expanded economic networks has diversified women's occupational choices. Many have transitioned into salaried employment, entrepreneurship, and service-oriented professions while continuing to maintain traditional crafts and food production. This dual engagement illustrates a complex balance between cultural continuity and food production. This dual engagement illustrates a complex balance between cultural continuity and social change.

Contemporary Bodo women thus embody both the guardianship of tradition and the pursuit of progress. Their evolving roles signify the community's broader movement toward gender equality, economic diversification, and sustainable development. By negotiating between inherited practices and modern livelihoods, they contribute not only to household welfare but also to the socio-economic advancement.

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Measuring People's Attitude Towards Preservation of Cultural Heritage: A Case Study of Majuli

Ankita Kotoky* & Dr. Nilutpal Neog**

Abstract

The North-Eastern part of India specially Assam is blessed with twin beauties of natural and cultural heritage. Majuli situated in Assam is certified to be the world's largest river island. The region of Majuli is well-known for its natural and cultural heritages commonly known as 'Satras'. 'Satras' of Majuli are well known cultural heritage of the nation as a whole. The core objective of the study was to know the attitude as well as the socio-economic conditions of the local people living in the vicinity of the 'Satras' towards preservation and conservation of Satras as the age old Satras are vulnerable to perennial floods every year. A total of three-seventy respondents were administered for the survey using structured schedules. The Likert scale technique was used to know about the attitude of the people. The results reveal positive attitude of the people towards protection and preservation of the heritages of Majuli commonly 'Satras'. The results would be beneficial for policy making and decision relating to heritage.

Keywords: Attitude, Satras, Majuli, Cultural Heritage, Assam

Introduction

The most common definition and the one constantly used in French law since the enactment of the law in 1913 states -

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heritage consists of a “set of ancient monuments and the built-up sites having an artistic, historical or cultural interest (Grefe, 2001: 18). Article 1 of the Venice Charter (ICOMOS, 1964) has extended the concept of heritage geographically: “The concept of a historic monument embraces not only the single architectural work but also the urban or rural setting in which is found the evidence of a particular civilization, a significant development or a historic event”.

The North-eastern part of India comprising of the seven sisters and one brother is a powerhouse of natural and cultural beauty. The north-east part of India Assam in particular is known for its famous one horned rhino, national parks, the world’s largest riverine island, the temples and natural beauty. Assam is a well-established tourist destination for national and international tourists. Assam is called as the land of blue waters, green heavens and pristine beauty. One among the seven sisters and brother Assam is a home to various migratory birds and hub to the rich cultural heritage of the world. Such a rich hub of heritage is Majuli which is a landmass surrounded by water on all sides. Majuli which is known as the world’s largest riverine island is situated in the North-eastern part specially Assam.

Majuli, the largest riverine island of the world was created by changes in the course of river Brahmaputra and Dihing. Majuli is a popular destination in Assam. The island is called as the cultural capital of assam due to the presence of the ‘Satras’. The famous ‘Satriya’ dance is practised in the Satras. But the island being a river island is prone to floods and flood induced erosion every year disturbing people and making normal life a difficulty. The island is need of conservation and numerous attempts have been taken by government to preserve the island and its beauty. Efforts have been made to include the island in the UNESCO recognised World Heritage site for its conservation but Majuli fails to stand and find a place in UNESCO’s map of world heritage sites. Inclusion in World Heritage Site (WHS) can help in its preservation and lead to increase in employment avenues due to increasing number of visitors to the WHS (Heinen, 1995). Riverine islands are prone to natural hazards and provide a rationale for superintending a study because built heritage sites, commonly called monasteries, are affected by floods every year.

Grid analysis shows that the total area of the island was 629.2 km² in 1975, 602.95 km² in 1990, 567.9 km² in 2005 and 487.5 km² in 2017, respectively. The annual rate of erosion in Majuli was 1.75 km² per year from 1975 to 1990, 2.33 km² per year from 1990 to 2005, and 6.7 km² per year from 2005 to 2017, respectively (Roy et.al., 2020). Existing data show that, out of 65 monasteries, the number reduced to a mere number of only 22 after floods and erosion washed away their land and buildings (Bharasa & Gayen, 2020).

The paper is set in context of knowing the attitudes of the people living in the largest riverine island of the world 'Majuli' towards protection and preservation of the cultural heritages of Majuli commonly known as 'Satras'. 'Satras' are part and parcel of the people living in the region of Majuli. The paper deals with the broad objective of knowing the attitudes towards preservation of cultural heritage of the local people living in close proximity with the Satras. The data from field was analyzed using Likert scale technique which is a widely used technique to measure attitudes of people. The results reveal that majority of the people living in Majuli perceives the Satras as inseparable parts of life.

Objective of the Study

The study basically had one broad aim on knowing the attitude of the local people living in vicinity of the cultural heritage of Majuli commonly known as 'Satras'.

Methodology of the Study

The study was basically based on primary and secondary sources of data. The core work of the study was based on primary data. Primary data was collected using a structured interview schedule. The study opted a multistage sampling method. From the total districts of Assam, the study purposively selected Majuli as the study area owing to its cultural significance and beauty. For the next stage, out of the two development blocks one development block was selected. Out of the twelve gaon panchayats, three gaon panchayats were selected. For the next stage twenty villages were selected. Finally, a total of three-seventy respondents was used for the final analysis. The respondents were randomly selected. Secondary data needful

for the study was collected from Tourism office, Cultural office and Directorate of Economics and Statistics, Majuli.

Results and discussions

Socio-demographic profile of the people

To know the population composition, the respondents were categorized based on gender. Of the total sample of 370, 305(82.4%) were males and 65(17.6%) were females. Compared with females, there were more males in the study population.

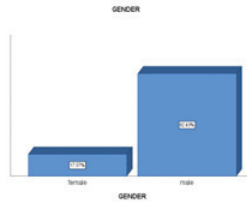


Fig. 1.1 Gender distribution of the respondents (Source: Author's calculation from field Survey)

Age of the Respondents

The age of the respondents was asked during the survey to determine the demographic distribution. While looking at the distribution by age groups, the majority of the respondents were found to be in the age group 41-60. The study population was classified into three groups. The age group 41-60 consisted of 65.9% of the total population, followed by 18.9% in the 61-80 age group. The lowest number was seen in the 20-40 age group, with only 15.1% of the total population.

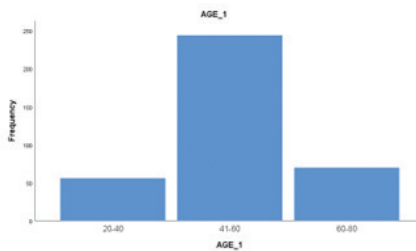


Fig. 1.2 Age distribution of the respondents

Source: Author's calculation from field Survey

Educational qualification of the Respondents

Respondents were also asked about their level of education. The respondents were categorized into six basic categories to have a better know how of the educational status of the respondents. Illiterate, primary, below secondary, higher secondary, graduate and post-graduate. Out of the total respondents the majority of them were graduates. The presence of illiterate people is found to be low or negligible

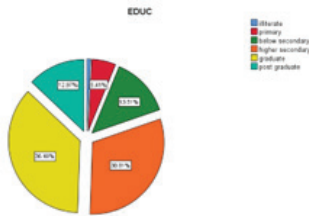


Fig. 1.3 Educational Qualification of the respondents

Source: Author's calculation from field Survey

Income of the Respondents

Respondents were also asked about their monthly income to have an idea of the economic condition of the respondents. The respondents were divided into sub categories for better explanation. The majority of the respondents fall under the category of Rupees 10,001-50,000 and the lowest was in the less than Rupees 5000 category. The low income can be associated to the rural nature of the economy. The income distribution of the sampled respondents is shown by the pie diagram below

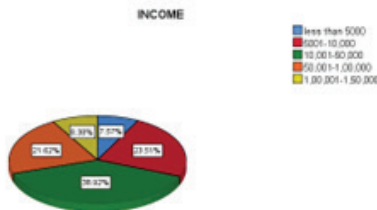


Fig. 1.4 Income distribution of the respondents

Source: Author's calculation from field Survey

Family Size of the Respondents

To know about the number of family members in the household the respondents were also asked about their family size. The largest family size found in the study was eight whereas the smallest family size was one. Majority of the family size was of four members which is near or close to the national average

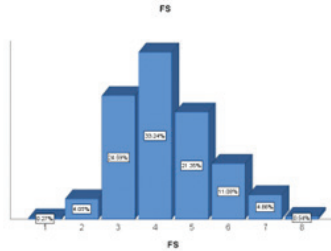


Fig. 1.5 Family size of the respondents

Source: Author's calculation from field Survey

A total of four attitudinal questions were included in the present study to know about their attitudinal status. The attitude of the respondents in lieu of the attitude approached to them is shown below.

Attitude 1 Majuli's heritage is something to be proud off.

As an answer to the first attitude about 81.34% of the respondents strongly agree that they are proud of Majuli's cultural heritage. The results of the attitude of the sampled population are shown below.

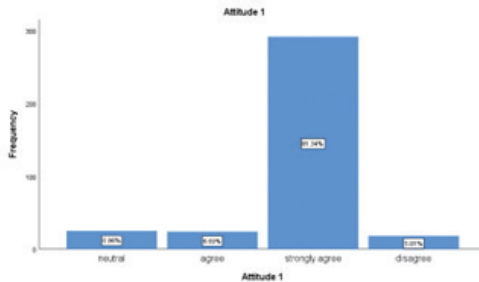


Fig. 1.6 Respondents attitude towards Majuli's Heritage

Source: Author's calculation from field Survey

Attitude 2

The second statement against which the attitude of the respondents was asked was that Heritage sites need to be conserved and preserved to protect it for future generations. Out of the total population 64.35% respondents strongly agreed to protect the heritages for future generations. While 26.46% agreed but 9.19% were neutral in preserving heritages for future generations.

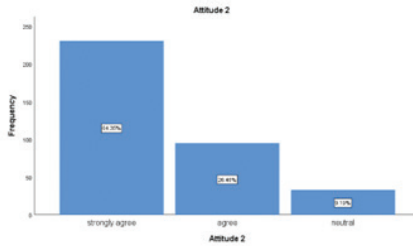


Fig. 1.7 Respondents attitude towards protection of cultural heritage

Source: Author's calculation from field Survey

Attitude 3

The value of the river island Majuli would not be the same without its cultural heritages. This was the third statement asked to the respondents and to this 67.69% strongly agreed that the world's largest river island would not be the same without its cultural heritages.

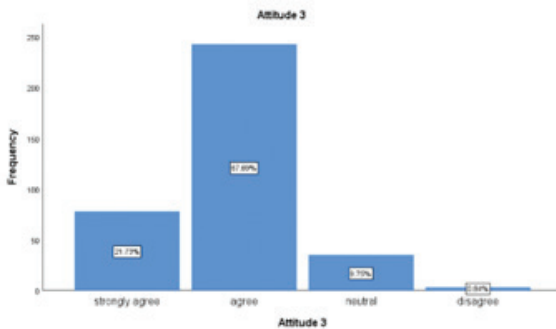


Fig. 1.8 Respondents attitude towards preservation of heritage

Source: Author's calculation from field Survey

Attitude 4

The last attitude that was asked to grasp an idea about the attitude of the respondents as per the questionnaire was that We must not support any government or non-government agency who aims to preserve our cultural heritage. Accordingly, 62.67% of the respondents strongly disagreed to the statement of not supporting any government or non-government agency for preserving heritage. 8.08% were neutral to the statement.

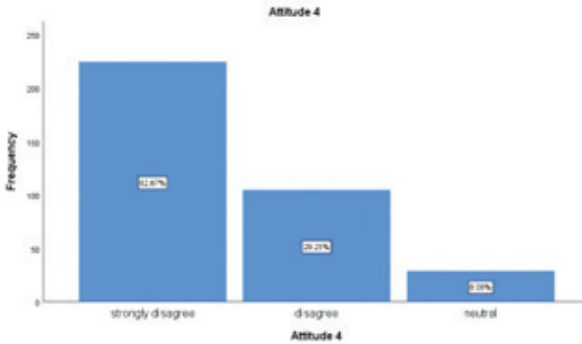


Fig. 1.9 Attitude of the respondent towards cultural heritage

Source: Author's calculation from field Survey

The above discussion clearly shows that the people of Majuli are very much concerned about the protection and preservation of cultural heritage of Majuli. The cultural heritages of Majuli commonly known as 'Satras' forms an indispensable part of the cultural heritage of the country and also the region as a whole. The attitude of the people was measured by a five-point Likert scale following Likert scale technique by Rensis Likert (1932). Likert scale is the most commonly used technique to know the attitude of individuals. Almost all the attitudes showed positive response towards the 'Satras' of Majuli.

Conclusion

The paper successfully applied the Likert scale to know the attitude of the people towards the preservation and conservation of the cultural heritage 'Satras' of Majuli which forms a crucial part of the daily life. The primary focus of the paper

was methodological rigor. The paper also presents a detailed analysis of the socio-demographic conditions of the surveyed respondents. Almost all the local people had strong preservation attitudes towards 'Satras'. The findings also provide an answer to the research question of the study. The findings can also aid the policy makers and thinkers working on different aspects of heritage to formulate sustainable management of the heritages of Majuli as the island is prone to the perennial problem of floods every year.

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Panel Econometric Analysis of the Causal Relationship Between Investment and Industrial Output in Northeast India

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Abstract

This study looks at the relationship between investment and industrial output in the case of six Northeast Indian states, Assam, Manipur, Meghalaya, Nagaland, Sikkim, and Tripura, which is seen over the 2011-12 to 2022-23 period. We use Gross Fixed Capital Formation as a proxy for investment, which is transformed to constant prices using the GDP deflator, and for industrial output we use Manufacturing Gross Value Added (GVA) at constant prices. Secondary data for the study were obtained from the Reserve Bank of India (RBI), the Ministry of Statistics and Programme Implementation (MOSPI), and the World Development Indicators (WDI). We used advanced panel econometric techniques, including the Levin-Lin-Chu (LLC) unit root tests, the Pedroni panel cointegration test, and the Dumitrescu-Hurlin (DH) panel Granger causality test, which helped examine the short- and long-run dynamics between investment and industrial performance. The results show that both variables are stationary at levels. Based on Pedroni's test statistics, there exists a long-run cointegration relationship indicating that investment and industrial output move together in the long run. However, the DH test provides evidence of no short-run Granger causality in either direction, indicating that short-

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run changes in capital formation do not have an immediate impact on manufacturing output and vice versa. The results suggest that there are essential, immediate, and long-term investment requirements to support industrial development in the area. In contrast, short-term industrial development is a function of structural rigidities and supply-side constraints.

Keywords: *North-Eastern States, Investment, Industrial Output, Panel Granger Causality, Cointegration.*

Introduction

Industrial growth is at the core of what we see as fast-track economic development, which, in turn, increases productivity and brings about structural change. In that which we may term broad-scale transformation, it is investment that takes centre stage in industry, in particular, what we may call Gross Fixed Capital Formation. Also, it is through capital accumulation that we see the expansion of production capacity, the introduction of better technology, and an overall increase in industrial output. In the case of developing areas that also face more serious infrastructural deficiencies and resource constraints, the relationship between investment and industrial output is a make-or-break issue.

In this context, the Northeastern region of India is an outlier compared to the rest of the country. Despite an optimal location and abundant natural resources, the area has experienced lower industry growth rates than the rest of the country. As a result, the area has developed infrastructure, limited funding, a remote location, and some supply-side limitations. On the other hand, India's Central Government and the Northeast states have made multiple attempts to improve the underdeveloped region in the country, such as the North East Industrial and Investment Promotion Policy (NEIIPP) and the Act East Policy. Thus, it becomes necessary to understand the region's investments and their conversion into industrial output to improve the outflows from developmental policies.

Taking all of this into account, this study examines the relationship between investment and industrial output in the six northeastern states of India (Assam, Manipur, Meghalaya, Nagaland, Sikkim, and Tripura) covering the period 2011-

12 to 2022-23. It analyses, using panel econometric methods (investment and industrial output), the short and long-term relationships between the variables using the LLC test for unitroots, Pedroni's test for cointegration, and DH test for causality in panels. It is hoped that this relationship will inform policy to improve industrial growth in Northeast India, and that the development of such industrial facilities in the region will help fill the gap in the empirical literature.

Literature Review

1. Theoretical Literature

Growth theory presents investment as a driver of industrial expansion. Classical economists like Smith and Ricardo argue that capital accumulation increases productive capacity. Neoclassical theory (Solow, 1956) similarly shows that higher capital stock raises output until diminishing returns set in. Endogenous growth models (Romer, 1986; Lucas, 1988) extend this by treating investment not just as a factor but a source of growth, as it drives technological progress, human capital formation, and innovation, enabling sustained industrial expansion. The industrial development literature also highlights capital formation as essential for modernisation, mechanisation, productivity gains, and the construction of infrastructure, such as transport and power. Overall, theory consistently establishes a positive link between investment and industrial output, shaped by institutional and structural conditions.

2. Empirical Literature (India and Global)

Sahoo and Dash (2012) accurately confirm empirical evidence of the connection between investment and output. In the Indian case, investment in infrastructure bolsters industrial performance. This evidence is the same in other international studies; for example, Erden and Holcombe (2005) state that, in developing nations, empirical evidence shows that both public and private investments enhance productivity. In writings from the Northeast, much of what we know comes from institutional reports. The North Eastern Council points out continued bottlenecks in transport, relatively high logistics costs, and less-than-ideal power availability that inhibit industrial growth.

NITI Aayog also observes that, despite overtures, the region has seen only limited investment and poor manufacturing activity compared to national levels. According to MOSPI and RBI (2014), industrial GVA in India's Northeast is very low, and thus capital formation would also be lower due to slow capacity addition.

Regon A. (2014) examines the problems and prospects of industrialization in the North Eastern Region, the region's industrial policies, and the causes of industrial backwardness. The study finds that only a few large-scale industries—tea, coal, petroleum, paper, and cement—are currently operating, with the tea industry employing the largest share of labour. Private investment remains low due to high perceived risks. Although several industrial policies have been introduced, their impact has been limited, as seen in declining shares of factories, fixed capital, invested capital, and net value added. Despite significant development potential, industrial progress remains slow. The author argues that stronger government support and regional planning are needed to promote industries based on local resources. Overall, the findings indicate that structural and infrastructural constraints weaken the investment–output relationship in the region.

3. Methodological Literature

Sophisticated panel techniques are frequently employed to examine investment–output dynamics. The Dumitrescu–Hurlin (2012) test permits heterogeneous causality across regions, and Pedroni's (1999, 2004) cointegration procedures may be useful to determine long-run relationships in heterogeneous panels. The LLC unit root test (Levin et al., 2002) is popular for testing for stationarity in short panel data. While widely applied in research on developing regions, they are rarely used in the Northeast; hence, the importance of this study.

Objectives of the Study

1. To assess the stationarity properties of investment and industrial output using panel unit root tests.
2. To investigate the existence of a long-run equilibrium relationship between investment and industrial output using Pedroni's panel cointegration test.

3. To analyse the causal relationship between investment and industrial output using the Dumitrescu–Hurlin panel Granger causality test.
4. To provide policy insights based on the empirical findings to strengthen industrial development in Northeast India.

Methodology

Study Area: The present study examines six Northeastern states of India — **Assam, Manipur, Meghalaya, Nagaland, Sikkim, and Tripura**. While the North-Eastern region technically comprises eight states, **Arunachal Pradesh** and **Mizoram** have been excluded due to significant data limitations. Specifically, there is a lack of Gross Fixed Capital Formation (GFCF) data for Arunachal Pradesh for 2011–2014, and for Mizoram for 2011–2019. If we had included them, we would have faced an unbalanced panel, which could compromise the credibility of the results.

Time Period: The study uses annual panel data for the period 2011–12 to 2022–23, with 2011–12 taken as the base year for all constant-price economic indicators.

Sources of Data: This study is based entirely on **secondary data**. Gross Fixed Capital Formation (GFCF) data in current prices, is used from the RBI report and Gross Value Added (GVA) in the manufacturing (industrial) sector, in constant prices is collected from the report published by **Ministry of Statistics and Programme Implementation (MOSPI)**.

To adjust for inflation and make GFCF data comparable over time, current-price GFCF is converted into a constant-price series using the **GDP deflator**, obtained from the *World Development Indicators* (WDI) database.

Variables and Their Construction

Gross Fixed Capital Formation (GFCF)

We used GFCF as a proxy for **investment**. Since it is initially available in current prices in the RBI, we converted it into constant prices using the following formula:

$$\text{GFCF}_{\text{CONSTANT}} = \text{GFCF}_{\text{CURRENT}} \cdot \frac{100}{\text{GDP Deflator}}$$

Gross Value Added (GVA)

GVA is used as the proxy for **industrial growth**, especially manufacturing. GVA data is obtained from MOSPI in constant prices.

To facilitate econometric analysis, both variables are transformed using the **natural logarithm**. This log transformation helps stabilise variance, reduce skewness, and allows us to interpret coefficient estimates in terms of **elasticities**.

Justification for the variable and selection scope: This study uses Gross Fixed Capital Formation (GFCF) as a measure of total investment, as it captures additions to productive assets such as machinery, equipment, and infrastructure that shape industrial capacity. Manufacturing GVA at constant prices is used to represent real industrial output, free from price effects. Since manufacturing growth depends on capital formation, these two variables appropriately capture the investment–industry relationship, the study analyse six Indian states with complete, consistent data on GFCF and manufacturing GVA, allowing a balanced panel and avoiding imputation. The study period is determined by the availability of constant-price state-level data, ensuring comparability across time and regions. This focused dataset supports the reliable use of panel econometric techniques, including unit root tests, cointegration, and Granger causality.

Methods

Panel Unit Root Tests

In panel data analysis, examining the stationarity properties of the variables is a crucial methodological step. Since, our dataset combines both cross-sectional and time-series dimensions, traditional time-series unit root tests may suffer from low statistical power. Therefore, the study employs **panel unit root tests** to determine whether the variables are stationary or contain unit roots. To determine the stationarity properties of the variables, the study first applies panel unit root tests. The

Levin–Lin–Chu (LLC) test is estimated to examine whether each series contains a unit root. The LLC model follows:

$$Dy_{it} = r y_{i,t-1} + \sum_{k=1}^r a_{ik} Dy_{i,t-k} + \eta_i + e_{it}$$

Where,

y_{it} denotes the variable (ln_gfcp or ln_gva),

η_i is the individual-specific effect,

r is the lag length determined by information criteria.

The null hypothesis is:

$H_0: r = 0$ (Panel Unit Root)

against the alternative hypothesis

$H_1: r \neq 0$ (Panel Stationarity)

The null hypothesis implies that the series is non-stationary, meaning that its statistical properties change over time and shocks have permanent effects. In contrast, the alternative hypothesis indicates stationarity, implying that the series reverts to its long-run mean and shocks are temporary. Rejecting the null hypothesis, therefore, suggests that the variable is stable over time and suitable for further long-run and causality analysis.

Panel Cointegration Tests

When panel variables are found to be integrated of the same order, it becomes necessary to examine whether they share a long-run equilibrium relationship. To address this, the study applies **panel cointegration tests**, which are suitable for datasets containing multiple cross-sections with relatively short time periods.

To investigate whether a long-run equilibrium relationship exists between Gross Fixed Capital Formation and manufacturing GVA, the study applies Pedroni's (1999, 2004) heterogeneous panel cointegration test.

The long-run cointegrating equation is specified as:

$$\ln(GVA_{it}) = a_i + b_i \ln(GFCF_{it}) + e_{it}$$

Where, captures state-specific fixed effects,

b_i allows for heterogeneous slope coefficients,

e_{it} is the cointegrating residual.

Pedroni tests the null of **no cointegration**:

$$H_0: e_{it} \sim I(1)$$

against the alternative:

$$H_1: e_{it} \sim I(0) \text{ (Cointegration exists)}$$

Under the null hypothesis, the residuals from the long-run relationship are non-stationary, implying that no stable long-term relationship exists between the variables. The alternative hypothesis states that the residuals are stationary, indicating the presence of a long-run equilibrium. If the null hypothesis is rejected, it suggests that GFCF and GVA move together in the long run despite short-run fluctuations.

Dumitrescu–Hurlin Panel Granger Causality Test

To examine the direction of causality among the variables, the study employs the **Dumitrescu–Hurlin Panel Granger Causality Test**, which is particularly suited for heterogeneous panel datasets. Unlike traditional Granger causality tests that assume parameter homogeneity across units, the DH test allows causal relationships to vary across cross-sections, making it more appropriate for multi-state data. The test evaluates whether past values of one variable help predict another variable within a panel context. Under the null hypothesis, there is **no Granger causality** for any panel unit, while the alternative hypothesis suggests that causality exists for at least some cross-sections. The DH approach provides both individual- and group-level causal insights and performs well even in panels with short time series. The results of the causality test help identify whether expenditure causes outcomes or vice versa, and whether these relationships influence economic growth dynamics. This framework strengthens the empirical validity of the study by identifying both short-run predictive links and structural long-run dependencies.

The DH causal model is:

$$y_{it} = a_i + \sum_{k=1}^K g_{ik} y_{i,t-k} + \sum_{k=1}^K b_{ik} X_{i,t-k} + e_{it}$$

The null hypothesis of **no Granger causality** is:

$$H_0: b_{i1} = b_{i2} = \dots = b_{ik} = 0 \quad \forall i$$

The alternative hypothesis allows causality in at least one panel:

$$H_1: b_{ik} \neq 0 \text{ for at least one } i$$

The null hypothesis states that past values of y_{it} do not help predict y_{it} for any panel unit. The alternative hypothesis allows for heterogeneity by permitting causality in at least one state, even if others show none.

Results and Discussion

Panel Unit Root Tests

Table 1 Panel Unit Root Result

```
. xtunitroot llc ln_gfcf
```

Levin-Lin-Chu unit-root test for ln_gfcf

Ho: Panels contain unit roots	Number of panels =	6
Ha: Panels are stationary	Number of periods =	12
AR parameter: Common	Asymptotics: N/T -> 0	
Panel means: Included		
Time trend: Not included		

ADF regressions: 1 lag
LR variance: Bartlett kernel, 7.00 lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-5.7907	
Adjusted t*	-1.9206	0.0274

```
. xtunitroot llc ln_gva
```

Levin-Lin-Chu unit-root test for ln_gva

Ho: Panels contain unit roots	Number of panels =	6
Ha: Panels are stationary	Number of periods =	12
AR parameter: Common	Asymptotics: N/T -> 0	
Panel means: Included		
Time trend: Not included		

ADF regressions: 1 lag
LR variance: Bartlett kernel, 7.00 lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-5.7907	
Adjusted t*	-1.9206	0.0274

The panel unit root test results indicate that both variables have statistically significant p-values at 5% level. It leads to the rejection of the null hypothesis of a panel unit root. This

means that both $\ln(\text{GFCF})$ and $\ln(\text{GVA})$ are stationary. Since the variables are stationary, they are classified as $I(0)$, indicating stable statistical properties over time and suitability for further econometric analysis at their level.

Panel Cointegration Test

Table 2 Panel Cointegration Result

```
. xtcointtest pedroni ln_gfcf ln_gva
```

Pedroni test for cointegration

Ho: No cointegration	Number of panels	=	6
Ha: All panels are cointegrated	Number of periods	=	11

Cointegrating vector: Panel specific

Panel means:	Included	Kernel:	Bartlett
Time trend:	Not included	Lags:	2.00 (Newey-West)
AR parameter:	Panel specific	Augmented lags:	1

	Statistic	p-value
Modified Phillips-Perron t	-0.4639	0.3214
Phillips-Perron t	-3.1522	0.0008
Augmented Dickey-Fuller t	-3.1953	0.0007

Since both variables were found to be stationary, the Pedroni panel cointegration test was applied to examine whether a long-run equilibrium relationship exists between GFCF and manufacturing GVA. The results show that two out of the three statistics, the PP-t and ADF-t tests, are statistically significant at the 1% level, which leads to the rejection of the null hypothesis of no cointegration. This indicates that a stable long-run relationship exists between investment and industrial output across the six Northeast states.

Dumitrescu–Hurlin Panel Granger Causality Test

Table 3 DH Panel Granger Causality Result

```
. xtgcause ln_gva ln_gfcf, lags(2)

-----
Dumitrescu & Hurlin (2012) Granger non-causality test results:
-----
Lag order: 2
W-bar =          1.6939
Z-bar =         -0.3749 (p-value = 0.7078)
Z-bar tilde =   -0.5388 (p-value = 0.5901)
-----
H0: ln_gfcf does not Granger-cause ln_gva.
H1: ln_gfcf does Granger-cause ln_gva for at least one panel (states_id).

. xtgcause ln_gfcf ln_gva, lags(2)

-----
Dumitrescu & Hurlin (2012) Granger non-causality test results:
-----
Lag order: 2
W-bar =          0.7642
Z-bar =         -1.5135 (p-value = 0.1301)
Z-bar tilde =   -0.8443 (p-value = 0.3985)
-----
H0: ln_gva does not Granger-cause ln_gfcf.
H1: ln_gva does Granger-cause ln_gfcf for at least one panel (states_id).
```

The Dumitrescu–Hurlin (DH) panel Granger causality test was conducted to examine whether investment (\ln_gfcf) predicts industrial output (\ln_gva) or vice versa in the short run. The results show that neither direction of causality is statistically significant. Specifically, the null hypothesis of no causality cannot be rejected for $\ln_gfcf \nrightarrow \ln_gva$ ($Z\text{-bar} = -0.3749$, $p = 0.7078$) and for $\ln_gva \nrightarrow \ln_gfcf$ ($Z\text{-bar} = -1.5135$, $p = 0.1301$). This implies that short-run movements in investment do not help predict manufacturing output, and fluctuations in manufacturing output do not predict subsequent investment levels across the Northeast states. Therefore, the relationship between investment and industrial output appears to be driven primarily by long-term structural factors rather than short-term dynamic interactions.

Policy Implications

In our study, we report long-run cointegration between investment and industrial output but do not find evidence of short-term causality, suggesting that, in the case of the Northeast states, we observe a slow-growing investment-based industrial model rather than an immediate one. That is to say that which we see is a progressive increase in capital formation, for example, in the form of investment in machinery, infrastructure, or industrial development may take up to several years to reflect in terms of higher manufacturing output, which is a result of long-term issues, implementation delays, and structural problems in the region. Also, in the short term, we see that the factors that play a greater role are current market trends, supply chain issues, input availability, and productivity, rather than long-term investment.

Conclusion

This study examines how investment influences industrial production in six North Eastern states from 2011–12 to 2022–23. Instead of using the general term “investment,” we use inflation-adjusted Gross Fixed Capital Formation (GFCF) and real manufacturing GVA as proxies for industrial output. The Levin–Lin–Chu test shows both series are stationary, allowing us to analyse their long- and short-run relationships without differencing. Pedroni’s cointegration test indicates that investment and industrial output move together over time, suggesting that capital formation contributes to long-term industrial growth. However, the Dumitrescu–Hurlin test finds no short-run causal link: immediate changes in investment do not quickly alter output, nor do short-term output fluctuations drive new investment. These results show that consistent, long-term investment matters more than expecting quick industrial gains. Weak infrastructure—such as poor transport, logistics, and market connectivity—slows the conversion of investment into actual industrial output in the short run. Therefore, governments should strengthen core infrastructure, reduce supply chain inefficiencies, expand access to finance, and create a more supportive industrial environment. Overall, while investment and industrial growth are connected in the long run,

their short-term relationship is weak. This calls for stable, long-term investment strategies coupled with targeted industrial reforms to unlock the true potential of the North Eastern region.

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Migration and Urbanization in Assam: Trends, Factors and Socio-Economic Implications

Shikha Sahu*

Abstract

Migration and urbanization are two interlinked processes suiting the socio-economic and sequential transformation of Assam. Urbanization means the development and growth of urban areas through infrastructural advancement and socio-economic enhancement, whereas migration includes the movement of people within or across regions in search of job opportunities, better standard of living and shelter. In Assam, both these phenomena have shown significant yet regionally varied trends over past few decades. Assam witnessed an increased level of urbanization from 12.9% in 1991 to 14.1% in 2011, remaining below the national average which is 31.2%. The tentative data also indicate a gradual rise, which is still low than national level, which highlights the states slow pace urban grown and expansion. Migration- both in and out has also played a crucial role shaping this pattern, influencing structures, labour dynamics and spatial development. This paper analyzes the trends, causes and consequences of migration and urbanization in Assam using secondary data sources, which highlights their combined impact on regional disparities and demographic dynamics.

Keywords: Migration, Urbanization, Demographic Change, Urban Development, Regional Imbalance, Assam.

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Introduction

Migration and urbanization are interlinked which have greatly influenced the social and economic transformation of Assam. Migration refers to the movement of people from one place to another, for some reasons like job opportunities and better living condition. In Assam, this movement of people has historically formed by factors such as demographic pressure, shortage of land and employment opportunities. Assam being the land of veritable cauldron shelters around 3% of the country's population presents a somewhat intricate demographic character including rapid population growth and highly diverse population composition. Besides natural growth, the process of migration also contributes significant increase of population growth in Assam resulting declining land-man ratio, high unemployment and underemployment pressure in the labour market etc. Along with the various economic, demographic, social, political aspects, the fertile land, rich natural resource and ample scope of development in Assam always attracts the people from outside.

Assam's urbanization is seen to be slow process rate which was around 14%, significantly lower than the national average 31.6%. (2011, census). Key factors include the state's natural resources like oil and tea, which has enhanced industrialization, although this has also led to some challenges like a low level of urban infrastructure and sanitation. Guwahati which is the main urban center, while other cities like Dibrugarh and Jorhat have also experienced growth and some other districts like Nalbari showed rapid growth between 2001-2011 due to spillover effects. The push factors are stronger as compared to the pull factors in the case of rural urban migration in India. Consequently, the large urban areas experience rapid population growth without the provision of basic amenities. A large number of small urban areas which have been previously known as villages increase their population and transform into small towns without fulfilling basic amenities of urban areas. As a result, people live in urban areas without having basic facilities and their decent living standards are compromised. They often become the centers of stagnation and lack necessary civic infrastructure and amenities (Shaban et al., 2020).

The relationship between migration and urbanization in Assam is deeply enlaced. Migration has contributed to the growth of urban settlements, on the other hand urbanization created new zones of economic attraction that pulls people from rural areas. Understanding these processes is very important for analyzing the particular areas changing demographic patterns, resource utilization and developmental challenges. Thus, studying migration and urbanization together provides crystal clear view of how human moves from place to place and settlement patterns which shape the socio-economic structure of Assam.

This paper makes an attempt to understand the concept of migration and urbanization in the context of Assam and highlight the factors which are responsible for migration in Assam. It also tries to highlight the challenges and implications of migration led to urbanization in the state.

Literature Review

The current scenario of migration and urbanization in Assam has attracted increasing academic attention in recent years. According to the Census of India (2011) and recent Statistical Handbooks of Assam, urbanization has been steadily increasing, particularly in districts like Kamrup (Metro), Dibrugarh, and Cachar, where employment and educational facilities are concentrated.

Previous studies have highlighted that migration has become one of the major forces influencing the present pattern of urbanization in Assam. Rural-to-urban migration has increased due to better livelihood opportunities, education, and improved living conditions in urban centers. (Bora, 2018). In the context of Assam, the growth of the service and informal sectors in cities like Guwahati, Dibrugarh, and Silchar has encouraged large-scale rural migration, contributing to the gradual expansion of urban areas (Saikia & Dutta, 2020). The rate of urbanization across Assam remains uneven. Districts such as Kamrup (Metro) and Dibrugarh show rapid growth, whereas others lag behind, resulting in regional disparities and unequal development. (Goswami, 2021). Infrastructural development, administrative concentration, and migration from rural and border areas have significantly accelerated the pace of urban growth. However,

these have also led to population pressure on urban resources and civic amenities. (Directorate of Economics & Statistics, Assam, 2022–2023). While migration supports economic growth and urban expansion, it also gives rise to challenges such as unemployment, overcrowding, and pressure on housing and sanitation. These findings underline the complex relationship between migration and urbanization in the current scenario of Assam. (Sharma, 2023). From the given review, it is clear that migration and urbanization in Assam are closely interlinked and continued to shape the states' socio-economic structure. However, most existing studies have focused on earlier census periods and general trends, whereas limited attention has been given to recent situation. Therefore, the present study aims to bridge this gap by analyzing the current scenario, major factors and implications of migration-led urbanization in Assam.

Objectives

1. To understand the current scenario of migration and urbanization in Assam.
2. To examine the major factors responsible for migration in Assam.
3. To analyze how migration – led urbanization influences the socio-economic development and environment in Assam.

Methodology

This paper is based on secondary sources of data and information collected from Census of India; Statistical Handbooks of Assam, government reports and published research papers. A qualitative approach has been followed to understand the relationship between migration and urbanization in Assam.

Current scenario of Migration and Urbanization in Assam

In recent decades, Assam has undergone significant changes in migration and urbanization. Rural–urban migration has increased as people move to towns and cities in search of better employment and living standards. The income sent back home plays a crucial role in improving rural livelihoods and strengthening local economies. At the same time, inflows from neighbouring states and countries have altered the state's

demographic and cultural landscape, contributing to both economic activity and social–political challenges.

Urbanization reflects the growing concentration of population and economic activities in urban centres. Although Assam’s urbanization rate remains below the national average, it continues to rise due to migration, population growth, and the conversion of rural areas into urban settlements. Urbanization brings changes in demographic, socio-economic, ethnic, and environmental characteristics (Boterman et al., 2017).

Assam has experienced four major phases of in-migration: tea garden labourers from Bihar and Uttar Pradesh; agricultural workers from East Bengal (now Bangladesh); migrants from Nepal; and traders from various Indian states (Devi, 2007). More recent migration, especially from Bangladesh, continues to reshape the state’s population structure and strain public services.

Census data from 1991, 2001, and 2011 show increasing diversity in migration patterns, with steady growth in rural-urban migration and rising rural-rural and urban-urban movements. These trends highlight ongoing socio-economic transformation across the state.

Table 1 Changing Pattern of Migration in Assam (1991-2011)

Migration Directions	1991	2001	2011	Change (1991-2011)
Rural-Rural	40.5 lakh	38.9 lakh	63.4 lakh	Increased by 56%
Rural-Urban	5.5 lakh	6.7 lakh	10.3 lakh	Increased by 88%
Urban-Rural	1.6 lakh	1.5 lakh	3.2 lakh	Increased by 95%
Urban-Urban	3.3 lakh	5.3 lakh	8.9 lakh	Increased by 169%

Source: Census of India, Assam, Migration Table, 1991, 2001 and 2011

Urbanization in Assam has advanced at a moderate but consistent pace. The states urban population expanded from about 2.48 million in 1991 to around 4.4 million in 2011, increasing the overall level of urbanization from 11.10%

to 14.10%. Although this rate remains below the national average, it shows gradual progress. Kamrup district with over 80% urban population, followed by Dima Hasao, Jorhat, and Tinsukia. On the other hand, districts such as Baksa, Chirag and Lakhimpur remain less urbanized showing regional disparities in urban growth. In fact, the dominance of Guwahati city as an agglomerative force has remained to continue during the study period. This phenomenon further reveals that the number and growth of cities is increasingly being determined by the location of tertiary activities which are market oriented and which have more agglomerative tendencies (Das and Dutt, 1993).

The growth of urban population in Assam over last three decades shows a gradual rise in the level of urbanization. To show the gradual trend, the following table presents data on the total and urban population of the state along with the corresponding levels of urbanization during the Census 1991, 2001 and 2011.

Table 2 Level of Urbanization in Assam (1991-2011)

Census Year	Total population (in millions)	Urban Population (in millions)	Level of Urbanization (%)	Change from Previous Census
1991	22.41	2.48	11.10	-
2001	26.66	3.44	12.72	Increased by 1.6%
2011	31.17	4.39	14.10	Increased by 1.38%

Source: Census of India, Assam 1991, 2001 and 2011.

Although the level of urbanization in Assam has increased over a period of time, it still remains below the national average. The growth has mainly been concentrated in Kamrup Metropolitan, Tinsukia, Dibrugarh and Jorhat districts, highlighting uneven regional development.

Factors Responsible for Migration in Assam

Migration is influenced by several factors that determine people's choices to move from one place to another. These can be

divided into push or pull factors. Push factors are the unwanted conditions that make people to leave their home region, while pull factors are the attractive conditions that attract them to new regions. Both operate simultaneously, and a factor may be positive for some people and negative for other. Generally, the factors responsible migration can be classified into economic, social and demographic factors.

Economic Factors

Economic causes are the most significant reasons for migration. People tend to leave areas with poor economic reasons and move toward regions with better opportunities. A few economic aspects include the general economic condition, availability of fertile land, size of landholdings, employment opportunities and development of transport and communication. Regions with low income, unemployment or limited resources usually see out migration, while areas with growing industries attract people in search of jobs. Similarly, migration from rural to urban areas often increases with industrial development better connectivity with other areas. Improved transportation and communication facilities break rural isolation and encourage people to explore better opportunities elsewhere.

Social Factors

Social reasons also play an important role in influencing migration. These social customs, religious pressures, education, information networks and government policies. In India, for example women often migrate after marriage to live with their husbands this movement guided by social customs rather than economic reasons. Religious or political oppression also leads people to migrate in search of safety and freedom. In many cases, people from lower socio-economic backgrounds are more mobile because they lack stable property or livelihood. On the other hand, in developed regions, the educated and skilled population are often tending to migrate in order to find a better opportunities and access better information. Government decisions, such as setting up industries or changing land policies and environmental crises like flood, droughts or famine can also lead to population movement.

Demographic Factors

Demographic characteristics of a population also determine migration behavior. Age is one of the important factors- young adults, particularly those of working age, are more likely to migrate in search of better opportunities. In contrast, older individual is less inclined to take risks. Children generally migrate with their families. Consequently, migration rates tend to be highest among younger group of people, working age population.

Causes Migration into Assam:

Migration into Assam has been shaped by its history and economy. During the British period, large numbers of laborers from central and eastern India were brought to work in tea plantations due shortage of local workers. By 1901, Assam had about 6.5 lakh tea garden laborers which form a major part of its population and contributing greatly to its economic growth. Educated Bengali Hindus also migrated during colonial era to work under British administration and in education and trade. In the early 20th century, Muslim peasants from present day Bangladesh moved to Assam for agricultural purposes, especially to cultivate jute, which expanded rapidly in the Brahmaputra valley. Later, Marwari traders from Rajasthan settled in Assam for business purposes.

In recent decades, cross-border migration from Bangladesh and Myanmar has also influenced the region, sometimes linking with insurgent networks that affect the security situation of Assam.

Impact of Migration-led Urbanization in Assam

The process of migration-led urbanization has brought about a transformation in Assam's socio-economic background. Urbanization driven by migration influences various aspects of development including employment patterns, income levels, infrastructure growth, education and living standard of the people. While it has opened new avenues for economic progress, it has also created several challenges that affect the overall development of the state.

Urbanization and Socio-economic Development

As per the 2011 Census, the level of urbanization in Assam was recorded at 14% compared to the national average of 31%. This shows that the state continues to lag behind the overall pace of urban development observed across India. Such relatively low affect of urbanization has significantly influenced Assam's socio-economic progress and growth. When managed efficiently, urbanization can act as a inducement for sustainable and inclusive development by creating employment, improving living standards and promoting equal opportunities. Planned urban growth facilitates better access to education, healthcare, housing and other essential services, which in turn can help in reducing poverty and social inequality.

Urbanization also contributes to technological advancement and economic diversification. The development of infrastructure and transport networks enhances spatial connectivity, enabling the integration of rural and urban economies. This process promotes income generation, improves productivity and encourages innovation. Furthermore, exposure to new technologies and economic activities allows individuals to upgrade their skills and improve their living standard. However, the socio-economic transition driven by urbanization also brings challenges. Shifts in family structures and social norms have become evident with expansion of urban centers. The increase in female labor participation, while empowering them has also led to a balancing act between domestic and professional responsibilities among them. Additionally, the rapid pace of urban growth without adequate planning has resulted in issues such as overcrowding, inadequate housing, traffic congestion and strain on water supply and sanitation facilities. These factors often lower the quality of life in cities and towns. Infrastructures limitations contribute to continue constrain Assam's economic growth. With this growth of urban population, the demand for housing and basic amenities has outpaced supply of goods and services. Unplanned urban expansion has led to the proliferation of substandard living areas and environmental degradation. Therefore, systematic urban planning and the implementation of appropriate regulatory measure are essential to ensure sustainable urban growth in the state.

Urbanization and its Environmental Impact

Rapid and unregulated urbanization has also generated considerable environmental issues. The loss of green cover and open spaces has contributed to ecological imbalance, while increased industrialization vehicle emissions have intensified air pollution in urban areas. This deterioration of air quality poses health risks to city dwellers and undermines environmental sustainability. Moreover, the spread of urban settlements into nearby forest areas disrupted ecosystems, affected wildlife habitats and led to rising temperatures in specific regions. Water pollution and poor sanitation have further compounded public health concerns, particularly among children, resulting in diseases such as diarrhea, measles and tetanus. Overcrowding and the growing number of vehicles have also caused excessive noise and congestion in urban areas.

Conclusion

Migration and urbanization in Assam show a complex and closely linked relationship shaping the state's demographic and socio-economic landscape. Internal and international migration, particularly in border districts, has led to uneven population distribution, cultural and linguistic changes, and pressure on land and resources, giving rise to socio-economic and ethnic challenges. Although urbanization has progressed—with the number of towns increasing from 80 in 1981 to 214 in 2011—Assam's urbanization rate (about 14%) remains far below the national average. Unplanned migration, limited industrial growth, weak infrastructure, and administrative inefficiencies have constrained balanced urban development. Addressing these challenges requires systematic urban planning, effective migration management, and regionally balanced development to ensure inclusive and sustainable growth in Assam.

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Barrier to Women's Participation in STEM Education and Entrepreneurship with Special Reference to North-East India

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Abstract

This paper explores the barriers that influence women's participation in STEM education and entrepreneurship in the context of North East India. Though several global and national initiatives exist to promote gender parity in STEM fields, women remain underrepresented across STEM courses, particularly in entrepreneurship. This paper is based on secondary literature, with the aim of assessing the status and relevance of STEM education and STEM entrepreneurship, and identifying the barriers to girls' participation in both, with a special reference to North East India. This paper examines the connection between STEM education and STEM entrepreneurship, focusing on the development of entrepreneurial attitudes among girls and women. Based on previous studies, this paper also discusses the significant barriers that limit girls' participation in STEM education and in STEM-based business ventures and entrepreneurship. This paper concludes by suggesting steps to enhance aspirations and attitudes towards STEM education, as well as to develop interest in starting STEM-based or technical business ventures among girls and women.

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Keywords: *STEM Education, STEM Entrepreneurship, Gender Gap, Girls' Participation in STEM, Entrepreneurial Aspiration.*

Introduction

Though rapid advancements are occurring in the fields of science, technology, engineering, and mathematics (STEM), a significant gender gap persists, particularly in girls' participation in these fields across Northeast India. In Northeast India, diverse communities and tribes with distinct ethnic, linguistic, and cultural features shape gender roles and limit the participation of women and girls in education and entrepreneurship. (Balakrishnan et al., 2024)

Many studies reveal that patriarchal traditions in Northeast India still limit women in the decision-making process and in accessing educational opportunities. Due to traditional beliefs, women have less power to make decisions and fewer opportunities to access education (Boruah, Khaund, & Pradhan, 2021). Along with these traditions, other issues like poverty and early marriage create obstacles for women to be visible in schools, the workplace, and in public life. Studies show that most people believe that, due to the prevalence of matrilineal systems, women have more power than men in some Northeast states, but this is not exactly true. States like Meghalaya: though women manage family property, actual control and the benefits remain with men.

Infrastructural challenges, a lack of trained teachers in STEM fields, limited access to technology, and stereotypes (which emphasise that STEM subjects are male-oriented) are among the barriers to STEM education. Though many girls are entering science fields at colleges across the country, their enrollment in science subjects remains low in the North-East states. A study reveals that only a few girls can pass science subjects in higher secondary schools in Northeast India (Kumar S., 2021). As a result, fewer girls have the technical skills to start their own businesses or the aspirations to become entrepreneurs. This directly influences the phenomenon of female entrepreneurship in innovation-driven businesses, as technical and scientific skills are necessary to start innovation-based enterprises. This paper aims to assess how STEM education influences girls' interest

and participation in STEM-based entrepreneurship and to identify barriers to girls' participation in STEM education and STEM entrepreneurship.

Background of the Problem

The future of employment and innovation significantly depends on the growth of the STEM sector. In India, the demand for STEM professionals is increasing rapidly, especially in digital sectors and technological innovations. It was expected to create 65 million STEM job roles in India by 2025. Still, it has been observed that only 37% of girls across India, and even fewer in many Northeast states, can complete their higher secondary education in science subjects (Balakrishnan et al., 2024).

Many studies, including the Educational Achievement Index(EAI), reveal that though in the Northeast India region, overall gender gaps in literacy and workforce participation are comparatively lower than other parts of the country, a significant gap exists in terms of accessing higher and technical education, especially among indigenous communities from rural areas of Northeast India (Hussain, 2025).

In the context of entrepreneurship, women still remain underrepresented due to male-dominated industries, weak professional networks and limited support from family members. These barriers limit women's economic participation in the business and entrepreneurship sector (Prakruthi, 2024). In North East India, the problems faced by women entrepreneurs differ from those faced by male entrepreneurs. Women face different problems in the field of business and innovation in North East India (Limbu & Bordoloi, 2015).

Objective

The main objective of this paper is to discuss the significant barriers that limit girls' participation in STEM education and in STEM-based business ventures and entrepreneurship based on previous studies

Methodology

This paper is descriptive in nature and is based on a review of previous studies on women in Science, Technology, Engineering,

and Mathematics (STEM). The literature has been compiled from sources available on Google Scholar, along with various reports, and published as well as unpublished theses and dissertations.

Status of STEM Education and STEM Entrepreneurship

STEM education is one of the most crucial factors in advancing and driving economic growth worldwide. Globally, significant attention has been given to increasing participation in STEM fields, with special emphasis on girls and women. Women are still underrepresented in STEM fields compared to men. Recent studies reveal that worldwide, only 30% of students in STEM higher education are female, and 28% of researchers in STEM fields are female. Research studies also highlight regional differences in STEM, with Central Asia comprising 48% of STEM researchers and South and West Asia having 23.01% female representation in STEM. Though various policies and programs promote STEM education, these gender gaps persist due to socio-cultural and economic factors dominant in society (Thu, Hong, Huy, & Thi, 2024).

In Indian context, gender disparity in STEM education still continues. While examining enrolment trends in STEM education in India, it has been observed that the gender parity index (GPI) in science subjects at the undergraduate level is almost equal between males and females (GPI: 1.04). At the postgraduate level, women outnumber men in science subjects (GPI: 1.73). At the same time, in engineering and technology courses, women's participation is very low in terms of enrolment, with the GPI values below 0.5 in all levels (Amirtham, 2023)

Due to the "leaky pipeline" aspect that exists in Indian STEM education, only 14% to 30% women STEM graduates move to the STEM workforce or STEM jobs (Iyyanar & Arivumani, 2025)

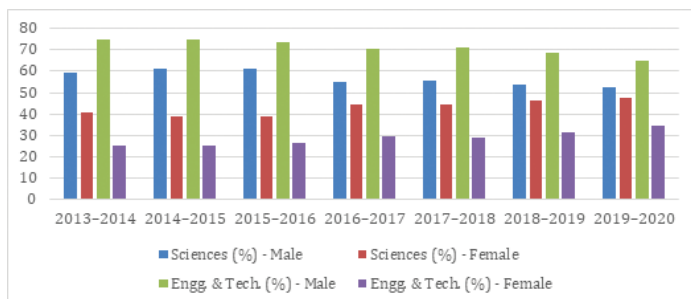
Studies show that female domination in subjects like zoology and botany at the postgraduate and PhD levels is clearly visible, but their representation in engineering fields and subjects like mathematics and physics at the PhD level remains low (Iyyanar & Arivumani, 2025).

From 2013 to 2020, most female students completed their PhD in STEM fields, indicating slow but steady progress in STEM education. In 2013-2014, 40.5% of women earned their PhD in

the sciences, and by 2019-20, the percentage increased to 47.6% (Amirtham, 2023). At the same time, the scenario is entirely different in terms of engineering and technology, as only 34.08% of women are PhD holders (Amirtham, 2023).

This data shows that almost half of PhD holders in Mathematics are women (49.4%), and in Chemistry, nearly 41.4% of women hold doctoral degrees. (CSIR survey on Women 2022). On the other hand, in mechanical engineering, only 18% PhD holders are women, according to AISHE 2019-2020 data (Aggarwal & Sharma, 2022). This information shows India's progress in reducing the gender gap in PhDs in STEM fields, but engineering and other technical disciplines still see lower female participation as PhD holders.

Table 1 Ph.D. Graduates in Sciences and Engineering Disciplines in India



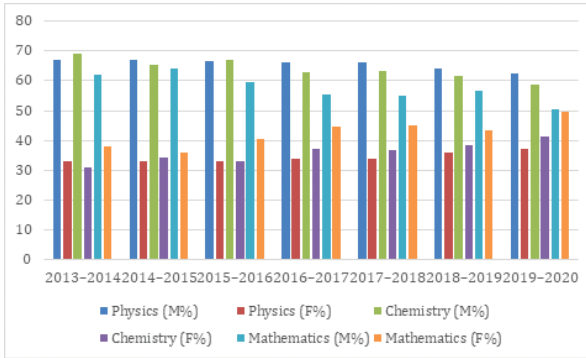
Source: Calculation from AISHE data of 2013–2014 to 2019–2020 (Amirtham, 2023).

This table highlights the percentages of male and female students in science and engineering for the academic years 2013-2014 to 2019-2020. From this table, it is cleared that male students' participation in science and engineering subjects, especially Engineering and Technology, is much higher than that of female students. This table clearly shows that for almost 7 years, more than 70% of students in Engineering and Technology fields were male, while female participation was only 40%.

After the academic period of 2016-17, the percentage of female students in both science and engineering fields increased. It

signifies the rise in the number of female students in science, engineering, and technology. However, there is still a noticeable gap in the participation of male and female students in engineering and technology fields.

Table 2 Ph.D. Graduates in Selected Sciences and Mathematics Disciplines in India



Source: Calculation from AISHE data of 2013–2014 to 2019–2020 (Amirtham, 2023)

This table clearly shows the percentage of male and female students in Physics, Chemistry and Mathematics from the academic period of 2013-2014 to 2019-2020 in India. This table highlights a higher percentage of male students across all three subjects than female students. The data shows that more than 60% male students are in Physics and Chemistry, while female participation in Mathematics has increased gradually in recent times.

While looking at North East India, specific data on women’s participation in STEM is not readily available, but it can be inferred from the region’s higher education scenario. As per the All India Survey on Higher Education (AISHE) 2020-21, Assam and Tripura have the lowest female gross enrolment ratio (GER) of 18.4 in higher education, which is below the national average of 27.9. In Tripura, the GER of female Scheduled Tribe students is 12.4 (NEZINE, 2023)

STEM-based Entrepreneurship at the Global and National Levels

Globally, STEM-based entrepreneurship is witnessing rapid growth, especially in regions like Asia, San Francisco, and Beijing, as more people are enrolling in science- and technology-based disciplines. Many women around the world also start STEM-based business ventures. Though women entrepreneurs are fewer in comparison to men, by closing the gap, the world economy could witness growth up to 20% (Flores, 2025)

According to the Sixth Economic Census, 13.76% of entrepreneurs in India are women. A report by NITI Aayog and the International Finance Corporation reveals that in the country, almost 20% of businesses are owned by women. According to the WISER report and YOURSTORY data, nearly 18% of startup founders in India are women. India still lags behind other countries, as in the US women own 40% and in Europe 30% of businesses, but in India this ratio is only 14%. This indicates that women need more support to close the gender gap in business (Mehra, 2025). Also, though women are highly engaged in IT jobs, a small number of women (almost under 10%) can reach leadership positions or introduce themselves as founders of startups (Amirtham, 2023)

In North East India, women's role in the economy is significant. The Ima Keithel market in Manipur has been run by women for about 500 years – women from this region involved in small-scale craft and agricultural product businesses. Over the last 35 years, women entrepreneurs have emerged in sectors such as food processing, jute, and flower cultivation; however, male domination persists (Rehman, 2025). In Assam, only 15-20% of women are financially literate, while men are about 25-30%. This gap indicates that, due to low financial literacy, women find it difficult to run a business or become entrepreneurs (RBI & NSS reports summary, 2023).

Barriers for Girl's Participation in STEM Education and Entrepreneurship North-East India

Gender stereotypes and Family expectations

Gender role theory emphasises the influence of societal expectations and stereotypes on individuals' behaviour and

aspirations. Traditional gender norms often reflect the view that STEM and entrepreneurship are primarily male domains. STEM and entrepreneurship are not for girls because they don't have the capability to pursue them (Hui, Mengwei, & Liu Dewen, 2025).

Gendered stereotypes often limit girl's participation in STEM education. Studies show that most girls in North East India do not receive the same guidance, support, and resources to pursue technical education, STEM-based subjects, or business. At the same time, boys' participation is relatively high. Though many girls hold STEM degrees at the graduate level, their representation in STEM jobs and entrepreneurial ventures remains lower than that of boys due to stereotypes and biases (Basantia & Devi, 2021). Additional issues, such as early marriage, expectations to perform household duties, and a lack of role models, restrict girls' aspirations in STEM (K, M, Santhosh, & Karunakaran, 2025). Due to these societal beliefs, women receive fewer opportunities in the decision-making process and in career transitions, which create obstacles to their growth in the entrepreneurship sector (Sharma & Parida, 2021). Even they don't get direct support from their family members and husbands in business matters (Mahanta, 2016). Evidence shows that societal norms and family responsibilities often restrict women from fully exploring their entrepreneurial potentialities (Chutia, 2024). Specific gendered role makes women vulnerable to accessing education and entrepreneurship opportunities which influences the low participation rate of girls in STEM education in Northeast India (Boruah, Khaund, & Pradhan, 2021)

Society never expects a woman to run a business and become a businesswoman. These expectations restrict women's growth and development in entrepreneurial activities in Assam (Limbu & Bordoloi, 2015).

Economic and infrastructural barriers

In North East India, people from rural and marginalised groups still face obstacles like a lack of quality schools, a lack of science and computer labs and skilled and trained teachers. Due to traditional beliefs and the financial crisis, parents are unable to invest in their daughter's higher education. This led to high

dropout rates during the shift to higher secondary and technical education (Chakraborty, Sarkar, & Mete, 2024).

Studies show that, due to the involvement of a middleman, most women in rural areas receive lower prices for their goods and are unable to access a larger market for innovation- and tech-related products. Due to limited access to technology and network connectivity, as well as to cold storage and advanced manufacturing equipment, women are unable to be involved in Tech- or STEM-based businesses in North East India (Chutia, 2024). Most women still use traditional methods in their businesses and are not ready to implement new technology (CSDD, 2023). This limits their exposure to the new world of business ventures, which is primarily driven by technology and innovation.

Geographical limitations and exposure barriers

In northeast India, many places are rural and remote, with insufficient infrastructure for transportation and safety measures (Chakraborty, Sarkar, & Mete, 2024). This directly limits girls' participation in STEM education, as many are unable to attend school due to poor transportation. Especially, girls from remote areas are unable to go to urban areas to pursue STEM subjects at the higher secondary or college level. In reality, most technical facilities are located in urban-centric institutions, such as science museums, science clubs, and science labs (Balakrishnan et al., 2024). For this reason, girls from rural areas are unable to access technical facilities effectively. This limits girls' participation in STEM education.

Lack of role models

Social Cognitive Theory, as proposed by Bandura (1986), focuses on the interaction among individual factors, behavioural patterns, and the environment. This theory emphasises how observational learning, social modelling and environmental factors shape career interests and behaviours. When we connect this to STEM perspectives, it can be said that girls' decision to pursue STEM education and entrepreneurship is shaped by their observations around the environment, role models, mentors and peer groups. When girls receive support from family members and teachers and witness successful female

entrepreneurs, it directly shapes their interest and attitudes towards starting a STEM business. At the same time, the lack of strong female role models in STEM and entrepreneurship can limit girls' participation in these fields (Luttenberger, 2019). Due to the lack of female mentors in STEM fields, girls often lack proper professional guidance, which has led to a gender gap in STEM (Balakrishnan et al., 2024). Considering this aspect, it can be said that in North East India, there is also a lack of female role models and mentors in STEM fields. As a result, female students don't have the proper opportunities to understand and build the confidence to pursue aspirations in STEM-related fields.

Barriers to Education, Skill Training

Studies show that women often face difficulties accessing loans from financial institutions, which discourages them from developing an entrepreneurial mindset. Women entrepreneurs often hesitate to seek financial help from banks due to the lengthy, complex process (Mahanta, 2016). Though government initiatives like the Assam Start-Up Policy, 2017, and initiatives under the North East Industrial Development Scheme (NEIDS) are there to provide financial incentives, skill training to support women in starting business ventures, still, women don't have access to that information, which directly limits their growth in the entrepreneurial sector (CSDD, 2023). Most women also don't seek training before or after starting their business ventures (Paul, 2016). This directly affects women entrepreneurs' ability to gain the technical knowledge to implement new technological ideas in their businesses. Most women are unaware of new digital and technical innovations because they don't receive proper formal education to introduce them to those technologies (Paul, 2016).

Suggestions to Overcome the Barriers for Girls in STEM and STEM Entrepreneurship in the Context of North East India

To reduce barriers to girls' participation in STEM education and STEM entrepreneurship, it is important to implement targeted interventions that promote gender-inclusive education. It is essential to build well-equipped schools and STEM-based labs, providing sufficient resources such as internet access, computers, and learning materials, especially in rural and remote areas. By

providing scholarships and stipends to motivate girls from rural and remote areas to pursue STEM courses and entrepreneurship academic programs, the barriers can also be reduced. Different educational institutions can collaborate with stakeholders to organise a formal mentorship program and an awareness campaign, involving parents and community members to raise awareness of the importance of STEM education and entrepreneurial skills for girls. It is important to implement an inclusive curriculum that promotes STEM education among female students, as well as to design STEM entrepreneurship curricula at the school and college levels to develop aspirations among female students.

Conclusion

It's essential to empower girls to participate in STEM and start their own business ventures to drive significant growth in the North East region. It's very important to design a gender-sensitive curriculum in educational institutions in North East India that encourages girls to pursue STEM education and STEM entrepreneurship as career paths. Providing better opportunities, support, and resources can increase female participation in STEM and STEM entrepreneurship, thereby fostering better growth in this region.

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Ethnic conflict and displacement in Manipur: Socio-Economic Consequences

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Abstract

Manipur is a conflict-driven state with a long history of ethnic disputes (Naga-Kuki 1992-93, Meitei-Pangal 1993, Kuki-Paite 1997-98). On May 3, 2023, Manipur experienced yet another ethnic conflict between the Meitei and Kuki-Zo communities, which resulted in significant loss of life, displacement and socio-economic disruption. This chapter examines the root causes of the conflict through secondary data analysis. The immediate reason for the outbreak of this conflict was due to the High Court of Manipur's directing the state government to recommend the Meitei community to the Scheduled Tribe (ST) status. The study found that the 2023 ethnic conflict in Manipur has led to severe displacement, disrupting the socio-economic fabric in Manipur; moreover, the agriculture, tourism and fisheries sectors also suffered substantial losses. The chapter concludes by recommending ways to achieve sustainable peace and development in Manipur.

Keywords: Ethnic Conflict, Meitei, Kuki-Zo, Displacement, Socio-Economic Impact.

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Introduction

Manipur is situated on India's North-Eastern border and is often referred to as the 'Land of Jewels' or *Sanaleibak* in Manipuri. Geographically, Manipur covers 22,456 square kilometres, and it is divided into 16 administrative districts (Arora and Ziipao, 2020). According to the 2011 census, the population of Manipur is 28.55 lakh. Manipur has three ethnic communities: Meitei, Naga, and Kuki, along with a Muslim community called "Pangals" from East Bengal and Mayang from mainland India (Kipgen, 2018). However, throughout history, tension over land, resources, and cultural identity has fueled insurgency movements and inter-ethnic tensions among the various communities in Manipur. The ethnic violence that erupted on May 3, 2023, between the Meitei and Kuki-Zo communities marked a new peak, impacting thousands of people and reshaping the socio-economic landscape of Manipur (Kuki Reformation Forum, 2023; Human Rights Watch, 2025; International Crisis Group, 2025). During the conflict, more than 200 people have been killed, 70,000 people were displaced, including at least 10,000 children, over 260 churches were burned or destroyed, and approximately 5,600 weapons and 650,000 rounds of ammunition were looted from the state armouries (Leth, 2023).

Objectives

The objectives of this chapter are given below:

1. To analyse the historical, political and social factors contributing to the ethnic conflict in Manipur.
2. To assess the socio-economic Impact of displacement caused by the 2023 violence in Manipur.
3. To provide recommendations for sustainable peace and development in Manipur.

Methodology

The methodology of the study is based on a qualitative research approach, using secondary data from published research papers, journals, development reports, and credible media sources. It analyses the causes, impacts, and potential solutions to the Manipur conflict. The chapter interprets the socio-economic

impact of displacement through secondary data and thematic content analysis.

Review of Literature

Historical context, Identity, Land and territorial dispute

Various studies have highlighted the historical context of conflict in Manipur. Siamkhum (2014) explores and delves into the historical and socio-political tensions fueling conflicts, including territorial disputes, differing interpretations of history, and competition for resources. McDuie-Ra (2014) opined that the complex relationship between ethnicity, place, and belonging in Imphal shows that overlapping powers of civil authorities, the military, insurgents, and ethnic groups create a tense, fragmented city. Piang (2015) highlights that the British categorisation of local ethnic groups led various groups to assert exclusive ownership of shared spaces, escalating racial tensions and even causing attempts at ethnic cleansing. Sharma (2016) analyses the background realities of existing ethnic divides between the Nagas, Kukis, and Meiteis in Manipur and found that historical prejudices, socio-political structures, and the struggle for autonomy have contributed to tensions among these groups. Meitei (2017) highlights ethnic nationalism in Manipur, focusing on how different ethnic groups establish national identities and pursue territorial autonomy.

Triggers and Dynamics of Recent Conflict

When conflicts erupt, all eyes turn to the immediate chaos. But no conflict ignites overnight. There's always a slow burn that goes unnoticed until it's too late. That has been the case in Manipur (The Economic Times, 2024). Behera (2023) and Khamrang (2023) provide an objective assessment of the ongoing ethnic conflict in Manipur, highlighting that historical tensions, social mistrust, and political struggles have fueled the violence that erupted on May 3, 2023, in Manipur. Zou (2024) writes about the ethnic conflict in Manipur and believes that ethno-religious tensions, homeland politics, and insurgency have led to the conflict between the Meitei and Kuki-Zo groups. Mohapatra and Das (2024) evaluate the causes and consequences of the violence and highlight that it was ignited by the Manipur High

Court's consideration of granting Scheduled Tribe (ST) status to the Meitei community, which provoked protests from the Kuki and Naga tribal groups that were concerned about losing their privileges.

From the above Review of literature, we know that Ethnic conflict in Manipur does not just erupt overnight; however, it is built gradually and often overlooked until it explodes. Literature has shown that conflicts in the state of Manipur have primarily arisen from issues of identity, land and territorial disputes, competition for resources, and struggles for autonomy. Moreover, the Manipur High Court's recommendation for the inclusion of the Meitei community in the ST list further ignited the problems.

Socio-Economic Impact of Displacement

Livelihood and Economic Disruption:

Displacement due to ethnic violence has led to the disruption of the economy and livelihood. The Global Report on Internal Displacement (GRID) 2024 by the Internal Displacement Monitoring Centre (IDMC) reported that an overwhelming 67,000 of the 69,000 South Asians displaced by conflict and violence in 2024 were from Manipur (IDMC, 2024). The ongoing conflict in Manipur has caused loss of many lives, destruction of livelihood and damage to private as well as public property. Moreover, it also disrupted key sectors of the Manipur economy, including agriculture, fisheries, textiles, and tourism, further intensifying the economic hardship faced by the local population. The initial impact of displacement was felt through widespread economic disruption, as individuals engaged in various sectors were forced to abandon their businesses and livelihoods, prioritising safety and survival during the early days of the conflict (Rahman and Sheereen, 2012). Before the Conflict, diesel auto rickshaw drivers made an average of Rs 950 per day. However, from May 3, their wages have decreased to about Rs 467 each day. This was mainly due to sparse public movement, and the market shed was closed for many days after the 3rd of May (Meitei, 2024).

Figure 1 below shows household income from fishing before and after the conflict in Pumlen Pat in Kakching District of Manipur.

Before the conflict started, households earned an average daily income of Rs. 496.67 from fishing, with earnings ranging from Rs. 350 to Rs. 600. But after the conflict erupted on May 3, 2023, markets were closed, and economic activities were halted. As a result, households earned an average daily income of Rs. 253.33 from fishing, with earnings ranging from Rs. 100 to Rs. 400 only (Das, Kamei and Gangmei, 2024).

The Tourism Industry in the state of Manipur has also been drastically affected by the conflict. Figure 2 below shows the decline in the number of tourist visits in Manipur due to the Meitei and Kuki-Zo conflict. Tourist visits dropped drastically from 1,61,420 in 2022-23 to just 37,000 in 2023-2024.

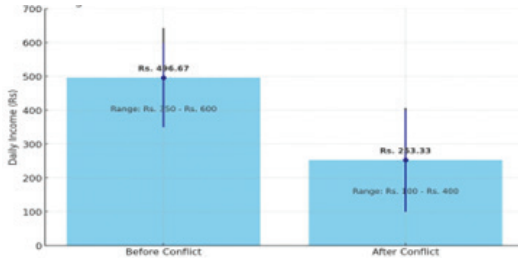


Fig. 1 Household income from Fishing in Pumlun Pat before and after the conflict.

Source: Das et al., (2024)

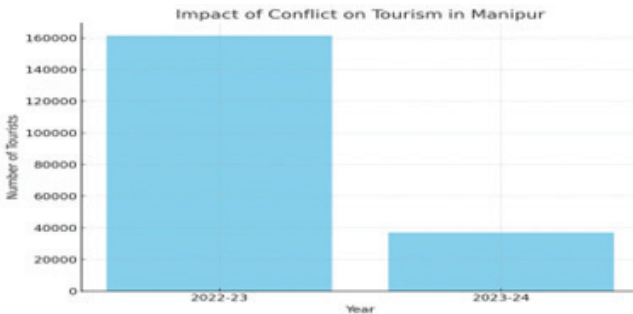


Fig. 2 Declining tourist visits to Manipur due to the Conflict.

Source: Das et al., (2024)

Education Disruption

The violence in Manipur severely disrupted the education system. Thousands of students, staff and teachers were forced to flee for their lives. The educational institute became the target for the mob. Schools, furniture, and books were burned down and vandalised by the mob. Government data indicates that more than 14,545 students were displaced during the violence, out of which more than 3000 are below the age of five. Moreover, Imphal West, Imphal East, Bishnupur, Churachandpur and Kangpokpi are the most affected districts (Zaman, 2023). Schools remained closed for two months, and out of 4,617 schools in Manipur, 96 schools were being used as relief camps and for other purposes. When the state government finally reopened schools on July 5, 2023, for classes 1 to 8, only about 40% attended due to safety concerns. However, the schools that reopened encountered difficulties in providing sufficient supplies for the students, particularly those who were living in relief camps and had been traumatised by the conflict. Additionally, the students' mental health has been severely impacted by the violence they observed or experienced. Many students are unable to concentrate on their schoolwork because of the trauma they are experiencing from the loss of their homes, friends, or family (Kumar, 2023).

Impact on the Health Sector and the Psychological Well-Being of Displaced People

The violence in Manipur has significantly affected the healthcare sector. Hospitals, primary healthcare centres, and community health centres in conflict zones have been especially impacted, making it difficult for residents to access medical care. Many doctors and nurses have fled to safer places, further straining the healthcare system. Additionally, essential health services, including routine immunisations, maternal health services, and treatment for chronic illnesses, have been disrupted (De, 2024). Health facilities and supplies have often been targeted, with seven looting incidents reported, including an attack on a vehicle carrying vaccines for children. On May 4, several healthcare facilities, such as a gynaecology clinic, diagnostic centre, and hospital, were looted or damaged, while a women's rehabilitation centre was set on fire. Healthcare workers have faced serious threats, including two deaths, attacks, and

kidnappings. Road blockades have restricted access to vital medicines, exacerbating health emergencies (Das *et al.*, 2024). A severe incident has been reported in the ongoing conflict, where a mother and child seeking medical treatment were burned inside an ambulance (Yumnam, 2025).

The ethnic violence in Manipur has left deep psychological scars on many, leaving numerous individuals with lasting trauma (Das *et al.*, 2024). The psychological impact of the conflict on students and educators cannot be overstated. Many students report difficulty concentrating on their studies or planning for their academic futures amidst the ongoing turmoil. Educators and staff, dealing with the emotional toll of the crisis while trying to maintain academic responsibilities, are also under tremendous stress. This psychological burden has compounded the academic disruption, leading to a significant decline in overall student engagement and performance (Singh *et al.*, 2025). A study conducted by Sinam and Singh (2025) on the emotional well-being of Manipuri students studying in Delhi NCR revealed that students suffer deep emotional distress, anxiety, fear, helplessness, and survivor's guilt, often intensified by feelings of identity-based alienation. Moreover, the conditions in the relief camps have further intensified the psychological trauma among those displaced by the ethnic violence. High levels of PTSD, anxiety, and depression are prevalent, particularly among those who have experienced violence firsthand, with women, children, and the elderly being the victims of the trauma (Das *et al.*, 2024).

Recommendations for Sustainable Peace and Development

The Indian Government has remained silent on the Manipur issue for a long time. On the other hand, the Manipur state government was completely paralysed and ineffective. To achieve sustainable peace and development in Manipur, a multifaceted approach is necessary. Given below are four key recommendations for achieving sustainable peace and development:

1. Both the Central and the State Governments must make an inclusive effort to completely disarm the armed groups and the civil population involved in the violence. If this is not checked, gun culture could further lead to unrest in the future.
2. Meaningful and effective dialogue should be initiated between the Central and state governments, the affected communities (Meitei and Kuki-Zo), as well as the Naga communities, concerning ST status, land rights and political representation.
3. Rehabilitation and resettlement programme, adequate compensation, access to education, health and employment opportunities for the displaced people should be of paramount importance.
4. Security and administrative reforms should be prioritised. Such reforms should aim to regain trust between the affected communities, ensure equal protection of rights, and create responsive governance structures that are sensitive to ethnic concerns to bring about lasting peace.

Conclusion

Though the conflict in Manipur is slowly returning to normalcy, the political leaders are nervous when it comes to conflict resolution (Kumar, 2012). Prime Minister Narendra Modi's visit to Manipur on 13 September 2025, laying the foundation stone for various developmental projects in Manipur, brings renewed hope for the people of Manipur amidst the tension and backlash from the opposition. The conflict in Manipur needs not only governmental initiatives but also partnership with the civil society and the affected communities. The conflict has left a lasting impact on both the Meitei and Kuki-Zo communities. However, it is interesting to note that even after more than two years of conflict, the central and state governments have yet to present a realistic solution. What will the government do to bring long-lasting peace to the state? Is there a hidden political agenda behind this? These are some of the questions we need to consider.

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Industrial Development and Renewable Energy Performance: A Time-Series Approach

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Abstract

The study examines the nexus of environmental impacts on the important secondary sector in the context of Assam. The study is exploratory. Secondary data (Time-series data) has been collected from the Statistical Handbook of Assam. The explained variable in the model is renewable energy performance, and the explanatory variables are invested capital and workers' wages in the state's industries. The invested capital of industries in Assam has an equilibrium relationship with renewable energy in the long-run. Workers' experience in industries has not predicted future performance in renewable energy. Therefore, the 1st hypothesis is not accepted, and the 2nd hypothesis is accepted. The study concludes that there exists an equilibrium relation between industrial development and renewable energy in Assam. Here, the author suggests some financial indicators of industrial development and the revenue households earn by adopting a solar power plant in their homes to determine the impact of industrial finance on the state's decision to adopt solar energy.

Keywords: *Renewable Energy, Industrial Development, Invested Capital, Assam.*

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Background of the Study

Industrial development and renewable energy performance in Assam are increasingly intertwined, shaping the state's path toward sustainable economic growth and environmentally responsible modernization. Wang, F. & Debel, M. T. (2025) investigate the correlation among renewable energy, industrial output, and economic growth using time-series data and statistical techniques such as the ARDL error-correction model and the Granger causality test. They find a strong correlation between the share of renewable energy and industrial production. The study examines the effect of Industry 4.0 on renewable energy and on the development of materials. This study shows that IoT and AI have effectively affected the renewable energy and economic development (Onu, 2023). The research study has an attempt to investigate the interaction between renewable energy consumption and industrial production for United States through Wavelet techniques and the Granger-causality test, and obtains that the Wavelet result shows a positive co-movement between industrial production and biomass energy and Granger-causality test result shows a bi-directional causality run from renewable energy consumption to industrial output in the U.S. Their study examines the effects of both renewable and non-renewable energy consumption on India's growth, using the unit root test, the augmented Dickey-Fuller test, the autoregressive distributed lag bound test, diagnostic tests, and Granger causality tests. The findings reveal that fossil fuels have a greater impact on India's industrial production than renewable energy, and That Unidirectional causality runs from energy consumption to industrialisation (Gogoi & Hussain, 2025)

Industrial development in Assam has a very beautiful historical background. Since ancient times, industries have been growing rapidly in the state. The performance of renewable energy has been shown in the case of electricity consumption and its yearly percentage change in Assam. First, Gross unit and Net unit generation from hydro-electric power have been setting records for electrical energy in the state. Since 2017-18, some off-grid solar photovoltaic power plants have been installed under schemes such as the Jawaharlal Nehru National Solar Mission National Solar Mission. The Agriculture Department has been providing grid-connected renewable energy to some districts (Statistical

Handbook of Assam, 2020). From the year 2019-20, the Assam Power Distribution Company Limited (APDCL) also provides smart street lighting systems in the urban areas of 33 districts, Grid-connected rooftop solar power plants, and off-grid rural electrification through solar PV systems under the SAUBHAGYA scheme.

Some financial allocations have been provided under these schemes to homeowners installing solar plants and to some institutions.

Justification: This study has argued in favour of a dynamic link between environmental sustainability and the state's industrial facilities in Assam.

Aim: This study aims to identify a nexus between industrial and economic sustainability in India. Therefore, the primary objective of the study is to determine the energy impact on industrial development in the state.

Hypotheses: (1) There is a short-run relation between invested capital in industries of Assam and renewable energy improvement. (2) There is no causal relationship between the wages of workers and hydroelectric energy.

Research Question: How does renewable energy affect the state's industrial development?

Methodology of the Study

This study is based on secondary data collected from the annual report of the Directorate of Statistics and Economics, Assam, for the selected period (2010-2021). In this study, the dependent variable is renewable energy performance (SE) and the independent variable is industrial development. The study uses net marginal unit generation of hydroelectric power to represent renewable energy performance, and wages of workers & invested capital in industries to determine industrial development. The statistical techniques used to analyse the data are the Johansen cointegration test and the Granger causality test. A multiple regression model is constructed to test the hypotheses –

$$RE_t = a_0 + b_1 IC_t + b_2 WW_t + e$$

Where, RE_t = Renewable Energy

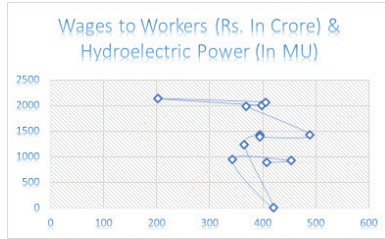
IC_t, WW_t : Invested capital and Wages of workers at time period t .

a_0 = Intercept term

b_1, b_2 = Regression co-efficients

e = Residual

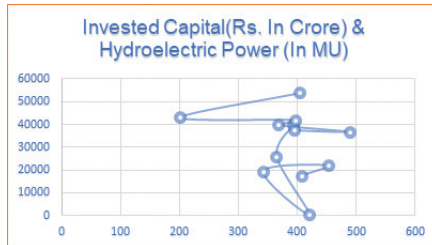
Necessary Statistical Data



Graph 1 A Comparative Analysis of indicators of industrial development and renewable energy performance (Year-wise)

Source: *Statistical Handbook of Assam (2021)*

This graph shows that in 2021-22, the invested capital is highest (53661.34 crore) in the industries of Assam and lowest (17399.24 crore) in 2010-11. The hydroelectric power consumption unit is highest (489.23 MU) in 2017-18 and lowest (202.06 MU) in 2021-22. Between 2013-14 and 2014-15, hydro power decreased slightly from 420.4 MU to 365.1 MU. Between 2017-18 and 2021-22, the invested capital has increased from 36603.2 Cr. To 53661.34 Cr. (Statistical Handbook of Assam).



Graph 2 A Comparative Analysis of statistical data on the Indicator of industrial development in Assam and Renewable energy performance (Year-wise)

Source: *Statistical Handbook of Assam (2021)*

Graph 2 shows that in the year 2017-18, the state’s people consume the highest hydroelectric power (489.23 MU) and the lowest hydroelectric power (202.06 MU) in the year 2020-21 for the selected period (2010-2021). Between 2014-15 and 2017-18, the state had witnessed a slight increase in hydro-power unit generation from 365.1 MU to 489.23 MU.

The state’s industries have given the highest wage to their workers (2134.02 Cr.) in the year 2020-21 and the lowest amount of wage (13.32 Cr.) to their workers in the year 2013-14 for the selected statistical period. Between 2016-17 and 2020-21, the industries paid slightly higher wages (1427.25 Cr. to 2134.20 Cr.(Annual Survey on Industrial Report, Govt. of Assam)

Co-integration Test Result

Trend assumption: Linear deterministic trend
Series: HYDROELECTRIC POWER IN MU INVESTED CAPITAL ...
Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CEs(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.996447511...	51.83169063...	15.49471287...	1.04823...
At most 1	0.112165384...	1.070728173...	3.841466496...	0.30078...

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**Mackinnon-Haug-Michels (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CEs(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.996447511...	50.78096246...	14.26430015...	3.85484...
At most 1	0.112165384...	1.070728173...	3.841466496...	0.30078...

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**Mackinnon-Haug-Michels (1999) p-values

The Johansen co-integration test results show one co-integrating equation at the 0.05 level between invested capital and hydroelectric energy. At that level, the null hypothesis would be rejected because the trace-statistic value is greater than the critical value. Also, the max-eigen statistic value is greater than the 0.05 critical value. Therefore, one co-integrating equation at the 0.05 significance level is included in the regression model. This result implies that there is a long-run equilibrium and co-integrated relationship between invested capital and hydro power.

Granger-Causality Test

Null Hypothesis:	Ots	F-Statistic	Prob.
WAGES TO WORKERS RS IN CRORE does not Granger Cause HYDROELECTRIC POWER IN MU	11	1.04499...	0.3365...
HYDROELECTRIC POWER IN MU does not Granger Cause WAGES TO WORKERS RS IN CRORE		0.74561...	0.4130...

The null hypothesis states that there is no causal relationship between workers' wages and hydroelectric energy. The null hypothesis would be accepted because the probability values are greater than the 0.05 level. This result shows that there is no causal relationship between workers' wages in industries and hydro power. It means that workers' wages do not Granger-cause hydro-power, and vice versa.

Conclusion

The 1st finding of the study suggests that there is a long-run equilibrium relationship between invested capital and renewable energy performance in the state. The study finds, using a causality test, that workers' wages do not predict future performance of renewable energy in Assam. The findings suggest that invested capital has an insignificant effect on renewable energy performance in the long run. Also, there is no information about the future occurrence of renewable energy for workers in the state's industries. Therefore, this study is based on the environmental sustainability's effect on the state's most important sector of economic development. The study reveals that renewable energy performance is explained by the level of invested capital in the long run, and that workers' wages also affect hydro power electricity consumption. But its previous records will not cause the next generation of renewable energy in Assam.

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Women in Social Entrepreneurship and Sustainable Development: Integrating Gender, Empowerment and Environmental Sustainability in North East India

Anannya K N Khanikor

Abstract

Social entrepreneurship is an important aspect for the development of a nation. Social entrepreneurship leads to generation of capital and also helps in addressing many socio-economic problems. It primarily seeks to create social value rather than purely economic profit. In North East of India, women in social entrepreneurship are in a more visible form. They are increasingly taking up roles as social entrepreneurs and are aiming for activities that link livelihoods, welfare of the community and environmental conservation as well. In North East, contribution of women as social entrepreneurs is multidimensional. They are able to facilitate the development of micro and small enterprises, social capital formation along with empowering themselves in economic, social terms. The paper makes an attempt to examine the current picture of women in social entrepreneurship and how it has contributed to sustainable development in North East of India. The paper includes a qualitative analysis of the entire area of study. It comprises of different case studies relevant to the area of study.

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Keywords: *Sustainable Development, Social Entrepreneurship, Empowerment, Women, North East.*

Introduction

Entrepreneurship is a dynamic process. It is a process that allows individuals or organisations to identify opportunities, gather resources and start new ventures that produce both economic and social benefit. Entrepreneurship is a multifaceted phenomenon that encompasses innovation, risk-taking, opportunity recognition, and strategic action, rather than just starting a business (Stevenson, 1983). The horizon of the concept of entrepreneurship expands to social, environmental and community-oriented dimensions.

Dees (1998) broadly defines social entrepreneurship as creating social values through innovative solutions that address societal problems. Social entrepreneurship can be defined as the practice of using entrepreneurial principles to find and pursue novel solutions to social, cultural, and environmental issues. Social entrepreneurship has emerged as a significant mechanism for addressing social and environmental challenges in developing countries, especially in states where the capacity of the state is limited or uneven (Mair & Marti, 2006). It is closely related to the Sustainable Development Goals (SDGs), especially those that address gender equality, poverty alleviation and environmental sustainability. In India, now, there is growing engagement of women in social entrepreneurship. This growth, though steady, is contributing to community resilience, diversification of livelihood and socio-economic transformation.

The region of North East India comprises of the states such as Assam, Meghalaya, Nagaland, Arunachal Pradesh, Manipur, Mizoram, Tripura and Sikkim. The North East India presents a complex socio-economic landscape characterised by rural predominance, abundant natural resources, ethnic diversity and environmental fragility. The history of North East India has been an evident of women's participation in community economies like weaving, agriculture, handicrafts, fisheries and even food processing. Women in North East India play a very prominent role in terms of social entrepreneurship. They have maintained a deep ecological knowledge. They have been the stewards of the

natural resources. Based upon this fundamental role, women are now increasingly involved in social entrepreneurship by fusing conventional wisdom with contemporary innovation. This has created many new opportunities along with addressing the developmental gaps. They are becoming more and more engaged in social entrepreneurship, branching out beyond traditional industries like handloom to recycling, food processing and even mechanised farming.

Women as social entrepreneurs are also promoting sustainable development in the unique region of North East India. The unique socio-cultural fabric of the region creates a fertile ground for women-led enterprises that are both socially impactful and environmentally conscious. Social entrepreneurship in the region of North East India is not merely a business activity; it serves as a mechanism of empowerment of women, community development and ecological stewardship. Women entrepreneurs in North East India contribute to sustainable development through production of eco-friendly products, organic farming practices, waste management, fishery cooperatives, cultural preservation through craftsmanship and so on. These contributions are also in line with the international commitments like the Sustainable Development Goals especially SDG 5 (Gender Equality), SDG 8 (Decent Work and Economic Growth), SDG 10 (Reduced Inequalities), SDG 12 (Sustainable Consumption and Production) and SDG 13 (Climate Action).

The present study, thus, examine the role of women in social entrepreneurship in North East India with focus on women's empowerment and how their initiatives support sustainable development.

Objectives

- (i) To study the current landscape of women's social entrepreneurship in North East India.
- (ii) To assess the contribution of social entrepreneurship initiatives to economic, social and environmental dimensions of sustainable development in North East India.

Methodology

The study is qualitative and descriptive in nature. It is based on secondary sources of data. The secondary sources of data include academic articles, books, blog articles, reports and different internet resources. After the data is collected, representative case studies are analysed to understand the status of women as social entrepreneurs in the states of North East India and how it has contributed towards the sustainable development in the region.

Review of Literature

Philips et al. (2015) in their work "Social Innovation and Social Entrepreneurship: A Systematic Review" are of the opinion that social entrepreneurship includes a broad spectrum of initiatives that combine for-profit and non-profit strategies to solve social problems through innovative and entrepreneurial approaches. Scholars like Bornstein and Davis (2010) in their work "Social Entrepreneurship: What Everyone Needs to Know" define social entrepreneurship as the pursuit of sustainable solutions to social problems through innovative, mission-oriented ventures. B. Cohen and M.I. Winn (2007) in "Market Imperfections, Opportunity and Sustainable Entrepreneurship" argue that social entrepreneurship fosters sustainability by integrating economic viability with social and environmental missions. Scholars like Mair and Marti (2006) in their work "Social Entrepreneurship Research: A Source of Explanation, Prediction and Delight" note that social entrepreneurship occupies a hybrid space between non-profit and for-profit models, emphasising both social impact and financial sustainability.

A De Bruin, C.G. Brush & F. Welter (2007) in "Advancing a Framework for Coherent Research on Women's Entrepreneurship" highlights how women entrepreneurs often adopt community-centric, collaborative, and inclusive approaches. P. Kantor (2005) in "Determinants of Women's Microenterprise Success in India" shows that women-led enterprises reinvest a higher proportion of earnings in education, nutrition and social welfare, amplifying developmental benefits. D. Jamali (2009) in "Constraints and Opportunities Facing Women Entrepreneurs" shows that women-led enterprises create inclusive growth and support marginalised communities,

especially in developing regions. A.S. Arya and Rahul Shukla in their work “Connecting Women’s Empowerment and Environmental Sustainability: A Review” critically examines the intersection of women’s empowerment and environmental sustainability. Umarani Muthukrishnan in “Can Women Empowerment Contribute to Sustainable Growth” examined the role of individual entrepreneur cognitive characteristics contributing to social enterprise performance and how the skills of the women social entrepreneurs led them to move from just social impact generators to becoming thought leaders.

R. Bhattacharyya (2019) in his work “Women, Work and Empowerment in North-East India” indicates that women in North east India hold traditional expertise in handloom weaving, micro-enterprises and agricultural activities. Another study by Saikia & Bora (2019) demonstrated women empowerment through entrepreneurship growth. Their study discovered that women entrepreneurs engage in a variety of entrepreneurial activities and that these activities aid them to better their socioeconomic condition in society. Amrendra Kumar (2021) in “Problems and Prospects of Women Entrepreneurship in India with Special Reference to the North-East Region” examines the status of women entrepreneurship in North-East India. However, research explicitly linking women’s social entrepreneurship to social impact and environmental sustainability in the region remains limited. This gap provides the rationale for the present study.

Women and Social Entrepreneurship in North East India

Women in North East India have long played a central role in traditional livelihoods such as weaving, agriculture, sericulture and the use of forest based resources. Based on this traditional knowledge, these informal activities have transitioned into formal business opportunities. These opportunities expand to diverse sectors such as eco-tourism ventures, organic farming produces agro-products, etc. Women-led social enterprises in North East India demonstrate varying pathways to empowerment and ecological sustainability which promote sustainable development in the region and also align with the Sustainable Development Goals adopted by the United Nations.

Social entrepreneurship has emerged as a powerful tool to enable women to innovate, lead and address local development challenges.

Below are discussed case-studies from the states of North east India. Each illustrates how women in social entrepreneurship have advanced the cause of sustainable development, empowerment of women and environmental sustainability in the region.

Case Study 1: Eco-tourism Ventures, Assam

A pathfinder is changing North East India's tourism scene in the heart of Assam. Where lush hills drop into foggy valleys and tea farms spread across the horizon. Alyssa Rani Singha is a social entrepreneur who and a change maker from Assam who founded the Seven Sisters Holidays, an eco-tourism brand based in Assam. The Seven Sisters Holidays has emerged as a leading advocate for promoting responsible tourism in North East India. Under her leadership, Seven Sisters Holidays actively participates in community engagement, cultural preservation and eco-tourism i.e. from low-impact transportation to promoting plastic-free travel. This initiative, started in 2016, with a goal to provide eco-friendly and community-based travel, now employs a significant number of women in various roles such as content creators, managers, on-ground tour guides, etc. the initiative also provides training to female guides and to young women in business. Ventures of this kind empower women by generating income from grassroots tourism and preserving regions with rich biodiversity. This case illustrates how women social entrepreneurs in North East India combine environmental sustainability with cultural preservation and community empowerment in ecotourism.

Case Study 2: Fidgety Fingers, Sikkim

Devika Gurung started "Fidgety Fingers" in Sikkim in 2015 to empower impoverished women by offering free instructions in traditional fibre arts including knitting, crocheting, and embroidery. This allows for the preservation of cultural crafts and sustainable livelihoods. The initiative trains women participants, such as school dropouts, young mothers, child brides, and victims of abuse, which leads to employment

within Fidgety Fingers or independent businesses, fostering independence and social empowerment. Fidgety Fingers favourably impacts local environmental sustainability in Sikkim by supporting handcrafted products from natural, locally obtained fibres like wool, which encourages low-energy, zero-waste production procedures compared to industrial manufacture. By training rural women in these skills, it builds community-based economies that preserve Sikkim's biodiversity through sustainable material use, such as organic yarns, aligning with state's organic farming culture. This case illustrates how women as a social entrepreneur is acting as an agent of promoting sustainable development in the region and contributing to social and economic empowerment of women in North East India.

Case Study 3: Komna Moidan Enterprise, Arunachal Pradesh

Social entrepreneur Komna Moidam works for the upliftment of women, including housewives, student drop-outs, and women belonging to the disadvantaged sectors, all who required support. By offering a chance for a sustainable way of life, Komna offers a platform. Through her enterprise, M/S Komna Moidan Enterprise, Komna works with the local tribal products which are manufactured using the raw materials accessible in the adjacent jungles and crafted utilising rich cultural skills like bead-making, etc. Her work focuses on women's economic development by assisting them in utilising the traditional talents that have been passed down through generations from their ancestors. Through the initiative, women artisans earn regular income from their craft, enhancing decision-making power within the family. This case demonstrates how grassroots initiatives by a woman can promote economic inclusion, gender empowerment, and regional cultural identity. As the materials used are biodegradable, these materials leave minimal ecological footprint compared to mass-produced plastic jewellery.

Case Study 4: Food processing enterprises, Nagaland

In Chizami village, Phek district, Nagaland, a millet revival program was started by the well-known women's rights and sustainable development organisation North East Network. The establishment of a women-run millet-based bakery, where

village women turn millet into wholesome food products, was made possible by the North East Network. This initiative is a great example of grassroots social entrepreneurship as mostly it is run by Chizami Women's Collective. As millets require less water and chemical inputs to grow, this initiative has acted as a tool for gender transformative development that will also help in combating climate change. This case illustrates how women in North East India use food processing to enhance rural livelihoods, empower communities and contribute to regional sustainable development. This shows the integration of traditional knowledge, value addition and entrepreneurship to empower women economically and socially.

Case Study 5: Conservation of Biodiversity and Eco-Entrepreneurship of Mizoram

Despite having an abundance of forests, Mizoram is threatened by habitat loss, the unsustainable exploitation of native plant species, and problems with plastic and urban trash. A social entrepreneur from Mizoram named Lalphili Ralte founded the "Zo Bio Hub", a start-up that aims to empower women in rural communities by growing and processing native plants into herbal teas, essential oils, and natural cosmetics while simultaneously promoting the cultivation and preservation of plant species. This instance demonstrates how a woman in social entrepreneurship is helping to preserve the distinctive biodiversity of Mizoram by promoting the cultivation of native plant species. Women are gaining economic opportunities, entrepreneurial skills, and a voice in environmental issues. This case illustrates how women's environmental engagement in Mizoram connects sustainability and empowerment by preventing harm and creating alternatives.

Women in Social Entrepreneurship and Sustainable Development in North East India: an Analysis

Women are crucial in forming the economies and societies because they are resourceful and resilient in the face of adversity. Whether it is about optimising resources, starting a business, or enhancing farming methods, women were always at the fore front. This spirit still continues to define women's participation today as social entrepreneurs.

The North East region has a long tradition of agro-based livelihoods where women act as central agents. Over the past years, this role has expanded into social entrepreneurship, where women engage in enterprises designed to generate income along with deliver social, cultural and environmental value. Each initiative where women engage has been able to transform local economies through socially-oriented entrepreneurship. The North East region of India provides a unique context with communities respecting women's economic participation, collective action, a rich biodiversity enabling resource-based enterprises. Thus, women's entrepreneurial endeavours often start with traditional talents which later develop into socially conscious micro business that not only cater to local needs but also the larger needs of the society.

In North East India, women as social entrepreneurs play a very vital role in promoting sustainable development. These ventures where women lead or participate contribute to sustainable development. For example, social entrepreneurship contributes to SDG 1 and 8 by income generation, diversification of livelihoods and creation of employment opportunities. Women in social entrepreneurship are taking leading roles as new economic agencies. This aligns with SDG 5 of gender equality. Women as social entrepreneurs have bridged the social gaps and are promoting social inclusion by empowering marginalised groups, investing in community development projects. This ultimately aligns with the SDG 10 of reducing inequalities. Women in social entrepreneurship are sustainable livelihoods along with environmental sustainability. Their initiatives have helped to rejuvenate the environment and, thus, aligning with SDG 12 & 15.

Conclusion

Social entrepreneurship has garnered much-needed attention due to its potential to greatly enhance people's lives and means of subsistence. Social entrepreneurship encourages creativity and mobilises new resources to tackle important issues impacting different, usually underprivileged groups. Furthermore, achieving socio-economic success hugely depends on women and social entrepreneurship. Empowering women

through social entrepreneurship in North East India presents a promising pathway to sustainable development by integrating economic empowerment with environmental stewardship. Women social entrepreneurs in North East India play a crucial role in driving sustainable development by merging innovation with social consciousness. Whether through organic farming, eco-tourism, or weaving collectives, women have emerged as leaders in sustainable development. This experience of North East India demonstrates that women's empowerment and sustainable development are deeply interconnected and both can be achieved through women's increasing participation in social entrepreneurship. Women's social entrepreneurship is not merely an economic activity but a transformational pathway towards equitable and sustainable development.

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Growth of Tourism in Assam: Before and After COVID- 19 Outbreak

Himasmita Kakati

Abstract

In the modern era, the tourism industry plays a crucial role in a state's/ region's economic growth and development. Our state, Assam, is blessed with abundant natural beauty and resources. This definitely attracts domestic and foreign tourists to our state. At different times, our state government has also taken various initiatives to attract tourists. This study was conducted from 2015 to 2024. From 2015, the graph of tourism growth showed an upward trend, though slowly but steadily, but suddenly COVID-19 appeared like a disaster, and the entire scenario changed. With the help of secondary data from the Directorate of Tourism, a descriptive analysis was conducted from 2015 to 2024. After the COVID outbreak, the graph showed a downward trend. Since 2021, some sparkles have appeared in this sector of Assam. The number of tourists has increased. Though in smaller numbers, the number of foreign tourists has been growing gradually. Foreign tourist revenue is higher than domestic tourist revenue. Therefore, the government must take more initiatives to attract foreign tourists. Exploring and developing hidden tourism destinations in remote areas will also be a great way to boost tourism growth. Since Assam's tourism industry is mainly dependent on Mother Nature, there should also be a priority for sustainability in the tourism sector, with the help of public-private and NGOs coordination.

Keywords: Covid- 19, Domestic Tourists, Foreign Tourists, Revenue.

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Introduction

The tourism industry is considered one of the most critical drivers of socio-economic growth and development in a country/ state/ region. In a broader sense, it covers the social, cultural, and economic aspects of a place, including the activities of visitors and the service sector (such as hotels, restaurants, and trips) of the host place. The word tourism refers to short-term travel by people to areas outside their habitat for leisure, refreshment, business, or personal reasons, usually for less than one year. It can be either individual or group travel. Tourism involves fun, relaxation, refreshment and enjoyment. The tourism industry is a significant economic driver, generating revenue and employment for the host country/state. The tourism industry encompasses a wide range of services, including hotels, restaurants, tours, and transportation.

Tourism can be segregated in different categories, such as-

- (a) Business Tourism.
- (b) Sports Tourism.
- (c) Medical Tourism.
- (d) Eco- tourism.
- (e) Adventure Tourism.
- (f) Cultural Tourism, etc.

Business tourism, also known as business travel, involves travelling for work-related or professional purposes, such as conferences, meetings, or other corporate events. It is about combining professional obligations with travel to different cities or countries.

Sports tourism is defined as travelling to participate in or to attend sports events. It is a blend of athletic interests and a desire to explore new places.

Medical tourism is another form of tourism, though it is not directly related to happiness or refreshment; still, the word 'relaxation' can be applied here. Lower costs, advanced medical facilities, and other factors drive medical tourism.

Eco-tourism refers to responsible, sustainable travel to natural areas that protect the environment and support local

communities. Wildlife watching, hiking, etc., are some of the popular eco- tourism activities.

Adventure tourism is mainly about exciting, thrill-seeking travel. It is all about travelling beyond someone's comfort zone and experiencing new and exciting things. Adventure tourism is all about the combination of exploration and excitement.

Cultural tourism refers to travelling to experience a place's local culture, history, traditions, rituals, lifestyle, and heritage. It involves activities such as discovering heritage sites, attending regional or local festivals, and learning about local rituals and customs. Cultural travelling supports local people/ communities through local businesses by eating at local hotels and restaurants, staying at local homestays, or buying locally handmade crafts.

Tourism Industry in Assam

With its scenic natural beauty, diverse culture, rich biodiversity, and the hospitality of the local people, the tourism industry in Assam is rapidly growing. Assam features three main geographical areas: the Brahmaputra valley, the Barak valley, and the intervening Karbi tableland and the N C (North Cachar) Hills. There are numerous significant travel destinations across Assam. Since the state is characterised by plains and hilly areas, rivers, ethnic villages, etc., tourists can find different locations and experiences while travelling in Assam.

Key Attractions in Assam

Kamakhya Temple (Ambubachi Mela), Kaziranga National Park, Pobitora Wildlife Sanctuary, Nameri National Park, Manas National Park, Majuli, Charaideu, different attractive points in Guwahati, including Assam Zoo, Srimanta Sankardeva Kalakshetra, Historical places, Temples and various Ahom monuments in Upper Assam, especially in Sivasagar, Tea Garden etc., are the key attractions in Assam for domestic as well as foreign tourists. Assam has recently recorded a significant increase in the tourism sector, which has boosted income and employment for local people in our state. According to the Assam Tourism Development Corporation (ATDC) report, our state welcomed over 70 lakh domestic tourists and approximately 50 thousand foreign tourists in 2023- 24. On the New York Times' list, Assam

ranks 4th among 52 destinations to visit in 2025. The tourism industry has a significant influence on a country's or region's economic growth. It directly affects the GDP. As employment opportunities increase, the handicrafts of a place attract more customers, driving its growth. The tourism industry has helped promote Assam's culture. Now our state festival, Bihu, and the Bihu dance are getting worldwide attention. Tourism has helped upgrade our Eri, Muga, and Mulberry silk industries in Assam.

With a noble motive to establish Assam as a leading tourist destination in North-East India, the Assam govt. Had formed and launched a new logo and introduced a new catchy tag line, "Awesome Assam" with a pledge of taking Assam's tourism sector to a new position by investing the maximum of its resources on brand campaign and publicity (Mitra, 2016).

In 2025, Assam adopted a concert tourism policy to organise musical concerts by renowned singers from around the world, which will attract tourists to the state. This policy is designed to position Assam as a top entertainment destination. Through these large-scale music events, Assam will experience a boom in tourism, investment, and employment opportunities. With a strategic partnership with prominent concert organisers, Assam will unleash more economic development and solidify its position as a dynamic cultural as well as musical hotspot (ORDERED BY THE GOVERNOR NOTIFICATION. Memo. No. eCF No. 638375/33, Dated. Dispur, the May 26, 2025.)

Review of Literature

Assam is blessed with immense natural and cultural resources to generate income and employment through tourism. Still, due to insufficient government funding for this sector and other factors, the industry is not growing as much as it could. To develop the state's tourism sector, however, hindrances to its growth should be removed. From 2009 to 2012-13, total revenue earnings from tourist lodges rose; they decreased, and 15-16 as they reached their highest level compared to previous years. The tourism sector has great potential in Assam, but in terms of employment generation and revenue earnings from both foreign and domestic tourists, it is not inspiring. Geo-tourism and eco-

tourism products of the state should be immediately identified, and steps should be taken to develop them. Infrastructure should be developed, and coordination among the public, private, and NGO sectors is required (Gogoi, 2017). Located in the North-East of India, Assam is blessed with exceptional potential for developing tourism activities and the tourism industry. But the potentialities are to be explored and put to the highest and most efficient use. From the perspective of economic development, the state is lagging behind. Inadequate infrastructure, ethnic and insurgent conflict, inaccessibility, and lack of awareness of the state's tourism potential are the barriers to establishing the tourism sector as a successful economic sector in Assam (Phukon et al., 2020). In the entire north-eastern region of our country, proper planning for tourism can be a good source of revenue and employment. But this needs more tactical formulation of tourism development policies. To address various challenges in the tourism sector, strategies such as promoting tourism products, educating local people, and building a capable framework can be adopted (Zimik & Barman, 2021). Before the Covid-19 pandemic, Assam was experiencing a brighter phase in the tourism sector, since the state is blessed with immense natural beauty and biodiversity of flora and fauna. But COVID-19 had put the state's tourism sector into a dire situation. The tourism industry in Assam appears to be an assured avenue for the state's growth and development. For the fullest utilisation of this industry's potential, this sector should be handled with careful, visionary planning. Infrastructure improvement, eco-friendly tourism practices, and social participation are major components for success (Kalita & Barsha, 2024). Regarding the development of the tourism industry in Assam, the concept of hidden tourism should be taken seriously and pursued strategically. Deliberate development of hidden destinations provides an avenue to transform the tourism sector into an economically and environmentally sustainable, culturally authentic, and socially just sector. In this vision, tourism serves as a driver of comprehensive growth, transforming undiscovered or hidden locations into exemplars of sustainable tourism (Pallathadka & Roy, 2025).

Objectives

1. To assess the trend of tourism in Assam during the pre-COVID, COVID, and post-COVID situations.
2. To assess the trend in domestic and foreign tourism before and after the COVID-19 situation.

Methodology

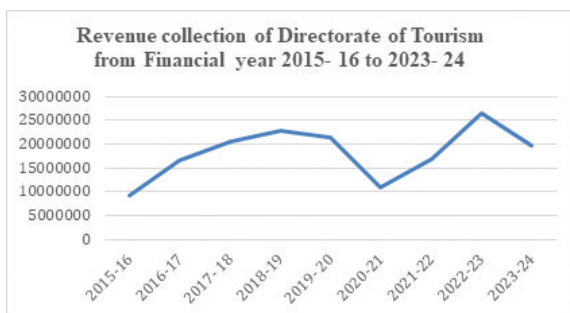
To address the objectives of this study, a mainly descriptive method has been used. Through graphical representation, data has been analyzed. This study is entirely based on secondary data. Data is collected from the Directorate of Tourism, Assam, and the Statistical Handbook of Assam, published by the Directorate of Economics and Statistics, Assam, for the years 2015- 16 to 2023- 24.

Trend and Nature of Tourism in Assam: Before and After Covid- 19

Table 1 Revenue collection of Directorate of Tourism in Assam (from financial year 2015- 16 to 2023- 24)

Year	Total Revenue Collection
2015-16	9213492.00
2016-17	16606650.00
2017- 18	20576627.00
2018-19	22843279.00
2019- 20	21461173.00
2020-21	10971743.00
2021-22	16918063.00
2022-23	26409895.00
2023-24	19838168.00

Source: Directorate of Tourism Assam, Statistical Handbook of Assam 2024



The above analysis clearly shows that revenue collection from the tourism sector to the Directorate of Tourism has increased from 2015-16 to 2018-19. In 2018-19, it was Rs. 22843279.00. In 2019-20, it began to decrease, and in 2020-21, it reached its lowest point. But from 2021-22, it starts rising and reaches its highest point in 2022-23. It seems that after 2 years of the pandemic, which kept people from travelling, they became excited to travel, boosting tourism and revenue inflows. Though in the year 2023-24, revenue collection of the Directorate of Tourism, Assam, has shown a downward trend, it is not as low as 2020-21. It was Rs. 19838168.00. This year, revenue collection from tourist lodges under the Directorate and from Taz Vivanta have decreased. Still, revenue from tour operators has increased, which is a really positive sign for the state's tourism sector.

Table 2 Revenue Collection of Tourist Lodges from different Places in Assam (From 2019-20 to 2023-24)

Year	Revenue collection by tourist lodges
2019-20	10034684
2020-21	11746715
2021-22	18130988
2022-23	14828115
2023-24	22194675

Source: Directorate of Tourism, *Statistical Handbook of Assam* (2020, 2021, 2023, 2024)

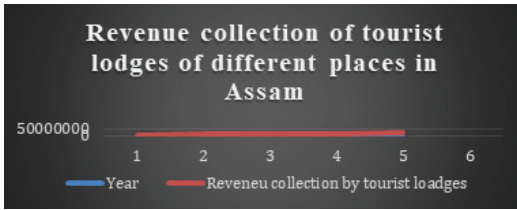


Figure 2

The above table and diagram show the trend in revenue collection from tourist lodges in Kaziranga, Sivasagar, Bhalukpong, Chandubi, Barpeta Road, Guwahati, Jorhat, Tezpur, and Nogaon. It shows a fluctuation from 2019- 20 to 2023- 24. But in the year 2023- 24, it was Rs. 22194675, which is a record for overall tourism development.

Table 3 Tourist Visit to Assam from 2015- 16 to 2023- 24

Year	Total Tourist
2015- 16	5669270
2016- 17	5441575
2017- 18	5966160
2018- 19	6068211
2019- 20	5164901
2020- 21	1352036
2021- 22	1704163
2022- 23	9831141
2023-24	7067334



Figure 3

Source: Directorate of Tourism, Statistical Handbook of Assam (2018, 2019, 2020, 2021, 2022, 2023 & 2024)

Table 3 and the above figure (3) clearly show the difference between the pre-COVID and post covid situation regarding the tourism industry in Assam. It clearly shows that from 2019- 20, tourist visits to Assam started decreasing, but from 2021- 22 they started increasing slowly. After two years of the pandemic, which compelled people to stay at home, people started travelling slowly from 2021-22, and in 2022-23 it reached its peak.

Table 4 Comparison between the Trend of Domestic and Foreign Tourists Visit (2015- 16 to 2023- 24)

Year	Domestic Tourist	Foreign Tourist	Total Tourist	Percentage of domestic tourist	Percentage of foreign tourist
2015- 16	5642950	26320	5669270	99.54	0.46
2016- 17	5413156	28419	5441575	99.48	0.52
2017- 18	5934791	31369	5966160	99.47	0.53
2018- 19	6027002	41209	6068211	99.32	0.68
2019- 20	5146307	18594	5164901	99.64	0.36
2020- 21	1351690	346	1352036	99.98	0.026
2021- 22	1702932	1231	1704163	99.93	0.072
2022- 23	9812195	18946	9831141	99.81	0.19
2023-24	7041205	26129	7067334	99.63	0.37

Source: Author's calculation from data of Directorate of Tourism, Statistical Handbook of Assam (2018, 2019, 2020, 2021, 2022, 2023 & 2024)

Table 3 shows the trend in domestic and foreign tourists to Assam before, during, and after Covid-19. The trend shows that the tourism sector in Assam is mainly dependent on domestic tourists. From 2015- 16 to 2018- 19, though still slightly, there is a positive trend in the share of foreign visitors in Assam. In 2018- 19, it reaches its peak. If we compare this case with the case of revenue collection, we get a combined result that 2018- 19 is really a positive year for the tourism sector of our state. This year, revenue collected by the Directorate of Tourism, Assam, also reached its peak compared to previous years. But Covid-19 had totally changed the scenario. It notably decreased the number of tourist visits, and the percentage of foreign tourists fell to 0.026% in 2020- 21. From 2021- 22 to 2023-24, the share of it

started rising. But the domestic tourism recovers faster and still leads the market.

Conclusion

From the above analyses, it is clear that since 2015- 16, Assam's tourism industry has shown a positive trend in both domestic and foreign tourist arrivals. But Covid- 19 had completely changed the scenario. But from 2021- 22 onward, there is a slight upward trend. Overall, during the period, domestic tourists play a leading role in the market. The percentage of foreign tourists rises slowly. Foreign tourists contribute more to revenue collection. Therefore, there should be proper planning in attracting foreign tourists to our state. At different times, the government has taken various steps to increase domestic and foreign tourism to our state. With plenty of natural resources and a diverse cultural heritage, Assam is a land of attraction for domestic and foreign tourists alike. With proper government planning and public-private partnerships, tourism can drive the economy to its peak, but an appropriate strategy is needed to maintain sustainability in the near future. Since they have found that in 2023- 24 the year lagged in both cases, i.e., the number of tourist visits as well as revenue collection by the Directorate of Tourism, therefore, more planning should be done to achieve a rising trend in tourism growth. Exploring hidden tourism destinations in remote areas and developing them is also a great way to increase tourism growth. Since Assam's tourism industry is mainly dependent on Mother Nature, there should also be a priority for sustainability in the tourism sector, with coordination among the public, private, and NGO sectors.

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25

A Descriptive Study on Women Entrepreneurship in Assam: Opportunities & Challenges

Tnang Loan Kachari*

Abstract

Women's involvement in entrepreneurship has become increasingly essential for regional economic progress, especially in Assam, where cultural diversity and abundant natural resources show unique business possibilities. The present study examines the position of women-led undertakings in the state, focusing on the factors that encourage their entrepreneurial association and the obstacles that continue to hamper it. This paper identifies key areas where women show strong potential—such as handloom weaving, handicrafts, food-based industries, service activities and other small-scale ventures. It also outlines critical challenges, including limited educational and technological exposure, social boundaries, gender biases, financial constraints, mobility limitations and insufficient support systems for building confidence. The findings indicate that coordinated policy measures, improved skill development initiatives, and greater organisational support are vital for strengthening women's entrepreneurial capacities. Amplifying these supports can contribute to more inclusive economic growth in Assam and promote persistent improvement of women-led enterprises.

Keywords: Women Entrepreneurship, Opportunities, Assam economy, Business Challenges.

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Introduction

Entrepreneurship is widely recognised as a key mechanism of economic growth in modern economies. Alongside men, women's participation in entrepreneurial pursuits has increasingly contributed to socio-economic progress worldwide. Studies reveal that women possess the potential to handle both family responsibilities and professional roles simultaneously, and their involvement in entrepreneurship reflects innovation, resilience, and the capacity to generate employment for others (K. Kamalakkannan, *Women Entrepreneurs: Opportunities, Challenges and Problems with Reference to India-An Analytical Review*, 2018). Many women prefer for self-employment or business ventures as an alternative to low-paid unstable wage employment, making it crucial to ensure that they have access to quality education, decent work opportunities, social protection and resources that support informed decision-making (Samantroy & Tomar, 2018).

Improvements in women's education, changing skill requirements, and broader social and economic transformations have motivated more women to participate in business initiatives. However, despite this progress, the entrepreneurial perspective of women in India remains significantly underutilised (K.Kamalakkannan, *Women Entrepreneurs: Opportunities, Challenges and Problems with Reference to India-An Analytical Review*, 2018). Gender inequalities continue to push women into low-paid and less secure occupations, and only a few women can benefit from the opportunities that lead to higher-level positions. Promoting women's entrepreneurship, therefore, plays a dual role in strengthening women's empowerment and contributing to broader economic development. Women-led businesses can foster employment and stimulate economic activity, highlighting the need for consistent motivation, institutional support and financial assistance (Bhatta & Borpujari, 2023).

Women constitute a large proportion of India's population, and their growing interest in entrepreneurship adds remarkable value to national development. Nevertheless, the existing governmental and social initiatives have not yet achieved the required level of effectiveness in accelerating women's entrepreneurial growth (Arya, Charan Panda, & Kaur, 2017).

Women from diverse socio-economic backgrounds, regions, and cultural or religious groups are often unaware of government schemes and facilities due to limited access to information and inadequate outreach (K. Kamalakkannan, *Women Entrepreneurs: Opportunities, Challenges and Problems with Reference to India-An Analytical Review*, 2018). Empowering women not only enhances their own socio-economic standing but also strengthens families, communities and the nation at large. Even though women in recent times have greater freedom to engage in entrepreneurial activities, the extent of this empowerment varies across social groups (Anupriya, 2023). In Assam, where women represent 48.92% of the population according to the 2011 Census, improving the social and economic conditions of women is of utmost importance, and promoting women-owned enterprises can play a transformative role in accomplishing this objective (Hazarika, 2020). The majority of women in the state remain concentrated in low-investment, low-technology ventures such as soap or detergent production, papad making, spice grinding, pickle preparation, and beauty-related services. Their entrepreneurial desires are often hindered by insufficient financial access, limited managerial experience, limited technological exposure, and restricted family support. It is striking that only about 14% of entrepreneurs in India are women, according to the 6th Economic Census reported by Startup India (Wadhwa, 2025).

Therefore, this paper aims to examine the opportunities that can reinforce women's entrepreneurial spirit in Assam and to analyze the significant challenges they continue to face in their business journeys.

Review of Literature

The concept of women's entrepreneurship has been highlighted through various institutional definitions and scholarly perspectives. The Government of India identifies a women-owned undertaking as one in which women hold at least 51% of the financial stake and constitute at least 51% of the workforce. This definition establishes both ownership and employment criteria as central to recognizing an enterprise as women-owned. Despite such policy frameworks, the presence of women

entrepreneurs in India remains relatively modest, accounting for approximately 10% of total business establishments (Sharma, 2014).

Scholars have contributed a much deeper understanding of the meaning and scope of women's entrepreneurship. Dr Roy defines women entrepreneurship as the capability of women to mentor, influence and direct business processes toward achieving organisational goals (Roy, 2023). Her study, which focuses on Assam, shows a dual characteristic: women receive promising opportunities but also encounter structural and socio-economic barriers. She emphasises that amplifying women's entrepreneurial engagement requires continuous support from government agencies, social institutions, and family circles.

Vanitha and Thriveni (2023) illustrate women entrepreneurship as a dynamic process comprising the initiation, organisation and management of business ventures by women. They underline the creative nature of entrepreneurship, noting that women often generate innovative ideas, integrate resources, and strive for financial independence and economic mobility. Their work emphasises that entrepreneurship lays down the pathway to women's empowerment, autonomy and meaningful participation in the economic sphere (Vanitha & Thriveni, 2023).

International perspectives further enlighten the understanding of women's entrepreneurial participation. The Global Entrepreneurship Monitor (GEM) examines women's participation across various stages of business creation and growth. The 2024–2025 GEM Global Report quotes that women's Total Early-Stage Entrepreneurial Activity (TEA) stands at 7.2% globally, with India ranking 15th among participating economies (GEM 2024/2025 GLOBAL REPORT: ENTREPRENEURSHIP REALITY CHECK, 2025). This ranking reflects gradual progress for India, but it also indicates significant room to improve women's involvement in the entrepreneurial environment.

Recent empirical research indicates that although women are gradually entering entrepreneurial sectors, they continue to face multiple challenges. Sukalkar and Bharati Pujari (2025) observe that women entrepreneurs in India encounter intersecting social, political, cultural and technological constraints that influence their entrepreneurial trajectories. Their findings

indicate that women's entrepreneurial journeys are shaped not only by opportunity structures but also by systemic limitations that restrict access to resources, networks, and enabling environments (Sukalkar & Dr Bharati Pujari, 2025).

Collectively, the reviewed literature suggests that while women's entrepreneurship in India—and especially in regions like Assam—is gradually expanding, considerable institutional, social, and cultural barriers continue to impede its full realisation. Addressing these challenges requires sustained policy intervention, stronger support systems, and holistic strategies to create an inclusive entrepreneurial ecosystem that empowers women to meaningfully and exclusively engage in business activities (Saikia, 2025).

Methodology

The present study is descriptive in nature. The data has been collected from various secondary sources, including government reports and websites, census data, journals, research papers, and book chapters.

Discussion

(a) Opportunities for women entrepreneurs in Assam: In Assam, women have access to a variety of entrepreneurial opportunities that emerge from the state's socio-cultural diversity, natural resources, and an emerging support ecosystem.

- **Sectoral opportunities for women:** Women in Assam have been engaged in handloom weaving and other traditional crafts for a very long time. Based on these strengths, several sectors offer promising entrepreneurial avenues:
 - ❖ Assam's rich cultural heritage and abundant natural resources create significant opportunities for the food processing sector, especially when supported by adequate technology and value-addition methods (Hazarika, 2020).
 - ❖ Women can explore small-scale manufacturing activities such as handicrafts, handloom products, garment stitching, apparel design and agarbatti production, which align with existing skills and community practices (Bano, 2023).

- ❖ The service sector offers strong opportunities in areas such as beauty and wellness services, small restaurants, tailoring units, florist services, catering, computer service centres, and event management (Bano, 2023).
- ❖ Women in rural areas can benefit from livestock rearing and poultry farming, which remain viable and sustainable entrepreneurial options in Assam (Hazarika, 2020).
- **Training Programmes:** Women are able to gain opportunities and benefit from various training programmes, like:
 - ❖ **Wing – Women Rise Together, Assam:** This programme, led by DPIIT, Startup India Invest, Startup Assam, and the Department of Industries & Commerce, offers workshops that train women to understand best business practices and to resist challenges effectively and efficiently (DPIIT, Startup India, 2025).
 - ❖ **Swavalambani:** It is implemented by MSDE and NITI Aayog and is an initiative that focuses on creating awareness, offering training and mentoring, and assisting women in securing financial support for their ventures (Ministry of Skill Development and Entrepreneurship launches ..., 2025).
 - ❖ **Capacity Building Program for Women Home Stay Entrepreneurs of Assam:** This programme is designed to guide women with hospitality management and entrepreneurial skills to effectively run homestays, which is a sector with growing potential in Assam. It is an initiative of the Assam State Rural Livelihood Mission (ASRLM), launched by the Indian Institute of Entrepreneurship (IIE, 2025).
 - ❖ **Surujmukhi NGO, in collaboration with EDII – MSDP:** The Micro Skillpreneurship Development Program provides hands-on training in mushroom farming, tailoring, sewing, weaving and goat rearing, enabling women to start micro-enterprises. The Micro Skillpreneurship Development Program (MSDP) (Surujmukhi NGO, 2025).

- **Government Initiatives and Schemes:** The Assam government has launched several initiatives and schemes to promote women's entrepreneurship. The most prominent ones are discussed as under:
 - ❖ **Mukhya Mantri Mahila Udyamita Abhiyan (MMUA) / Lakhpati Baideo Programme:** This scheme under ASRLM offers phased financial support to women Self-Help Group members to promote income-generating activities (Government Schemes Updates, n.d.).
 - ❖ **Swanirbhar Naari – Atmanirbhar Asom:** It is a flagship programme under the Directorate of Handloom & Textiles, Assam. It aims to purchase hand-woven products directly from local weavers to support their livelihoods (Government of Assam, Handloom Textiles & Sericulture, 2025).
 - ❖ **Orunodoi Scheme:** Provides monthly financial assistance to women to help meet essential household requirements, thereby improving financial stability (Assam State Portal, n.d.).
 - ❖ **Startup Assam:** Encourages entrepreneurial initiatives among youth and women by offering guidance and support for launching new ventures (Startup Assam – an Initiative of Government of Assam, n.d.).

(b) Challenges Faced by Women Entrepreneurs

Based on literature and government findings, women entrepreneurs in Assam encounter a range of difficulties:

- **Lack of Education and technical know-how:** Women's educational levels often lag behind men due to early marriage, financial limitations and insufficient family encouragement (Sharma, 2014). Inadequate exposure to training and networking restricts their ability to develop entrepreneurial skills (Tass & Ahmed Hakim, 2022). Many women also struggle to adopt new technologies and remain unskilled in several business domains due to limited literacy and awareness (Arya, Charan Panda, & Kaur, 2017).
- **Social Constraints:** Traditional norms often confine women to domestic responsibilities, limiting their ability to pursue business opportunities. Cultural and religious beliefs reinforce these restrictions (Sharma, 2014). In several rural parts of

Assam, experimenting with new ideas or unconventional ventures is still considered socially inappropriate (Hazarika, 2020). Women are expected to carry multiple roles at home, often placing family responsibilities above professional aspirations (K. Kamalakkannan, *Women Entrepreneurs: Opportunities, Challenges and Problems with*, 2018).

- **Gender-Inequality:** Deep-rooted gender biases continue to affect women's entrepreneurial participation. Women are often perceived as less capable than men in business environments (K.Kamalakkannan, *Women Entrepreneurs: Opportunities, Challenges and Problems with*, 2018). Societal norms view entrepreneurship as a male-dominated field, and women may need family members' permission before pursuing a business idea (Sharma, 2014). Acceptance of women in leadership roles also remains limited in several communities (Bano, 2023).
- **Inadequate Financial Assistance:** Women frequently struggle to secure credit from financial institutions despite having good credit behavior. Limited collateral, lack of property ownership and dependence on male family members weaken their financial credibility (Arya, Charan Panda, & Kaur, 2017). As women are primarily dependent on their parents and husbands, they lack the necessary credibility to raise funds (K. Kamalakkannan, *Women Entrepreneurs: Opportunities, Challenges and Problems with Reference to India-An Analytical Review*, 2018). Financial institutions and lenders often remain skeptical about women's business potential, making it harder for them to obtain loans (Bano, 2023).
- **Lack of Self-Confidence:** Women's confidence is often affected by insufficient family support, limited technical knowledge and lack of exposure to business environments (Arya, Charan Panda, & Kaur, 2017). As a result, women may avoid taking independent decisions or initiating new ventures due to fear of failure or a fear of dependency on others (Bano, 2023). Women often struggle to believe in themselves to start something new (K.Kamalakkannan, *Women Entrepreneurs: Opportunities, Challenges and Problems with Reference to India-An Analytical Review*, 2018).

- **Low Mobility:** Concerns about safety and societal expectations restrict women's ability to travel for business needs (Adhikary & Koley, 2024). Travelling or staying out for business is sometimes viewed with suspicion. Many women also feel uncomfortable interacting with male colleagues or travelling long distances, especially at night (Sharma, 2014). Women lack confidence to travel at night and also across different regions (Anupriya, 2023).
- **Male-female Competition:** Women often encounter strong competition from male entrepreneurs who may have better financial and social resources (Bano, 2023). Limited access to capital and networks makes it challenging for women to compete effectively (Adhikary & Koley, 2024). Additionally, intermediaries sometimes exploit women entrepreneurs through fraud or unfair practices (Sharma, 2014).

Conclusions

The above discussion highlighted a diverse range of opportunities for women. But they also face various challenges. By addressing the barriers discussed above and expanding the opportunities already available, Assam can facilitate stronger, more sustainable participation by women in entrepreneurship. Such advancement not only empowers women individually but also contributes to broader economic growth, social development and the overall progress of the state.

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An Economic Study of Consumer Expenditure on Fitness: A Case Study on Jorhat District, Assam

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Abstract

This paper examines the socio-economic benefits of fitness centre usage among members in Jorhat district. A survey of 105 respondents reveals that fitness centre membership is perceived as a valuable investment, contributing to improved physical and mental health, increased productivity, and reduced healthcare costs. Furthermore, the study suggests that the fitness industry plays a vital role in the local economy, generating employment opportunities and stimulating economic growth. The results of this study provide insights into the benefits of fitness centre usage and its impact on the local community, offering implications for fitness centre operators, policymakers, and individuals seeking to promote health and wellness in the region. Overall, this paper contributes to understanding the socio-economic benefits of fitness centre use and its potential to improve individuals' quality of life in Jorhat district.

Keywords: *Productivity, health and wellness, consumer behaviour, healthcare cost, gym membership*

INTRODUCTION

The growing emphasis on health and wellness has increased the popularity of fitness centres in India, reflecting changing lifestyles and rising health awareness. Beyond improving

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physical well-being, fitness centres contribute to the economy by generating employment, stimulating local spending, and enhancing individual productivity (Kaur & Singh, 2020). Regular exercise helps prevent lifestyle-related diseases such as diabetes and hypertension, thereby reducing healthcare costs and improving quality of life (World Health Organisation, 2022).

In the context of Jorhat district, an emerging urban area in Assam, analysing consumer expenditure on fitness centres provides insight into both behavioural and economic dimensions of health investment. This study aims to examine consumers' spending patterns on fitness centres and evaluate their financial benefits, including improved productivity and reduced health care costs. The findings are expected to highlight the role of the fitness industry in promoting economic and social well-being.

LITERATURE REVIEWS

Baek et al. (2011) identified cost as a significant factor influencing gym-goers' behaviour. It indicated that consumers often balance perceived value with membership fees and convenience. Rand et al. (2013) investigated economic incentives for gym attendance, concluding that short-term financial rewards significantly increase attendance, but long-term behaviour requires intrinsic motivation. Zhang W et al. (2014) examine the consumer behaviour of health and fitness club members in the Liverpool area. It analyses who uses health and fitness clubs. It looks at why people use these clubs. This study used questionnaires and interviews. This study found that the main users are young adults, affluent individuals and those focused on health or appearance. Jyothirmal V et al. (2014) examined the factors influencing customers' decisions to attend fitness centres in Visakhapatnam. Researchers surveyed 100 fitness centre clients and found that the primary motivators were improved health and diabetes prevention (45 respondents). Other significant factors included combating early aging (23), developing self-control (19), and gaining social status (13). The findings offer insights for fitness center owners, trainers, and individuals interested in physical exercise. Luis A et al. (2018) studied the key factors influencing customer satisfaction in Brazilian fitness centres. This study involved 368 customers across four centers, focusing

on workout facilities, pricing and staff quality. The findings revealed that clients value a diverse range of well-maintained fitness equipment, the politeness and competence of instructors, and the overall cleanliness of the facility. In his study, Spoorthi M (2021) examined the relationship between health fitness consciousness and purchasing behaviour toward health-related products among 84 young adults (ages 18–35) in Bengaluru. Using a structured questionnaire and descriptive survey design, data were collected through both online and offline modes. Statistical analyses (correlation, t-test, ANOVA, Scheffe's test) showed a significant positive link between health fitness consciousness and purchasing behaviour, with individuals with higher health consciousness, rather than gender, as the focus in marketing and health promotion strategies. Khugshal R. (2021) shows the Importance and Benefits of gym exercises in her paper. Regular exercise, including gym workouts, offers significant physical and mental health benefits. This study highlights how exercise improves overall fitness, reduces stress and anxiety, and enhances self-esteem and memory. Regular exercise strengthens muscles and bones, lowers the risk of heart disease and blood sugar fluctuations, and combats cardiovascular issues. Aerobic exercises, such as brisk walking, are particularly effective at preventing osteoporosis. Regardless of age or gender, regular exercise promotes a healthier lifestyle by inducing positive changes in both artificial gym settings and natural environments.

Objectives of the Study

To Examine the Consumer Expenditure on Fitness Centres and to Evaluate the Economic Benefits of Fitness Center Usage in the Study Area.

Research Questions

1. What is the average monthly/annual expenditure on fitness centre membership?
2. How does fitness center usage impact healthcare costs and productivity among members in the study area?
3. How do fitness centres contribute to the economic well-being of individuals and the local community in the study area?

Significance of the Study

The significance of this study has been identified in several key areas. Firstly, this study's findings have provided valuable insights into the economic benefits of fitness centre use, which can inform policy decisions and promote investment in the fitness industry. Secondly, the study has contributed to the existing body of knowledge on the relationship between physical activity and economic outcomes, which can inform the development of more effective health promotion strategies. Furthermore, the study's findings have highlighted the importance of fitness centers in promoting physical activity and reducing healthcare costs, which can be used to advocate for increased funding and support for fitness initiatives. Overall, the significance of this study lies in its potential to inform policy and practice, promote investment in the fitness industry, and contribute to a better understanding of the relationship between physical activity and economic outcomes.

Research Methodology

In this study titled "Economic Analysis of Consumer Behaviour on Fitness Centres in Jorhat District," a structured methodology has been adopted to ensure a systematic investigation of the research problem. The research has been carried out using a quantitative approach, and qualitative data have been collected to analyse consumer expenditure patterns, economic benefits, and influencing factors related to fitness centre usage. The study has been designed to achieve its objectives through the collection of primary data from selected respondents. For the study, Jorhat district was purposively selected, known as one of the fastest-growing cities in Assam after Guwahati. Jorhat is a culturally, educationally and esthetically developed town. Administratively, the district is divided into five tehsils: Jorhat East, Jorhat West, Titabor, Teok, and Mariani. Of these, the eastern part of the district was purposively selected as a study area because places like Gar-Ali, KB road, and A.T. road are major centres of commercial and business activity, and most of the famous and well-rated gyms are there. The study used convenience sampling and included 105 gym members. This sample consisted of 15 respondents randomly selected from

each of 7 well-rated fitness centres (with ratings of 4.8 stars or higher) in the Jorhat East region.

Result and Discussion

Consumer Expenditure on Fitness Centers and to Evaluate the Economic Benefits of Fitness Center Usage

The fitness industry has experienced significant growth over the past few decades, driven by increasing awareness of the importance of physical health and wellness. As a result, fitness centres have become an integral part of modern lifestyles, offering a range of services and facilities to meet diverse consumer needs. Understanding consumer expenditure patterns on fitness centres is crucial for stakeholders, including gym owners, policymakers, and marketers, as it provides insights into the economic benefits of fitness centre usage. Consumer expenditure on fitness centres encompasses various aspects, including membership fees, personal training sessions, and ancillary services such as nutrition counselling and wellness programs, according to a report by the International Health, Racquet & Sportsclub Association (IHRSA), the global fitness industry generated over \$84 billion in revenue in 2020, with a significant portion attributed to membership fees (IHRSA, 2020). This substantial economic activity underscores the importance of examining consumer expenditure patterns in the fitness sector. The economic benefits of fitness centre usage extend beyond the revenue generated by the industry. Regular exercise and physical activity have been shown to have numerous health benefits, including reduced risk of chronic diseases, improved mental health, and enhanced overall well-being (World Health Organisation, 2018). By investing in fitness centres, individuals can potentially reduce their long-term healthcare costs, contributing to a more sustainable healthcare system.

Expenditure Patterns on the Fitness Center of Respondents

Expenditure on fitness centre members per month refers to the amount individuals spend on membership fees, services, and products offered by a fitness centre or gym. This expenditure can include costs such as membership dues, personal training

sessions, group fitness classes, and other services or products offered by the fitness centre (International Health, Racquet & Sportsclub Association, n.d.).

According to a Bureau of Labour Statistics report (n.d.), consumer expenditure on fitness and recreation services, including gym memberships, has increased over the years, indicating a growing demand for fitness services. Understanding the expenditure patterns of fitness centre members can help gym owners and managers tailor their services and pricing strategies to meet the needs of their target audience.

Monthly expenditure on gym membership fees across various fitness centres

An analysis is conducted based on a total of 105 valid responses—monthly expenditure on gym membership fees across various fitness center. The data reveal that 60 respondents (57.1%) spent ₹500-1000 per month on fitness, 30 respondents (28.6%) spent ₹1001-2000 per month, and 15 respondents (14.3%) spent above ₹3000 per month on fitness. This distribution indicates that the majority of respondents preferred spending between ₹500 and ₹ 1000 on fitness, while a significant proportion invested more in their fitness goals. The varying expenditure levels may be attributed to factors such as income levels, fitness goals, and personal priorities. By understanding these expenditure patterns, fitness centers can tailor their services and pricing strategies to meet the diverse needs of their target audience.

Expenditure on gym-related products includes the cost of gym membership fees, protein and dietary supplements, fresh produce, and lean protein sources (Kamalakaran & Senthil, 2020). Tracking these expenditures helps individuals understand their spending habits, make informed decisions about fitness goals, and enables gym owners to tailor services to their target audience (Katz, 2019).

The overall costs associated with these services are determined by the individual's specific choices and requirements, including the type of membership, the complexity of the diet plan, and the frequency and nature of the training sessions. By combining these elements, individuals can create a holistic fitness program that aligns with their personal goals and budget.

Monthly Expenditure Includes Diet Plan, Personal Trainer

Monthly expenditure on supplements and diet plan. The data is categorised into two groups: those spending between ₹1,000 and ₹5,000 and those spending above ₹5,000. The data suggest that the majority of respondents (81.9%) spend between ₹1,000 and ₹5,000 on supplements and diet plans per month. This indicates that most individuals prioritise budget-friendly options for their fitness regimen. On the other hand, 18.1% of respondents spend more than ₹5,000 on supplements and diet plans per month. This group may include individuals who have personal trainers, as the cost of hiring a personal trainer can significantly increase monthly expenses.

It is observed that high-income individuals are more likely to spend above ₹5,000 on supplements and diet plans per month. This is because they have a higher disposable income and are willing to invest in premium fitness services, including personal training.

In contrast, individuals with lower incomes tend to prioritise budget-friendly options and spend between ₹1,000 and ₹5,000 per month on supplements and diet plans. This group may include students, working professionals, or individuals who are just starting their fitness journey. Some retired individuals are also willing to invest in personal trainers because it helps them with their gym activities, ensuring they can maintain their physical health and independence. It is found that the monthly expenditure patterns on supplements and diet plans vary significantly among individuals. While the majority prioritises budget-friendly options, a smaller group is willing to invest in premium fitness services.

The total expenditure on gym membership and supplements/diet plans is categorised into two groups. Without premium services, including personal training, it is observed that the expenditure tends to be around ₹6,500 or less, as gym fees and basic fitness needs are covered. With premium services, including personal training, the expenditure typically exceeds ₹6,500, reflecting the added cost of personalised guidance and support.

Improved Productivity

Improved productivity refers to the enhancement of an individual's or organization's ability to produce goods or services efficiently and effectively. According to a study published in the *Journal of Occupational and Environmental Medicine*, regular exercise is associated with improved productivity by enhancing cognitive function, reducing absenteeism, and promoting overall well-being. 105 respondents reported productivity improvements. The data suggests that a significant majority of individuals who engage in gym activities experience a positive impact on their productivity. Productivity is improved through regular gym activities, as physical exercise enhances cognitive function, boosts energy levels, and promotes overall well-being. By engaging in daily workouts or gym activities, individuals can experience these benefits, leading to improved productivity. As a result, their energy levels increase, laziness decreases, and working hours are extended, ultimately contributing to a more productive work environment.

Savings in Healthcare Costs of Respondents

Savings in healthcare costs refer to reductions in medical care and treatment expenses. According to a study published in the *Journal of Occupational and Environmental Medicine*, regular exercise and physical activity can lead to significant savings in healthcare costs by reducing the risk of chronic diseases and improving overall health.

It is observed that 56.2% of respondents reported savings in healthcare expenses, while 43.8% did not. The data indicate that a majority of individuals have experienced a reduction in their healthcare costs. Savings in healthcare expenses are achieved through regular visits to the fitness centre, as physical exercise is known to improve overall health and reduce the risk of chronic diseases. By spending time at the fitness centre, individuals can maintain a healthy lifestyle and reduce their healthcare expenses.

Based on primary survey data and case observations, it has been found that regular use of a fitness centre has led to noticeable improvements in individual productivity. Furthermore, approximately 50–60% of the members claimed to experience

a decrease in routine medical expenses over a six-month to one-year period, indicating a positive shift toward preventive healthcare behavior. It has been observed that expenditure on fitness gradually offset reduced spending on medication and doctor consultations, especially for lifestyle diseases such as obesity, diabetes, and high blood pressure. It has also been found that gym usage alone has not been considered sufficient by most members. Instead, an integrated approach that includes proper protein intake and a diet tailored to individual fitness goals has been widely adopted. This shift has been encouraged by gym trainers and dieticians who promote holistic health practices among clients. Therefore, overall monthly fitness-related spending often exceeds ₹5,000 for committed individuals.

Although the cost of maintaining gym memberships and dietary supplements has been perceived as expensive, their necessity for sustaining long-term health has been widely acknowledged. In today's fast-paced, sedentary lifestyle, the importance of regular physical activity cannot be overlooked. It has also been found that gym usage alone has not been considered sufficient by most members. Instead, an integrated approach that includes proper protein intake and a diet tailored to individual fitness goals has been widely adopted. Thus, the economic benefits of gym use have outweighed the initial monthly expenditure. Fitness centres have therefore not only been used as places for physical exercise but also considered essential investments in economic and personal health sustainability.

Is the Fitness Industry Contributing to the Local Economy?

It was found that all respondents agreed that the fitness industry contributes to the local community/economy. This response indicates that the fitness sector is widely perceived as economically beneficial within the Jorhat district. It was observed that many fitness centres in Jorhat are owned and operated by residents, and for several of them, this serves as their primary source of income. As a result, the fitness industry plays a significant role in generating livelihood opportunities for the local population. Moreover, employment is also created through the appointment of gym trainers, support staff, and

fitness consultants. In many cases, individuals earn part-time income by conducting fitness sessions or offering diet and nutrition advice. The local economy is further supported by the purchase of gym-related equipment, protein supplements, and fitness merchandise, much of which is sold through local suppliers and shops. Therefore, the fitness industry has been recognised as a valuable contributor to job creation, income generation, and entrepreneurial growth in the district.

Summary of Findings, Suggestions and Conclusion

- (i) Regular gym attendance was associated with improvements in both physical and mental health among members.
- (ii) A majority of the respondents reported increased energy levels, better cardiovascular health, and enhanced muscle strength.
- (iii) Gym users reported
- (iv) positive effects on mental well-being, including reduced stress, improved mood, and better sleep patterns.
- (v) Respondents were found to be more health-conscious and disciplined in lifestyle habits due to consistent fitness engagement.

Suggestions

In light of the findings presented in this dissertation, recommendations can be made to enhance future research and practical applications in this field. These suggestions aim to address the limitations encountered, build upon the strengths of the current study, and explore new avenues of investigation. The suggestion includes-

- (i) It is suggested that fitness centres introduce flexible pricing plans or packages to cater to different income groups, thereby encouraging broader participation.
- (ii) Awareness programs highlighting the long-term economic value of investing in fitness should be conducted to promote health-conscious expenditure.

- (iii) Subsidised membership options or loyalty rewards could be provided to retain regular members and reduce dropout rates due to high costs. It is recommended that fitness centres provide customised fitness and wellness plans focusing on both physical and mental health improvements.
- (iv) Regular health progress tracking and feedback should be offered to motivate members and enhance their satisfaction with health outcomes.
- (v) It is recommended that fitness centres provide customised fitness and wellness plans focusing on both physical and mental health improvements.
- (vi) Transparency in online ratings and user reviews should be maintained to build trust among potential members.
- (vii) Introductory offers, referral discounts, and family/group packages may be introduced to attract a wider customer base.

Conclusion

Based on the analysis, it has been concluded that the fitness industry plays a significant role in improving both individual health and the local economy in Jorhat district. The objective, which focused on consumer expenditure patterns and the economic benefits of fitness centre users, revealed that although gym memberships and related expenses (such as supplements, diet plans, and training services) were costly, they were considered a worthwhile investment. The cost was justified by the effectiveness of fitness activities in improving physical health, maintaining a healthy body mass index (BMI), and enhancing mental well-being.

Overall, it has been concluded that the fitness industry not only promotes health and well-being but also strengthens the community's socio-economic fabric. The respondents expressed high satisfaction with their respective gyms and indicated a strong willingness to continue their fitness activities in the future. The findings reflect that both physical transformation and community development can be achieved through a robust fitness culture, making the sector a valuable investment both individually and socially.

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Climate Shocks and their Impact on Livelihood, Society, and Economy: An Analytical Study of North East India

Tanmay Nandi*

Abstract

The North Eastern Region (NER) of India, which includes Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura, is one of the country's most climate-sensitive areas. In recent decades, the region has experienced repeated floods, droughts, and landslides that have disrupted lives and local production systems. This chapter looks at how these climate shocks affect livelihoods, social relations, and the regional economy. Using information from government publications, institutional databases, and scholarly research, the analysis shows that rising climate instability has reduced agricultural productivity, increased migration, and worsened income inequality. The chapter also points out institutional weaknesses that limit adaptation efforts. It concludes by stressing the need for coordinated planning, investment in green infrastructure, and community-based adaptation strategies to support sustainable and inclusive growth in the region.

Keywords: *Climate Change, Livelihood Vulnerability, North East India, Economic Resilience, Sustainable Adaptation.*

Introduction

Climate change is a major global issue of the twenty-first century. It affects not only the environment but also economic

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growth, human well-being, and geopolitical stability. Rising temperatures, shifting rainfall patterns, and more frequent extreme weather events disrupt ecosystems and production systems worldwide. According to the Intergovernmental Panel on Climate Change (2023), developing regions are the most affected by climate change. These economies often rely heavily on agriculture, forestry, and other natural resource-based activities. They also lack the financial and technological means to adapt quickly. This makes their populations more susceptible to environmental shocks like floods, droughts, and heat waves. In India, the North Eastern Region (NER) holds a unique position due to its complex landscape, cultural diversity, and ecological sensitivity. The region includes eight states: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura. It covers about 8% of India's geographical area and 4% of its population (Census of India, 2011). The region is rich in natural resources, such as forests, rivers, and fertile plains, but it also faces geographical vulnerability. The mountainous terrain, steep slopes, and high rainfall make it prone to floods, landslides, and soil erosion. Each year, the Brahmaputra and Barak river systems overflow during the monsoon season, flooding large areas of Assam, Tripura, and Manipur. Meanwhile, states like Arunachal Pradesh and parts of Nagaland are starting to see irregular rainfall and short-term droughts that were rare in the past. This unpredictable climate signals a gradual shift in the region's weather patterns, threatening the environment, the economy, and traditional lifestyles. The economic vulnerability of the North East is closely tied to its reliance on agriculture. Over 70% of the population depends on farming and related activities for their livelihood (NITI Aayog, 2022). Most of this agriculture relies on rainfall rather than irrigation. This means that farmers depend directly on the timing and intensity of monsoon rains. Even slight changes in rainfall or temperature can significantly affect crop yields, household income, and food security. Beyond immediate losses, repeated floods and droughts force families to move, damage public infrastructure, and disrupt social networks. These climate-related shocks lead to broader social and demographic changes. Flooding and erosion along the Brahmaputra displace many people every year, causing migration from rural areas to cities. As people

seek work or shelter, traditional community bonds weaken, and new pressures arise in already crowded towns. Climate-related disruptions often worsen inequalities. Poorer families recover more slowly while wealthier ones can adapt through credit, technology, or relocation. Gender disparities increase as women take on greater responsibilities in managing households, caregiving, and subsistence farming during crises. Given these complex interactions, this study examines how climate shocks collectively impact the livelihoods, social structures, and economic conditions of the eight North Eastern states. The goal is not only to document the losses but also to understand patterns of vulnerability and adaptation. By synthesising evidence from government data, research studies, and institutional reports, this chapter aims to identify practical strategies, like climate-resilient agriculture, improved infrastructure, and community-led adaptation, that can strengthen the region's resilience and promote sustainable development in a changing climate.

Review of Literature

Scholars have long explored the links between the environment and livelihood security. Chambers and Conway (1992) introduced the sustainable livelihoods framework, arguing that well-being depends on the strength and variety of economic, social, and environmental assets. Sachs (2015) expanded on this perspective, showing how climate change worsens global inequality, especially in areas with limited adaptive capacity. Research in India has documented similar trends. Sharma and Pant (2019) found that climate variability lowers crop yields and rural incomes. The Economic Survey of India (2022–23) noted that rising climate stress is a major reason behind rural distress and migration. Mukherjee et al. (2020) highlighted the North East's dual vulnerabilities—environmental fragility and limited connectivity—that increase the impacts of disasters. Studies focusing on specific states provide valuable insights. Das and Baruah (2021) discussed flooding- and erosion-induced displacement in Assam, while Bordoloi and Singh (2022) examined how changing rainfall patterns affect tea plantations. Chakraborty et al. (2023) highlighted gendered vulnerabilities, noting that women bear disproportionate burdens during adaptation. Despite these contributions, detailed studies

covering the entire NER are limited. Most research focuses on individual states or isolated challenges. This chapter seeks to address that gap by synthesising evidence across all eight states and showing how climate shocks shape livelihood systems, social change, and regional economic trends.

Objectives of the Study

1. To identify the major types and frequency of climate shocks and how these events influence livelihood and income generation across North East India.
2. To analyse social consequences, including displacement, migration, and gendered vulnerability.
3. To evaluate the macro-economic repercussions on productivity, employment, and inequality.

Research Methodology

Nature of the Study

This study uses a descriptive-analytical research design, suitable for understanding complex phenomena such as climate shocks and their social and economic effects. The descriptive part documents the patterns of climate-related events in the North Eastern Region (NER), such as floods, droughts, and landslides. The analytical part goes further, examining how these events influence livelihoods, social structures, and regional economic performance. Significantly, the study relies solely on secondary data, meaning no primary surveys or field observations were conducted. This approach is valid because the region has a wealth of publicly available climate, economic, and demographic data from credible sources. Using secondary data also allows for capturing long-term trends spanning 10 to 20 years more effectively than short-term primary surveys.

Data Sources

Information was gathered from official publications of the Ministry of Environment, Forests and Climate Change, the National Disaster Management Authority (NDMA), NITI Aayog, the Indian Meteorological Department (IMD), and the Reserve Bank of India (RBI). Reports from the North Eastern Council (NEC) and academic works from institutions like TERI, ICAR,

and IIT Guwahati were also reviewed. Global perspectives were drawn from the IPCC and World Bank.

Analytical Approach

Trend analysis was applied to rainfall and temperature data over the past two decades, and comparative assessments examined differences among states. The discussion interprets these patterns through the sustainable livelihoods framework, linking environmental shocks to social and economic outcomes.

Study Area

The study covers all eight North Eastern states—Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura—each representing different ecological zones while sharing common vulnerabilities.

Analysis and Discussion

Nature and Frequency of Climate Shocks

Climate conditions in North East India have become more unstable over the past few decades. Data from the Indian Meteorological Department (IMD, 2023) show a gradual warming trend, with average temperatures rising by about 0.12 °C every decade. Although this may seem small, even slight temperature increases can lead to significant environmental changes. The region has also seen a 10–15 per cent rise in extreme rainfall events, indicating that rainfall is becoming more concentrated and less evenly distributed throughout the monsoon season. This change in rainfall is particularly evident in states like Assam and Meghalaya, where heavy monsoon rains often result in widespread flooding. These floods are not just rare occurrences; they happen almost every year. Meanwhile, states such as Arunachal Pradesh and Mizoram are experiencing more landslides and flash floods, mainly because heavy rainfall on steep hillsides destabilises the soil. The National Disaster Management Authority (NDMA, 2022) reports that around 1.7 million people in Assam are affected by floods each year, with nearly one-third of the state's land submerged. This constant exposure weakens households and infrastructure over time. Conversely, despite being generally high-rainfall areas, Manipur and Nagaland have recently begun experiencing

drought-like conditions that are damaging crops and straining water resources. Overall, these trends show that the monsoon rains—traditionally relied on—are becoming less reliable. This unpredictability complicates crop planning, road building, and disaster management, increasing the region’s vulnerability to climate shocks.

Impact on Livelihood

The livelihoods of people in the North East are closely connected to the environment, particularly agriculture. Since over 70% of the population relies on farming, any disruption in rainfall or temperature directly impacts household income, food availability, and local markets. According to the Ministry of Agriculture (2023), annual crop losses in Assam and Tripura are estimated between ₹1,200–1,500 crore. The crops that suffer the most damage include rice, jute, mustard, vegetables, and seasonal fruits. In flood-prone districts, fields are often underwater for weeks, destroying crops, while in drought-affected areas, seeds fail to sprout or yield very little. Tea cultivation, especially in Assam and Meghalaya, faces similar hardships. Bordoloi and Singh (2022) highlight how erratic rainfall, prolonged dry spells, and increased pest problems have lowered both the quantity and quality of tea leaves. Since tea is a key export product, these disruptions have national and international economic repercussions. In response to ongoing climate shocks, rural households often adapt by finding alternative sources of income. They may turn to small-scale trading, transportation services (such as auto rickshaw driving or e-rickshaw driving), livestock rearing, or daily wage labour. While this diversification shows resilience, many of these alternative jobs are informal, offering low pay, no insurance, and little job stability. This means that while diversification may alleviate immediate hardships, it does little to reduce long-term vulnerability.

Social Impacts

Beyond the economic damage, climate shocks profoundly affect the social structure of the North Eastern Region. Annual flooding in areas like Dhemaji, Lakhimpur, and Dhubri forces thousands to leave their homes. The Northeast Development Agency (2023) estimates that around 4 lakh people are displaced

each year due to floods. Many move to temporary shelters or informal settlements near urban centres, where they struggle to find stable employment, access electricity, secure clean water, and provide their children with an education. Migration patterns are also shifting. As agriculture becomes less reliable, many men—especially younger adults—leave for cities in search of daily-wage work, leaving behind women, the elderly, and children. This shift places additional burdens on women, who must balance household duties, farming, and caregiving. Chakraborty et al. (2023) note that women experience increased psychological and physical stress during climate disasters, and their access to resources, education, and decision-making remains limited. Climate shocks also weaken traditional community support systems that historically helped families recover from disasters. Practices such as communal farming, shared labor, and collective festivals are fading as displacement and migration disrupt social ties. This decline in community bonds reduces resilience and leaves vulnerable households even more isolated.

Economic Impacts

The economic effects of climate shocks in North East India go beyond individual households—they impact the entire regional economy. According to the RBI Regional Report (2022), the North Eastern Region contributes just 2.8% to India's GDP, and this share is gradually decreasing. One key reason is the repeated destruction of crops, roads, embankments, schools, bridges, and power lines during floods and landslides. The Economic Survey of Assam (2023) states that Assam alone faces over ₹6,000 crore in flood damage each year. This includes losses to agriculture, livestock, housing, and public infrastructure. When roads and bridges are washed away, transportation costs rise sharply, disrupting supply chains and reducing producers' competitiveness. The World Bank (2021) estimates that combined economic losses from natural disasters across the region total about US\$1.3 billion annually. These losses build over time, hindering long-term development. Wealthier families and large businesses recover more quickly due to savings, insurance, or

diverse income sources. In contrast, small farmers and informal workers often sink deeper into poverty after each disaster, worsening existing inequalities and limiting social mobility.

Institutional and Policy Response

The governments of the North Eastern states, along with national institutions, have put several policies in place to manage climate risks. One of the most important efforts is the creation of State Action Plans on Climate Change (SAPCCs) under India's National Action Plan on Climate Change. These plans outline state-specific adaptation strategies that focus on agriculture, water resources, forests, and disaster management. However, progress has been uneven despite these frameworks. Several challenges hinder effective implementation:

- Insufficient data on climate patterns at the district and block levels. • Inadequate funding, especially for long-term resilience building.
- Weak coordination between departments responsible for the environment, agriculture, water, and infrastructure.
- Limited engagement with local communities, who have valuable knowledge for adaptation. Some promising initiatives do exist.

The Flood Early Warning System (FEWS) in Assam provides real-time flood alerts, significantly improving preparedness. In Meghalaya, integrated basin development programs promote water conservation and sustainable land use. However, these efforts are often limited to specific districts and do not apply uniformly across the region. A key issue is that climate policy is still mostly treated as an environmental matter. It is not integrated with economic planning, fiscal policy, and regional development strategies. For the North East to build lasting resilience, climate adaptation must become a key part of development planning at the state and district levels.

Findings

- High exposure: Every state in the region faces significant climate risk; Assam, Arunachal Pradesh, and Meghalaya are the most affected.

- **Agricultural fragility:** Heavy dependence on farming increases the impact of floods and rainfall variability.
- **Inequality:** Recovery favors wealthier households and widens socio-economic gaps.
- **Gender disparity:** Women bear disproportionate responsibilities during and after climatic events.
- **Fragmented governance:** Adaptation initiatives remain under-resourced and poorly coordinated.
- **Community potential:** Local ecological knowledge and cooperative practices could serve as grounds for sustainable adaptation if systematically supported.

Policy Suggestions

- Integrate climate concerns into economic planning so that budgets and development schemes clearly account for risk.
- Promote climate-smart agriculture through flood-tolerant crops, mixed farming, and better irrigation.
- Invest in green, resilient infrastructure—roads, embankments, drainage systems, and warning systems—through public-private partnerships.
- Empower local institutions with data, training, and financial resources to enact state climate action plans.
- Encourage livelihood diversification into micro-enterprises, tourism, and skill-based industries.
- Expand financial inclusion by offering micro-insurance, credit, and recovery grants to vulnerable households.
- Adopt gender-responsive adaptation policies that include women in planning and provide targeted support.
- Create a regional coordination mechanism, such as a North East Climate Coordination Council under the NEC, to align strategies across states.

Conclusion

The situation in North East India shows the complex link between environmental change and socio-economic vulnerability. Climate shocks in the region, whether in the form of floods, long dry spells, or frequent landslides, are not just natural events. They disrupt daily life, affecting how people earn income, how

communities function, how goods are produced and moved, and how families make long-term decisions. Each climate event leaves behind not just physical damage but also lasting effects on livelihoods, health, migration patterns, and regional development. The analysis makes clear that while the North Eastern states have begun developing policy frameworks to address climate risks, these measures often operate independently of broader development planning. As a result, disaster response typically remains reactive, focusing on relief and compensation instead of prevention or transformation. Climate change is no longer a sporadic challenge; it is becoming a constant pressure that shapes the region's economic and social landscape. This requires a significant shift in how climate issues are approached. Moving forward, the region needs to shift from short-term relief measures to long-term, inclusive adaptation strategies. These strategies must involve local communities, who have valuable traditional knowledge and are often the first responders during disasters. Building resilience will also require investment in durable, climate-resilient infrastructure, such as flood-resistant roads, improved embankments, early warning systems, and decentralised renewable energy systems. Moreover, there is a growing need to encourage innovation—ranging from climate-smart agriculture and water-efficient technologies to community-based disaster management and green job opportunities. These innovations can help diversify livelihoods, reduce reliance on climate-sensitive activities, and support more stable economic paths for households. Ultimately, ensuring climate security in the North East is not just crucial for environmental protection; it is vital for promoting stability, reducing inequality, and supporting inclusive regional development. A resilient North East, better equipped to withstand and adjust to climate shocks, will be in a stronger position to sustain economic growth, protect vulnerable populations, and preserve its rich ecological and cultural heritage for future generations.

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An Economic Contribution of Backyard Pig Rearing on Livelihood Security of Scheduled Tribe People: A Case Study in Dhemaji District, Assam

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Abstract

This study examines the influence of backyard pig rearing on livelihoods among the Scheduled Tribal communities of Assam, with a case study of the Mising community in Dhemaji district. Both primary and secondary data were used, with primary data collected from 100 randomly selected households across four villages in Dhemaji Development Block. The findings reveal that the highest-priority use of income is support for children's education, highlighting that income from pig rearing plays a vital role in providing better educational opportunities. Overall, backyard pig rearing emerges as a key livelihood activity, supporting both immediate needs and long-term security for ST families in the study area.

Keywords: Backyard Pig Rearing, Scheduled Tribe Population, Livelihood, Assam.

Introduction

Livestock plays a crucial role in enhancing the socio-economic conditions of rural households. In rural areas where opportunities in non-farm sectors remain limited, marginal and small farmers, along with landless labourers, depend heavily on

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livestock for their livelihoods. These groups together account for nearly 70% of the total livestock population, highlighting the significance of livestock rearing as an important source of income, employment, and economic security (Ali, 2007). India's livestock sector is one of the largest in the world. India has 56.7% of the world's buffaloes, 12.5% of the world's cattle, 20.4% of the world's camels, 1.4% of the world's equine, 1.5% of the world's pigs, and 3.1% of the world's poultry (Livestock Census, 2019). In 2010-11, livestock generated outputs worth Rs 2,075 billion, which comprised 4% of the GDP and 26% of the agricultural GDP (Brithal, 2008). The total output worth was higher than the value of food grains. The agriculture sector engages about 57% of the total working population and about 73% of the rural labour force. Livestock employed 8.8% of the agricultural workforce, albeit it varied widely from 3% in the North-Eastern states to 40-48% in Punjab and Haryana (Brithal, 2008). Moreover, animal husbandry promotes gender equity (Waters, 2010; Devendra, C., 2014). Women meet more than three-fourths of the labour demand in livestock production. The share of women's employment in the livestock sector is around 90% in Punjab and Haryana.

In livestock sector, piggery plays a significant role due to its notable contribution to income generation and the socio-economic development of rural households. Pigs are mammals with fat yet cute bodies, flat snouts that can move independently of their heads, tiny eyes and large ears. They are brilliant, social animals found worldwide.

In recent times, many individuals have begun backyard pig rearing to support their livelihoods. People who rear pigs know that pig rearing can generate income and enhance livelihood security. Some people do not know whether this farming can actually secure their livelihood. Keeping all these aspects in mind, this study examines the contribution of backyard pig rearing to the livelihood security of ST people in Dhemaji district of Assam. This study examines how backyard pig rearing secures the livelihoods of ST people in the study area. The result of this study has been helpful for the other people in the region who are not related to backyard pig farming, which will generate additional income.

Literature Review

Bhandari et al. (2007), in a study of the Kali-Khola watershed of Nepal, examined household livelihood security across highland and lowland communities using economic, ecological, and social indicators. Grounded in the livelihood security framework articulated by Lindenberg (2002) and Chambers and Conway (1992), highlighted that agriculture alone is insufficient to ensure sustainable livelihoods in watershed communities. Focusing on gender dimensions, Adisa et al. (2012) assessed women's participation in poultry production in Oyo State, Nigeria, using primary data from 244 women producers. The findings revealed high involvement in production and marketing activities but limited participation in processing. Although women were engaged in all identified poultry-related activities, overall participation was low, indicating a need for capacity-building and empowerment interventions. In the Indian context, Borgohain et al. (2013) investigated motivational factors influencing piggery farming in the Kamrup district of Assam. The study found that middle-aged farmers, particularly from Scheduled Tribe communities, were predominantly engaged in pig farming, as piggery provided a significant supplementary source of income compared to agriculture alone, especially in regions with limited non-farm employment opportunities.

Objective

The primary objective of this study is to evaluate the contribution of backyard pig rearing to the livelihood security of ST people in Dhemaji district.

Methodology

This study is based on both secondary and primary data. Primary data are collected from 100 Mising tribal households that had rearing pigs from four villages of Dhemaji development Block of Dhemaji district. This research used multistage sampling and a simple random sampling method to select the study area. Secondary data such as various government report is used to discuss the overview of the pig rearing in Assam and Dhemaji district.

Garret Ranking method is used to analyse most significant sector on which the farmer spent their most of the income earning from pig rearing

Discussion

Pig Farming in Assam

Assam, India's 16th largest state, is home to a population of over 31.2 million, ranking it 15th among Indian states in terms of population, according to the Director of Economics and Statistics, Government of Assam. Agriculture and its allied activities form the backbone of the state's economy, with over 56.5% of the primary workforce and 64.9% of marginal workers directly involved in this sector (Goswami, 2024). Recent data from India's livestock census (2019) underscore the significance of piggery in Assam. This data places Assam at the forefront nationally, with a pig population exceeding 2.1 million (Banik et al., 2016). This number is noteworthy, standing shoulder to shoulder with the pig population in countries like Ireland and Portugal.

Pig Farming in Dhemaji District

Dhemaji district was formed in 1989, with its headquarters in Dhemaji town. It comprises the erstwhile Dhemaji and Jonai sub- divisions. This district is composed mainly of plain valleys with a net sown area of less than 20%, half the state average. The district is one of the heaviest rainfall areas in Assam. According to the 2001 census, Dhemaji 's population was 0.57 million, of which over 90% were rural. In Dhemaji District, Nearly half of the population belongs to the Scheduled Tribes (ST). The tribes include the Misings (the largest group), Sonowal Kacharis, Bodos, Deoris, Lalungs, Hazongs, and ex-tea garden labourers. There are also a large number of Other Backwards Classes (OBC) people, the Ahoms and Chutiyas. (Deka, R., et al; 2007).

Pig farming occupies an important place in the livelihood system of the Mising community in Dhemaji district of Assam. Given the district's flood-prone ecology, recurring crop losses, and limited non-farm employment opportunities, piggery has emerged as a resilient and dependable supplementary livelihood option for rural households. Traditionally, pigs are

reared under backyard or semi-intensive systems using locally available feed resources such as kitchen waste, rice bran, and agricultural by-products. Among the Mising households, pig rearing is closely integrated with cultural practices, food habits, and social ceremonies, which ensures consistent demand and quick marketability. Economically, pig farming provides regular cash income, supports household consumption, and helps meet emergency expenses, thereby enhancing livelihood security. It is particularly significant for marginal farmers and landless households, who often lack access to formal employment or irrigated agriculture.

Use of earnings from pig farming in the study area:

Household expenses: In this study, household expenses include daily expenses in food, transportation, personal care, etc. It was clear from the survey that all sample farmers of the, used up to Rs 5000 in earnings from pigs for household expenses.

Medical expenses: The costs includes to treat or prevent injuries or diseases in pigs. It was clear that the entire population used approximately 5000 of their earnings on medical expenses for pigs in a year.

Children's education: In the study area, it was found that the sample farmers use part of their pig earnings for their children's education. It was observed that the majority of the farmers, i.e., 85.7%, spent Rs 5000-10000 on their children's education, and 14.3% spent less than Rs 5000.

Saving and investment: It is found that backyard pig farmers do not save from pig earnings; sometimes they save a little bit as cash, but not for long, rather than investing their money in other livestock, poultry, and agriculture.

Expenses for extending pig rearing practices: It is found that backyard pig farmers spend their pig sale earnings on expanding their pig farming practices. From the survey, it is revealed that the majority of the sample respondents, i.e., 72.7%, use Rs 4000-6000 to expand their pig rearing business, followed by 19.5% who use Rs 2000-4000 and 7.8% who use Rs 6000 and above.

Most significant areas on which the farmer spent: The Garrett ranking method offers backyard pig farmers a powerful tool for comprehensively assessing and addressing diverse

livelihood factors. By using the Garrett ranking method, the study determines in which sector the sample households spend the most with their earnings from pig. This structured approach not only facilitates a deeper understanding of their earnings and expenses but also helps the farmer diversify their income sources.

Here, the rank from 1-5 indicates the farmer's expenses accordingly. The Garrett's score for the above 5 factors calculated are shown in the table below-

Table 1 Garrett Score

Types of livelihood security factor	Total Garrett Scores	Average (percentage)	Rank
Children's education	3735	66.69	Rank 1
Household expenses	3300	58.9	Rank 2
Medical expenses	2724	48.64	Rank 3
Expanding pig rearing business	2115	37.76	Rank 4
Saving and investment	1701	30.37	Rank 5

Source: Field Survey

By using Garrett's ranking method, it is found that, farmers of backyard pig uses their pig income most in their children's education, which was given 1st rank and 2nd rank given to households expenses and 3rd rank given to medical expenses and 4th and 5th rank are given to expanding pig rearing business and saving and investment, respectively. This reflects the perception of education as a vital investment for the family's future, offering long-term socio-economic benefits. The consistently higher Garrett scores for this category indicate that, despite limited income, farmers consciously allocate resources to enhance their children's prospects.

Conclusion

The study clearly reveals that backyard pig rearing significantly contributes to the livelihood security of ST people in Dhemaji district. The highest-priority identified is support for children's education, indicating that income from pig rearing plays a vital role in providing better educational opportunities for their

children. This reflects that these farmers are highly conscious of the importance of their children's education and it can be inferred that earning from pig rearing has significant influence on making human capital among the ST people in the study area. This is followed by contributions to household expenses and medical needs, highlighting its importance in meeting essential daily and health-related requirements. Additionally, income is used to expand small businesses and for savings and investment, reflecting a growing focus on economic stability and future planning. Overall, backyard pig rearing emerges as a key livelihood activity that supports both immediate needs and long-term security for ST families.

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Betel nut as a Livelihood Strategy: An Analysis of the Quality of Life of Farmers in Nagaon District, Assam

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Abstract

Betel nut (Areca catechu) cultivation plays a significant role in the agrarian economy of Assam, particularly as a livelihood support for small and marginal farmers. This study examines betel nut farming as a livelihood strategy and assesses its impact on farmers' quality of life in Nagaon district, Assam. Using a descriptive and analytical approach, the study is based on both primary data collected from 156 farmer households in Nanaldawa and Kanchanpur villages of Rupahi Block and secondary sources. The findings reveal that betel nut cultivation is essentially a secondary occupation for most farmers due to its low investment requirement, minimal maintenance cost, and reliance on family labour. Although the earnings from betel nut farming are modest and characterised by price fluctuations and market uncertainties, they provide a stable supplementary income and contribute to household financial resilience. The study also highlights farmers' preference for organic fertilizers, eco-friendly packaging practices, and growing awareness of formal savings and insurance schemes. However, challenges such as small landholdings, limited market access, inadequate infrastructure, and vulnerabilities exposed during the COVID-19 pandemic continue to affect farmers' economic security. The paper concludes that with enhanced government support,

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improved market linkages, irrigation facilities, and targeted training programs, betel nut cultivation in Nagaon district has the potential to contribute meaningfully to sustainable rural livelihoods.

Keywords: *Betel Nut Cultivation; Livelihood Strategy; Quality of Life; Small Farmers; Assam; Nagaon District.*

Introduction

Betel nut, also known as areca nut, is the seed of the *Areca catechu* palm, a tropical tree cultivated widely across South and Southeast Asia. Traditionally, it has been used as a mouth freshener and a digestive aid. In Hindu culture, the betel nut symbolizes respect, honour, and auspiciousness, making it an essential element in rituals, religious ceremonies, and socio-cultural practices. Ancient texts such as Kautilya's *Arthashastra*, the *Sushruta Samhita*, and the *Kashyap Bhojan Kalpa* confirm that betel nut chewing has been practiced in India since antiquity. Its use became particularly widespread between 75 AD and 300 AD. Historical accounts also highlight its medicinal value for aiding digestion and respiratory health, as well as its cultural relevance, including references to its distribution during the visit of the Chinese traveller Yuan Shang (Ali et al., 2011; Bhatt, 2018).

Historical Origin and Cultural Significance

Although deeply embedded in Indian culture, evidence from archaeology, history, and linguistics suggests that both the betel vine and the areca nut originated in the Indonesian archipelago. They were introduced into India during the early Gupta period and gradually became a part of Indian cultural and religious traditions. In contemporary times, betel nut continues to be used widely as a masticatory substance, a medicinal ingredient, and a ceremonial offering in religious rituals and significant life events (Padilla, 2025; Anand, 2024; Bhuyan, 2024).

Regional Names of Betel Nut

The widespread use of betel nut is reflected in its many regional names. In India, it is known as *supari* (Hindi, Gujarati, Urdu), *tamol* (Assamese), *adukka* (Malayalam), and *pakku* (Tamil). Across Asia, it is called *binlang* in China, *jambi* in Indonesia, *kunsi* in

Myanmar, *bunga* in the Philippines, *puwak* in Sri Lanka, and *mak* in Thailand. These diverse names highlight its cultural integration across the continent (Ahuja & Ahuja, 2011).

Botanical Description

The *Areca catechu* palm typically grows to 10–20 meters in height and has a crown of 8–12 fronds. Its inflorescence bears both male and female flowers, and the fruit is a fibrous drupe measuring 5–10 cm long. Inside the fruit lies the nut, which varies in shape and contains a ruminated endosperm. Betel nut is commonly processed into two varieties: white and red. White betel nut is peeled, boiled, and sun-dried, giving it a mild flavour and long shelf life. It is especially valued in Assamese culture for rituals and social customs such as *tamul-paan*. Red betel nut is boiled or soaked to achieve its reddish colour and is widely consumed in Assam, where it holds commercial and cultural significance. (Ahuja & Ahuja, 2011; Bhuyan, 2019).

Medicinal Uses

Betel nut is traditionally believed to support digestion by stimulating digestive enzymes. It possesses antibacterial properties that help prevent dental decay and promote oral hygiene. The presence of coline is thought to provide mild analgesic effects. In Chinese medicine, betel nut has historically been used to treat respiratory ailments, including bronchitis and asthma (Ahuja & Ahuja, 2011; Ali, 2011).

Betel Nut Production in India

India is the world's largest producer of betel nut, with Karnataka, Kerala, and Assam being the major producing states. Ideal growing conditions include temperatures between 25°C and 35°C and annual rainfall of 2000–3000 mm. The crop thrives in well-drained, fertile soils with a pH of 5.5–7.5. Indian farmers often rely on organic fertilizers, such as compost and green manure, to enhance soil fertility. Modern irrigation systems, such as drip and sprinkler irrigation, are increasingly adopted to ensure proper moisture levels and improve productivity, especially in regions with inconsistent rainfall (**Directorate of Arecanut and Spices Development**). (2023).

Betel Nut Cultivation in Assam and Nagaon District:

Assam is one of India's leading betel nut-producing states, with Nagaon district standing out as particularly productive. Its favourable tropical climate, nutrient-rich alluvial soil, and abundant rainfall support extensive cultivation. Nagaon contributes over 12% to Assam's betel nut economy, producing more than 24,000 tonnes annually. The district's alluvial soil, enriched by the Brahmaputra River, has a pH of 5.5–6.5 and excellent moisture retention. Farmers in the region commonly use organic fertilisers and modern irrigation methods, supported by government subsidies (Directorate of arecanut and spices development, 2023).

Literature Review

Singha, R., & Singha, S. (2025) highlight the severe financial difficulties faced by farmers due to high interest rates, rising production costs, and declining commodity prices. Record crop production, combined with weak market demand, further depressed prices, prompting farmers to invest in larger equipment to improve efficiency. This increased competition for land, raising land prices and forcing farmers to borrow heavily. As a result, many farmers became highly leveraged and vulnerable to financial losses, leading to shrinking profit margins and cash-flow problems. Ray et al. (2003) reported that South Asia, particularly India, has widespread use of smokeless tobacco products such as betel quid and gutka. These products are linked to serious health risks, including oral and oesophageal cancers, oral submucous fibrosis, and complications during pregnancy. Although regulatory measures like the 2001 Tobacco Products Bill and gutka bans have been implemented, usage remains high. The study also shows that educational and awareness programs can significantly reduce tobacco consumption and related diseases. Katchova (2010) analyses financial stress among beginning farmers in the U.S. using USDA ARMS data. The study finds that older farmers and those with larger farms are less likely to face financial stress, while hobby farms and livestock farms are at higher risk. For beginning farmers, fewer factors significantly influence financial stress, suggesting that lenders should consider specific farm and farmer characteristics when assessing loan eligibility.

Objective of the Study

To assess the current financial status of betelnut farmers in the study area.

Area of the Study

India is the world's largest producer of betel nut, and Assam ranks third in national production, with Nagaon district being the leading producer within the state. For this reason, the study was conducted in Nagaon district. During 2021–2022, betel nut cultivation in Nagaon covered 24,175.68 hectares. Rupahi subdivision, under Nagaon district, is a vital betel nut–growing area with a total area of 267.63 hectares and a production rate of about 1,035 kg per hectare. Within Rupahi Block, the villages of Nanaldawa and Kanchanpur are key cultivation sites. Nanaldawa has 348.32 hectares of agricultural land (Census 2021), while Kanchanpur has 340.06 hectares (Land Use Data 2009). In Kanchanpur, betel nut production is approximately 1 tonne per hectare, based on the Crop Estimation Survey and the Assam Directorate of Economics & Statistics.

Sample Size

According to the 2011 census, the total number of workers in these two villages, namely Nanaldawa and Kanchanpur, is. In Nanaldawa village, there were 1341 workers, and in Kanchanpur village, 1291. By conducting a pilot survey, the researchers learned that 81875 farmers, households, or workers in Nanaldawa and Kanchanpur villages were involved in betel nut farming. Thus, the total number of farmers related to betel nut farming in this area is $81+75=156$ (total population of betel nut farming).

Methodology

This paper is based on descriptive, analytical, and historical enquiry using primary and secondary sources.

Discussion

Survey Findings on Farmers and Occupations:

A survey of 156 respondents from villages such as Nanaldawa and Kanchanpur shows that local occupations are diverse. About

41% of individuals are engaged in trading, 45% in manufacturing (mainly betel nut processing), and 3.8% in farming. Betel nut farming is a secondary occupation for 80% of respondents due to its low maintenance requirements, while 20% rely on it as their primary income source. The farming sector is male-dominated (70%), although women actively participate in planting, sorting, trading, and household-level processing.

Reasons for Choosing Betel Nut Farming:

Farmers reported choosing betel nut cultivation due to limited job opportunities, economic constraints, and the affordability of the activity, which requires minimal skill and investment. Most families cultivate betel nut on 2–3 *lusa* of land. Planting costs remain low, with 67.9% spending less than ₹1000. Seedlings are also inexpensive, with 70% of farmers paying less than ₹50 due to local availability. Labour costs are minimal because family members perform most of the work.

Packaging Practices

Coconut jute bags are the most widely used packaging material, with 80% of farmers preferring them over plastic due to their cost-effectiveness and environmental benefits. Many farmers have used these methods for 1–10 years, indicating long-term acceptance of eco-friendly packaging.

Sales and Marketing Patterns

Most farmers sell 2–3 kg of betel nut daily and 6–7 kg monthly, although 38% manage monthly sales of more than 8 kg. Annually, around 40% of respondents sell up to 15 quintals. Green betel nuts are the most popular product, sold by 70% of farmers. Prices range from ₹200 to ₹340 per day, depending on market conditions. Monthly earnings typically range from ₹ 1,250 to ₹ 2,000 for many households.

Demand Factors and Impact of COVID-19

Income generation is the primary reason for betel nut production, according to 88% of respondents. Only a small share uses it for personal consumption or medicinal purposes. The COVID-19 pandemic caused severe disruptions, including market closures, labour shortages, transportation difficulties, and storage

challenges. Many farmers suffered losses exceeding 60% due to their inability to harvest or sell their produce.

Savings, Finance, and Insurance Awareness

Financial behaviour among farmers is moderately stable. About 89% maintain some form of savings, mainly in formal institutions such as post offices, banks, and regional rural banks. Around 80% use formal saving channels, while 20% depend on informal methods due to low financial awareness. Most savings accounts are fixed-type accounts. However, 10% of respondents do not have access to banking facilities. Monthly savings generally remain below ₹5000. Health insurance awareness is improving, with 20–50% of respondents insured across different age groups, supported by government schemes and awareness programs.

Use of Organic Fertilizers

A significant number of farmers—80%—prefer organic fertilisers for their soil-enhancing properties, cost-effectiveness, and environmental friendliness. Materials such as cow dung, compost, and green manure are widely used, demonstrating a shift toward sustainable farming practices.

Conclusion

The financial situation of betel nut farmers in the surveyed region remains modest and vulnerable, heavily influenced by small landholdings, fluctuating market prices, and labour-intensive practices. While many farmers rely on secondary occupations to supplement income, savings and financial security remain limited. Challenges such as inadequate infrastructure, restricted access to formal credit, and vulnerabilities highlighted during the COVID-19 pandemic continue to affect livelihoods. Nevertheless, positive developments—including increased adoption of organic farming, eco-friendly packaging, and improved financial awareness—show promising potential. With continued government support, enhanced market linkages, improved irrigation facilities, and targeted farmer training programs, the betel nut sector in Assam, especially in Nagaon district, can achieve sustainable, resilient growth.

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Income Volatility and Financial Security Among Gig Economy Workers: A Study of Sivasagar District, Assam

Kamal Jyoti Patar*

Abstract

The gig economy has spread fast, altering the nature of labour relations and income distributions in the new economies such as India. Although digital platforms have provided more opportunities to work flexibly, it has also come with a high level of income uncertainty and financial insecurity. This paper explores the income volatility dynamics among the workers of the gig economy in the Sivasagar District of Assam in terms of their ability to cope with finances and their accessibility to social protection systems. The study on the dynamics of earnings volatility, spending habits and the effect of informal support systems on lessening financial risk is conducted in a mixed method design, which incorporates a combination of structured questionnaires and in-depth interviews. The results are likely to bring into the limelight the unstable nature of autonomy and economic exposure the nature of gig labour in semi-urban Indian settings. The paper can be put in context of the larger arguments on labour precarity, informalization, and digital labour in the Indian northeast, as it provides suggestions to policymakers on designing inclusive welfare systems to fit platform-based workers.

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Keywords: *Gig Economy, Income Volatility, Financial Security, Platform Labour, Precarious Employment, Sivasagar, Assam.*

Introduction

The emergence of the gig economy has changed the working character all over the globe, undermining the conventional patterns of employment and social protection. Uber, Swiggy, Zomato, Ola etc. are digital labour platforms that have empowered millions of people to receive short-term, task-based, and on-demand jobs. This revolution has been hailed as an advantage to labour flexibility and entrepreneurship, but has also created apprehensions about employment precarity, income insecurity and insufficient economic security. In general, gig workers globally are likely to experience unstable streams of income, lack of social benefits, and low bargaining in algorithmically controlled labor markets.

The gig economy in India has seen an impressive rise in the last ten years because of the fast rate of digitalization, unemployment among the young population, as well as the spread of mobile internet. Although the gig model offers livelihood opportunities, particularly in urban and semi-urban areas, the model also presents workers with enormous amounts of income volatility and economic fragility.

This duality of situations is expressed in the situation in Assam and in the more particular case in the Sivasagar District. Although Sivasagar is a semi-urban city with a rising level of digitization, the city has been experiencing a consistent rise in gig-based jobs, particularly in delivery and transportation services. Gig work provides young people in the area with a flexible way of earning due to the low levels of formal jobs. However, the inconsistency of the income, accompanied by increasing living standards and frailty of institutional protection nets, casts doubt on the future sustainability of such livelihoods. Also, not much empirical studies have been done to comprehend how gig employees in small towns such as Sivasagar cope with economic uncertainty or personal finances in the changing income situations.

This paper, hence, attempts to investigate the trends of financial security and income volatility with regard to gig workers in

Sivasagar, Assam. It will seek to establish significant sources of income insecurity, analyze financial coping strategies and access to formal and informal safety nets. The research sets the analysis in a regional context, which is why it adds to the larger topic of discussion of digital labour precarity in the northeast of India, which is commonly ignored by studies at the national level. The results are projected to offer important information to policy makers, platform operators as well as social welfare institutions to come up with inclusive systems that enhance economic stability and protection of workers within the gig economy.

Objectives

1. To examine the level and patterns of income volatility among workers in the gig economy.
2. To assess the level of financial stability and sustainability exhibited by gig workers in the region under investigation.

Literature Review

In their article “The Gig Economy, Platform Work, and Social Policy: Food Delivery Workers Occupational Welfare Dilemma in Hong Kong” published in *Journal of Social Policy*, Au-Yeung et al. (2024) provide a detailed discussion of the destabilizing effects of platform work based on the gig economy. Based on in-depth interviews conducted on 46 employees in the food delivering industry, the study exposes that algorithmic control, employment misclassification, as well as business transfer of risks to workers have all contributed to reducing access to occupational welfare (OW) benefits. Surprisingly, although workers appreciated the time flexibility that was availed by the gig platforms, a good number of them submitted to the non-payment of private occupational pensions since they perceived that working with gigs did not have anything to do with traditional welfare rights.

In their paper, “Gravitating the gig economy for reshaping the careers using technological platform in the digital age in an emerging economy”, published at *Journal of Information Systems and Informatics* (Mimi, A. & Mani, L., 2024), the authors look at how the gig economy is redefining the career of

young people in Bangladesh. Researchers are applying a mixed-methods approach involving surveys and ordinary interviews of 100 gig workers. This research proven that a significant percentage of university students and their recent graduates are participating in gig work not only to make money but also to advance their initial profession.

The research paper “Digital Capital and the Labor Market: Factors of Mutual Influence” by Bannykh (2020) presented at the International Scientific Conference “Far East Con” (ISCFEC) discusses the ways digital capital concept is transforming the labour market in the insular economies of the world. The research stresses that digital changes, including the emergence of remote labour, freelancing, and using tools like platforms, are not only changing the nature of a job but the organisation and workforce demand as well. Through a combination of theoretical insights and statistical predictions, Bannykh names one of the major issues: the digital divide that influences the digital economy participation by individuals and regions. Individuals who cannot afford enough digital skills or digital infrastructure will disproportionately enter into precarious, or informal employment, leading to an expansion of a precariat with precarious, or informal work.

In their article, “The Changing Nature and Organization of Work: An Integrative Review of the Literature” (Scully-Russ and Torraco, 2019), published in *Human Resource Development Review*, Scully-Russ and Torraco investigate how changes in the economic sphere, demographic changes and technological revolution are transforming the global labour market. The authors point out at the emerging popularity of freelance, contingent and gig work arrangement that is gradually replacing a traditional full-time employment. Within the larger platform economy, not only job structures are being modified, but the conceptualisation, access and organisation of work are changing as well. The article highlights not only the benefits but also the disadvantages that are brought by these changes as gig work presents flexibility and access to earnings but also poses the issues of job security, instability of income, the lack of social safeguards. Notably, the authors suggest a synthesised model in interpreting these changes in the context of Human Resource

Development (HRD), thus postulating that HRD practices need to change to accommodate the workers in the new labour climate. Such a reflection is especially applicable to the growth economies such as India, where the urban areas of like Assam are experiencing a boom of gig-based labor with little or no corresponding institutional supplement or protections to such workers.

In the article titled “ Digital economic development and its impact on economic growth in China: Research based on the perspective of sustainability” and authored by Jiao, S., & Sun, Q. (2021), the authors examine the relevance of digital transformation to the growth of urban economies in China. Their paper builds a broad digital economy index in 2011-18 that uses precise city-level data on 173 cities to measure internet development, digital literacy, and industrial efficiency to arrive at an index of digital economy scores. The results of their work demonstrate that the process of digital economic development entails a rather affirmative contribution to urbanization, and urban employment may be cited as one of the mediating factors. Interestingly, the latter also separates the concepts of direct and spillover effects, and it describes that despite the overall positive nature of both effects, the former is stronger.

Research Methodology

Research Design

The current research paper will use quantitative (analytical) research design to understand the dynamics of income volatility and financial security among the gig economy workers of the Sivasagar District of Assam. To describe the socio-economic traits, income patterns and financial behaviour of gig workers is the descriptive aspect of the study whereas the analytical aspect examines the relationships between income instability and some other things like financial coping strategies, access to credit, and the coverage of social protection.

Study Area

This research is carried out in the Sivasagar District, found in the Upper Assam. Sivasagar is a semi-urban environment, in which employment opportunities based on gigs, including

food delivery, e-commerce logistics, and ride-hailing, have grown along with digital penetration and young population involvement. The presence of the mixed economy in the district both urban service industry and rural livelihoods offers the perfect best environment to examine the incorporation of gig work in the local economic systems.

Population and Sampling

The target population would comprise of all the people involved in the gig and platform-based jobs in Sivasagar District. A sample size of 30 respondents will be used in this study and it will be adopted by employing a stratified random sampling technique to guarantee the distribution of respondents across various platforms. The sample will consist of full-time and part-time gig workers who would be compared in terms of the primary and supplementary earners.

Findings and Data Analysis:

Profile of Respondents

To recognise the socio-economic background of gig economy workers in Sivasagar District, primary data were collected from 30 respondents working across four major platforms such as Flipkart, Zomato, Swiggy, and Delhivery. The demographic and occupational profile furnish important context for analysing income volatility and financial security of GiG workers.

Table 1 Distribution of Respondents by Platform

Platforms	No of Respondents	% of Respondents
Flipkart	8	26.7
Zomato	7	23.3
Swiggy	9	30.0
Delhivery	6	20.0
Total	30	100

The figures indicate that the biggest percentage of the respondents (30.0) is using Swiggy, then Flipkart (26.7) and Zomato (23.3). This is indicative of the growing power of food delivery and logistic-based gigs in semi-urban settings such Sivasagar. Several employees stated that they would switch between

platforms based on seasonal demand and wage opportunities, which showed a dynamic and competitive labour market.

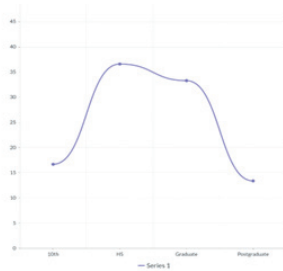
Table 2 Age-wise Distribution of Respondents

Age Groups	No of Respondents	% of Respondents
18-25	10	33.3
26-30	12	40.0
31-35	5	16.7
Above 35	3	10.0
Total	30	100

Table 2 shows that Most of gig workers (40.0) are between 26 and 30 years old group with 33.3% group being between 18 and 25 years. It implies that young adults are especially likely to be appealed by gig platforms, and a considerable number of them consider platform work an adaptable source of income when they cannot find regular jobs. A limited number of workers aged above 35 years participated in digital gig work, with only a small percentage (10) of the respondents having a age of above 35 years.

Table 3 Educational Qualification of Respondents

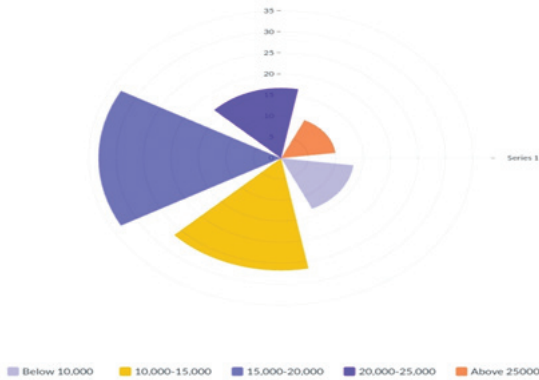
Education levels	No of Respondents	% of Respondents
Below HS(10th)	5	16.7
HS(10+2)	11	36.6
Graduate	10	33.3
Postgraduate	4	13.4
Total	30	100



The above graph shows that the vast majority of the respondents (approximately 70% of the total) have already attained Higher Secondary or Graduation, which indicates that the number of people who took part in the gig economy is not confined to people with low education. Other graduates reported that they used gig work as a means of temporary income when they looked for stable jobs. This demonstrates the increasing normalization of platform work in smaller towns in the hands of educated young people.

Table 4 Monthly income of Respondents

Monthly Income (₹)	No of Respondents	% of Respondents
Below 10,000	4	13.3
10,000-15000	8	26.7
15,000-20,000	10	33.3
20,000-25,000	5	16.7
Above 25000	3	10.0
Total	30	100



The above diagram shows that Most of the gig workers (approximately 60 percent) are paid between 10,000-20,000 on a monthly basis which means their earnings are modest and variable. A small portion (10 percent) of them receive more than 25,000, primarily, workers working longer hours or in

several delivery applications. The financial volatility of gig work was also often reported by the respondents who reported income variability because of changing customer demand and quantity of orders.

Major findings

1. Youth Dominant

A large number of gig economy workers in Sivasagar are in the 18-30 years age group. This shows that gig economy jobs are mainly attracting youth in search of flexible working opportunities or side-income sources because of a scarcity of formal employment opportunities in the given district.

2. Educational Profile & Aspirations

Approximately 70% of people have a Higher Secondary/ Graduate level of education, which shows platform work is not limited to people with no education. A considerable number of people see gig work as a source of employment with a goal of attaining stable and government jobs in future.

3. Platform Concentration

A large number of respondents are linked to Swiggy (30%) and Flipkart (26.7%), followed by Zomato and Delhivery. Food delivery and logistics jobs are most prevalent in the gig economy in Sivasagar because of the increasing retail and food chain establishments in this region.

4. Moderate but Unstable Income Levels

Earning capacity ranges from ₹10,000 to ₹20,000 per month, but this income can fluctuate depending on order quantities, fuel prices, climatic conditions, and time allocated online. Very few people in this profession earn above ₹25,000 a month, with just 10% of them falling under this category. Instability in income generation remained a major problem among respondents, especially when demand is low.

5. Absence of Social Protection

Access to formal social protection programs such as health insurance, provident fund/society, and pension schemes remains negligible. No respondent receives long-term social

welfare benefits from these online work platforms. The lack of which makes them more vulnerable financially when they are ill or need a break from work.

Conclusion

The research concentrated on income behavior, financial practice, and security issues of these platform laborers. On the basis of the collected primary data from 30 people working in companies such as Flipkart, Zomato, Swiggy, and Delhivery in Sivasagar, it can be concluded that gig economics in Sivasagar do not deliver economics. The analysis reveals that the majority of gig economy contributors belong to a young demographic (18–30 years) with a moderate level of education. They see platform work as a stopgap livelihood option rather than a serious career path. Although flexibility and immediate income generation are potential benefits of gig work, income variability, a lack of social safety nets, and poor financial literacy remain challenges for them. Autonomy and insecurity coexist in their experience, and this duality defines them, with gig economy workers valuing autonomy but being very concerned about the consequences in terms of uncertain income, savings, and benefits such as health insurance or pensions. In smaller towns such as Sivasagar, where jobs are limited, a safety net is provided through gig economy jobs but not financial sustainability. The conclusion drawn in this study is that without the introduction of effective institutional policies, the gig economy in the semi-urban region will continue to grow without adequate protection policies in place, thereby perpetually intensifying economic insecurity among the youth.

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Linking Learning into Earning: The Way Northeast India's Mental Health and Education Promote Skill Advancement

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Abstract

Linking learning with earning has become a central development concern, particularly for regions facing economic, geographical, and infrastructural constraints such as Northeast India. Skill advancement is no longer confined to technical training alone; it is increasingly influenced by education systems and the mental health of individuals. This paper examines how the integration of mental health and education promotes skill advancement and enables the effective transformation of learning into sustainable earning opportunities in Northeast India. Using secondary data from academic evidence, policy documents, and government reports, the study highlights the role of education in building cognitive and technical capacities and the role of mental health in enhancing motivation, resilience, and employability. The paper also discusses key skill requirements for workplace success and reviews major government and non-government initiatives supporting skill development in the region. The findings suggest that a holistic approach combining education and mental wellbeing is essential for

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inclusive skill advancement, employment generation, and long-term regional development in Northeast India.

Keywords: *Skill Advancement, Learning, Earning, Mental Health, Education, Northeast India.*

Introduction

Skill advancement refers to the continuous process of enhancing existing abilities and acquiring new competencies to meet evolving economic and technological demands. In today's dynamic labour market, individuals must constantly upgrade their skills to remain relevant, productive, and employable. Skill advancement involves not only technical proficiency but also cognitive, social, and psychological capabilities such as communication, problem-solving, adaptability, and resilience.

In Northeast India, skill advancement holds particular significance due to the region's unique socio-economic structure, geographical isolation, and limited industrial base. Traditionally, livelihoods in the region have been concentrated in agriculture, forest-based activities, and informal sectors. While these occupations remain important, they often fail to generate sufficient income or employment opportunities for a growing young population. Consequently, education and skill development have emerged as crucial pathways for economic inclusion and regional growth.

However, learning alone does not automatically translate into earning. Many educated individuals face unemployment or underemployment due to skill mismatches, lack of practical exposure, and psychological barriers such as low confidence, stress, and limited coping capacity. This highlights the importance of integrating education with mental health support to ensure that individuals can effectively convert learning into productive economic outcomes.

This paper focuses on the interrelationship between learning, earning, skill advancement, mental health, and education in the context of Northeast India.

Review of Literature

Existing studies establish that education significantly influences wages and employment outcomes. Card (1999) highlights

the positive causal effect of education on earnings. Research on earning while learning shows that employment related to one's field of study improves job prospects and long-term career outcomes (Geel & Gellner, 2012). Maitra and Mani (2017) demonstrate that vocational training programmes in India significantly enhance employment and income, particularly for women from disadvantaged backgrounds. Studies focusing on Northeast India emphasise vocational training as a tool for empowerment, employability, and social inclusion, despite persistent infrastructural challenges (Lucy, 2025). Pathak (2023) underscores the strategic importance of the Northeast and the need for inclusive development strategies centred on human capital.

Objective

The primary objective of the study is **to examine how the integration of mental health and education facilitates skill advancement by linking learning with earning in Northeast India.**

Methodology

The study follows a **descriptive and analytical research design** based on **secondary sources of data**. Information has been collected from published research articles, books, government reports, policy documents, programme evaluations, and official websites related to education, mental health, and skill development in Northeast India. The collected materials have been analysed using a **thematic approach** to understand the role of education and mental health in promoting skill advancement and employability.

Discussion

Concept of Skill Advancement and Workplace Skills

Skill advancement involves improving existing skills, acquiring new abilities, and adapting to changing job requirements and technologies. It includes both theoretical knowledge and practical expertise, enabling individuals to perform efficiently in competitive environments.

Some essential skills required for success in the workplace include:

- **Computer Skills:** Proficiency in basic computer applications such as word processing, spreadsheets, presentations, data analysis, and record keeping has become indispensable across sectors.
- **Technological Skills:** The ability to operate modern tools, digital platforms, and machinery improves efficiency and productivity.
- **Organisational Skills:** These skills help individuals manage tasks, time, and resources effectively within institutional settings.
- **Communication and Listening Skills:** Clear expression and active listening are crucial for teamwork, coordination, and service delivery.
- **Leadership and Decision-Making Skills:** These skills enable individuals to guide others, solve problems, and adapt to workplace challenges.

Together, these skills form the foundation of employability and career growth.

Need and Importance of Skill Advancement

The promotion of skill advancement is essential for both individual development and regional progress. Skill development helps bridge the gap between existing capabilities and labour market requirements, thereby reducing unemployment and underemployment.

Skill advancement contributes to goal achievement, personality development, and improved social status. By enhancing income-generating capacity, it improves living standards and reduces poverty. In Northeast India, skill advancement promotes regional growth by encouraging local entrepreneurship, reducing migration, and supporting diversified livelihood options.

Skill development also plays a significant role in women's empowerment. Access to vocational training, financial literacy, and psychological support enables women to engage in self-

employment and micro-enterprises, enhancing their economic independence and social recognition.

Linking Learning and Earning:

Learning refers to the lifelong process of acquiring knowledge, skills, and values, while earning represents the application of these competencies to generate income and sustain livelihoods. There exists a strong positive relationship between learning and earning, where higher levels of learning generally lead to improved earning capacity.

Learning enhances motivation, confidence, creativity, and adaptability. Individuals who continuously learn are better equipped to manage financial resources, plan careers, and respond to labour market changes. In regions like Northeast India, strengthening the learning–earning linkage is essential for transforming educational attainment into meaningful employment and sustainable development.

Role of Mental Health in Skill Advancement

Mental health is a critical determinant of learning capacity, adaptability, and productivity. Good mental health enhances concentration, memory, motivation, and resilience—qualities essential for skill acquisition and workplace performance.

In Northeast India, mental health challenges arise from limited healthcare infrastructure, geographical barriers, unemployment, and social stressors. Poor mental health often leads to absenteeism, low productivity, and dropout from education and training programmes.

Mentally healthy individuals are better able to cope with stress, adapt to new technologies, and perform consistently in sectors such as agriculture, tourism, handloom, hospitality, and services. Integrating mental health awareness into skill development initiatives enhances participation, retention, and learning outcomes, particularly among rural and tribal youth.

Role of Education in Skill Advancement

Education plays a foundational role in developing skills by building cognitive abilities, technical knowledge, and adaptive capacities. In Northeast India, education is increasingly aligned with region-specific economic opportunities.

Vocational programmes in tourism and hospitality in Assam and Meghalaya, music and performing arts education in Nagaland, and agricultural and technical education in Assam and Manipur illustrate how education supports skill advancement. Digital classrooms, smart schools, and community learning centres have further reduced geographical barriers and expanded access to global knowledge and market-relevant skills.

Education thus acts as a catalyst for employability, entrepreneurship, and inclusive growth in the region.

Skill Development Initiatives in Northeast India

Several initiatives demonstrate the practical linkage between learning and earning:

- **Pradhan Mantri Kaushal Vikas Yojana (PMKVY):** Provides skill training aligned with regional industries and emphasises certification and placement.
- **North Eastern Council (NEC) Initiatives:** Focus on agriculture, tourism, handicrafts, digital literacy, and entrepreneurship.
- **National Rural Livelihood Mission (NRLM):** Promotes sustainable livelihoods through skill training, self-employment, and financial inclusion.
- **NGOs and Private Sector Initiatives:** Offer training in IT, hospitality, handicrafts, agro-processing, and ecotourism, bridging traditional knowledge with modern market demands.

Conclusion

Learning and earning are deeply interconnected processes that form the foundation of skill advancement. In Northeast India,

the integration of mental health and education has significantly strengthened the ability of individuals to translate learning into sustainable earning opportunities. Education provides knowledge and technical skills, while mental health ensures motivation, resilience, and sustained participation in skill development initiatives. Together, they enhance employability, entrepreneurship, and regional economic growth. Strengthening this integrated approach is essential for inclusive development, reduced unemployment, and long-term prosperity in Northeast India.

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Entrepreneurship Opportunities in North-East India

Baby Karmakar*

Abstract

North-East India offers immense entrepreneurship opportunities due to its rich natural resources, strategic location, cultural diversity, and growing government support. Despite the presence of rich natural resources among nearly 200 tribes, their pace of development has been considerably slower than that of other regions in India. Many schemes by the government of India are provided for the NE region and its people to protect their biodiversity, minerals and other valuable resources. In India, the PMFME, Mudra Yojana, North East Region Vision 2035 (Niti Aayog), Nedfi, etc., are available for the North-East region to build more entrepreneurial skills. MoRD and NSDC launched several programs in the NE region for Skill development, helping people achieve self-employment opportunities and develop entrepreneurship skills, mainly among youths. So, this study tries to analyse the various entrepreneurship sectors in which the North-East people are engaged and also explore green economic development practices and sustainable tourism opportunities in the NE region

Keywords: *Entrepreneurship, NE Region, Skill development, Green Economic Development, Employment.*

Introduction:

Entrepreneurship is a frequently used word in the modern era, because population is growing day by day, and jobs are limited.

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So, to achieve employment status, it is necessary to build more and more entrepreneurs in our society. The North-East India region covers 7.97% of India's total geographical area and constitutes 3.78% its population (2011 census, Govt. of India). The eight states of North-East India are Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Tripura, Nagaland, together called "Seven Sisters States" and Sikkim (included in 2002) is called "Brother". The region has 200 ethnic tribes, diverse cultures and languages, large biodiversity, reserve forests, hills, mountains, rivers, minerals, animals, medicinal plants, and much more. All these geographical, cultural and natural significances create a spectacular visual of the North-Eastern Region.

Therefore, a region with such a specific characteristic is very favourable for developing people's entrepreneurial abilities.

Literature Review:

Das (2012), in his study, *Entrepreneurship through Micro Finance in North East India: A Comprehensive Review of Existing Literature*, explains different approaches to entrepreneurship development through microfinance. **Mitra A.** (2017), in his study 'Green Tourism Management in India: A 3D Study of the Seven Sisters States of North-East with Special Reference to Eco-Tourism', conducted a survey of the NE region on eco-tourism. The author spoke with travel agencies to gather information about eco-tourism and popularity of the states, constraints on tourism in NE, the use of different media for advertising, indigenous craft demand, state income from eco-tourism, etc. The author described the NE as the 'paradise unexplored'. **Hazarika** (2021), in his study titled "Resource Base of North East India: Problems and Prospects: A Descriptive Study," discusses the resources, problems, and prospects of the NE region. The author mentioned the status of hydropower potential in the Northeastern states, the geographical and forest areas, the potential of bamboo, human resource etc.

Objective of the study:

- 1) To study the various entrepreneurship sectors in which the North-East people are engaged.
- 2) To explore green economic development practices and sustainable tourism opportunities in the NE region.

- 3) To investigate the startup programs designed for entrepreneurship development in the case of the NE region.

Research Methodology

The present study is descriptive and analytical in nature and is based entirely on secondary data. Secondary data have been collected from various reliable sources such as government reports and publications of the Ministry of Development of North Eastern Region (DoNER), NITI Aayog reports, Startup India portal, North Eastern Council (NEC) documents, policy papers, census reports, research articles, journals, books, working papers, and authenticated websites. Data from tourism departments, MSME reports, and environmental sustainability studies have also been used to examine green economic practices and sustainable tourism opportunities in the region.

The collected data are systematically classified, tabulated, and analysed using qualitative and comparative analysis techniques. The study focuses on identifying major entrepreneurship sectors in which the people of North-East India are engaged, examining environmentally sustainable economic activities, and reviewing government-supported startup programs aimed at fostering entrepreneurship in the region. Conclusions are drawn based on trends and patterns observed from the secondary data sources.

Discussion:

Opportunities for Entrepreneurship Development in NE Region:

The sectors in which NE people are engaged or seeking employment are mainly agriculture and the handloom sector. About 60%-70% of people work in this sector; women's participation is more active than men's. Therefore, the industry which provides entrepreneurship opportunities for the people is discussed below :-

- a. **Handicraft and Handloom:** The tribes of the North East are famous for their Handloom and Handcrafted products. There are enough available resources in the region, which is why over 53% of looms and more than 50% of hand weavers come from the North-East. Bamboo and cane are their primary manufacturing tool. Some Famous Handloom

products of the NE region include Gamosa, Chador Mekhela, Naga Shawls, Phanek Inafi, and other traditional garments. While handcrafted products include: carpets, Kitchen utensils, japi, gold and silver jewellery (Gamkharu, Golpota, etc.), musical instruments, dolls, pottery, masks, etc. Assam silk is popular worldwide and is produced in three types: Eri Silk, Muga Silk, and Paat Silk. Muga Silk, also called 'Golden fibre', is produced only in the North East region. In the year 2020-21, 7976.03 MT of Silk was produced.

- b. Agriculture:** Agriculture is the main livelihood option of the NE region. Rice is a major agricultural product that employs more than 60% of the population. Other agricultural products include tea, sugarcane, potatoes, oilseeds, cotton, spices, and pulses. The tribes of the NE region practice Jhum Cultivation or slash-and-burn cultivation in the hilly areas and grow vegetables and agro-products. Table 1 presents major crops that are grown in 8 states of North East India.

Table 1: Major Agricultural Crops Grown in the NE region

State	Major Agricultural Crops
Assam	rice, jute, cotton, sugarcane, tea, rubber
Arunachal Pradesh	rice, wheat, jute, sugarcane, mustard, tea, garlic
Manipur	rice, corn, sugarcane, rubber
Nagaland	rice, corn, sugarcane, Jute
Mizoram	rice, cotton, sugarcane, rubber
Meghalaya	rice, wheat, cotton, jute, mustard, sugarcane, tea
Tripura	rice, wheat, sugarcane

Some agro-based practices followed by the people in the region are-

- I. Horticulture:** the cultivation of fruit, vegetables, flowers, and spices on agricultural land. An account of 5.1% horticultural fruits and 4.5% vegetables grown in the NE region. Major horticultural crops of the NE region include Pineapple, Citrus, Banana, Mango, Guava, Litchi, Papaya, Tomato, Potato, Cabbage, Lemon, etc.
- II. Floriculture:** Floriculture is the cultivation of various kinds of flowers (such as sunflowers, roses, hibiscus, orchids, etc.) and their import-export activities.

- III. Sericulture:** Sericulture is mainly followed by the Assamese people. The process of rearing silkworms for silk production is called sericulture. Only NE people produce the highest-quality silk garments, which hold traditional significance in the country.
- IV. Organic Farming:** Organic farming refers to agriculture practised with eco-friendly methods, using organic seeds, vermicompost, and organic manure. For healthy growth in sustainability and green economic development, organic farming is the most essential approach.
- V. Subsistence Farming:** The most common form of farming among NE people is subsistence farming. Here, farming is done only by a few people or a family to feed themselves. There is no motive of profit or sale of their products in the markets.
- a. Renewable & Non-Renewable Resources:** The region has abundant renewable and non-renewable resources. Based on these raw materials, many industrial units have been established in the area. The various industries of the area are given below-

Table 2: Major Industries of NE Region

Industries	Location
Oil Refinery	Digboi, Numaligarh, Bongaigaon, Noonmati- Assam
Petrochemicals Projects	Namrup, Bongaigon (Assam)
Paper Mills	Nagaon, Cachar
Cement Industries	Bokajan, Umrangshu, Badarpur and Sonapur (Assam), Hundung (Manipur), Tezu (Arunachal Pradesh), Cherapunjee, Jaintia hills (Meghalaya)

Source: Govt. of Assam, Industry and commerce 2024

Green Economy and Sustainable Tourism: -

The word 'Green Economy' refers to a model of development in which improvements in the standard of living and economic expansion occur by reducing environmental risks. The North-East region covers approximately 262,179 square Kilometres. It

has eight states, with dense forests and tourist attractions. Each state's geographical identity creates the perfect setting for green tourism. Some of the famous places of each north-east state are as follows-

Table 3: Major Tourist Places of the NE Region

State	Total Area (in sq. km)	Tourist Places
Assam	78,438	Kaziranga, Tezpur, Sivasagar, Majuli, Nameri, etc
Arunachal Pradesh	83,743	Tawang, Tezu, Sela Pass, Nuranang Falls.
Manipur	22,327	Loktak Lake, Ukhrul, Moirang, Khankhuikhunou
Mizoram	29,081	Phawngpui National Park, Champai, Lunglei
Meghalaya	22,829	Elephant Falls, Laitlum Canyon, Umiam Lake, Cherapunji
Nagaland	16,579	Dzukou Valley, Japfu Peak, Khonoma
Tripura	10,486	Nirmahal, Unakoti Rock Carvings
Sikkim	7,096	Yumthang, Kanchenjunga National Park

Source: Ministry of Development of North Eastern Region, (2025)

Sustainable Tourism is a mandatory fact in the current situation. In an era where global warming is causing climate change and other hazardous diseases, only sustainability can remove them. The need for sustainable tourism, therefore, arrived here. Sustainable tourism not only reduces harm to environmental resources but also promotes a sustainable cultural society.

A published report on the State of India's Forests 2023 suggests that, among the top states by area of forest and tree cover, Madhya Pradesh (85,724 km) ranked first. While Arunachal Pradesh (67,083 km) stood second in the list. On the other hand, Lakshadweep has the largest forest cover at 92 per cent. Mizoram, with 88.03 per cent forest cover, is the second, and the Andaman & Nicobar Islands, with 81.95 per cent forest cover, is the third.

In the Eight States of the NE region (Arunachal Pradesh, Nagaland, Mizoram, Meghalaya, Sikkim, Assam, Tripura,

and Manipur), along with the Andaman & Nicobar Islands and Lakshadweep, there is forest cover above 75 per cent. But deforestation is increasing day by day in the region, reducing forest cover. The most significant decrease in forest and tree cover was observed in Nagaland, at 125.22 sq km. Total forest & tree cover in the Northeastern region is 67% of the geographical area of these states. The Northeastern states continued to record a declining trend in forest cover. Only Mizoram recorded an increase of 178 sq km.

Entrepreneurship Skill Development Startups with Examples: -

- 1. Skill India** - PMKVY 4.0 implemented for FY 2022-26. Under PMKVY 4.0, the Government launched 30 Skill India International Centres, announced in the Budget 2023. These industry-related skill courses include New Age Skills such as Industry 4.0, Web 3.0, AR/VR, Climate Change, Green Economy, AI, EV Solar Missions, etc. A total of Rs 1244.52 crore has been utilised across all States and Union Territories of India to create more entrepreneurs. The government launched
- 2. Skill City:** The Assam Skill Development Council (ASDC) implements the "Skill City" mission in Assam, launched in 2015. The main aim of Skill City is to provide training in the Agricultural & Allied Sectors, Beauty, Construction, Healthcare, Hospitality, Technology, Retail, and many more. Skill City aims to develop individuals' overall personalities and learning potential, enabling them to earn their own livelihoods. By developing skilled individuals, the scheme fills the gap between labour supply and demand in industrial sectors. The scheme, in collaboration with international organisations, institutes, developed countries, and modern technology, operates its training programs and opens wider opportunities for the young generation of Assam to learn new skills and update their existing skills for the economic growth of the City and the State.
- 3. North East Skill Centres (NESC):** The North East Skill Centres (NESC) is an ASDM initiative that provides basic skills training to people in the North East, especially rural youth. ASDM signed a Memorandum of Understanding (MoU) with ITEES, Singapore, as a partner in developing

skills training for youth. The NESC was established in 2019 in Guwahati and provides world-class skill training across various programs. The main types of training included under NESC are as follows:

- i. Retail
- ii. Beauty and Wellness
- iii. Hospitality-Housekeeping
- iv. Hospitality-Food & Beverage Services

NESC, on behalf of ASDM, offers a free residential, job-oriented course under the Assam Skill University. The course duration is 1 year, and it is designed for SC candidates sponsored by the Directorate of Welfare of Scheduled Castes and Scheduled Tribes, Government of Assam. The eligibility criteria for inclusion in the NESC scheme are given below-

- a) The candidate must be a 12th pass from any recognised College/University.
 - b) The candidate must be in the age group of 17 to 25 years
 - c) The candidate should be physically and mentally fit.
- 4. Skill Hubs:** Under the PMKVY program, the government takes initiatives to provide placement-oriented training by expert trainers. MSDE funds it with a target to provide skill development to the young generation. The program's courses include Digital Marketing, Software Testing, Java, DevOps, Cyber Security, and Graphic Design.

All these initiatives of the Government of India are aimed at achieving the "Skill India Mission" launched in 2015 by Prime Minister Narendra Modi. The departments that support these government initiatives include the Ministry of Skill Development & Entrepreneurship, the National Skill Development Council, the Ministry of Rural Development, and other Non-Governmental Organisations. These departments establish various skill centres across India to transfer skills among the younger generation.

- 1. Nedfi (North Eastern Developmental Finance Corporation Ltd):** Nedfi was specially incorporated for entrepreneurship development practices in the North East region. It was implemented on August 9, 1995. The aim of Nedfi is to develop handloom & handicrafts,

provide vocational training and skill development, and empower women.

Limitations of Entrepreneurship Developmental Activities in the NE region:

Although there are enough resources and materials available in the North East, the region is not yet fully utilised. More than half of the population relies on agricultural activity. The families follow subsistence farming practices, and Lewis' dual sector model is applied in the North East region. Here, agriculture is done only to feed families, not for profit or sale. There are no major industries despite a large reserve of minerals and forest resources. The main limitations of can be seen in the following manner:

- 1) Agriculture activities have not progressed. The Green Revolution movement only impacts Gujarat, Haryana, and Punjab, but the North-Eastern region has still not benefited from it. People use traditional agricultural methods, which reduce crop productivity and yield.
- 2) There is no big industry established by the government of India. This indicates the underutilization of mineral resources. The lack of sufficient industrial units is the primary reason for the region's unemployment.
- 3) Another problem in the NE region is disguised employment. It is often seen in agricultural fields in the Northeast. Disguised employment is a burden to the economy. Their productivity gives no benefit to society.
- 4) Lack of infrastructure, capital, market relevance, and vocational training courses are the main reasons for entrepreneurship not developing in the region.
- 5) Another hindrance to entrepreneurship development is the skill gap. The government provides schemes to reduce the skill gap through NSDC programs, but it is quite slow in generating self-employed youth for the country. Many remain unemployed after completing government-provided vocational courses. This shows the limitation of skill development programs in the region.

Suggestions:

Promotional Activities: The government of India conducts promotional activities, such as advertisements, awareness campaigns, and guidance, to help NE youth understand the importance of entrepreneurship development for their self-employment.

1. Local governance attracts the mindset of the young generation by sharing success stories of youth who have become economically and socially stable after receiving training through skill development programs and starting their own businesses.
2. To create awareness of skill training and learning, workshops and seminars on skill development should be organised in schools, colleges, and universities so that young people are deeply inspired to become entrepreneurs.
3. The government of India must provide market-relevant courses to the young generation to help them learn new skills, enhance their potential, and upgrade their existing capacity.
4. The infrastructure of the skill centre needs to be developed, and reservations should be provided to increase women's participation in the skill development program. This will help to create women entrepreneurs in the handloom & handicraft sector.

The leading entrepreneurs of India are Bhavish Aggarwal (Co-founder of Ola-Cabs), Nithin Kamath (Co-founder of Zerodha), Sachin Bansal and Binny Bansal (Co-founder of Flipcart), Falguni Nayar (Co-founder of Nykaa) and many more entrepreneurs success journey, their struggle, mindset, ideas, their strategy etc need to be studied and adopt by the NE people so that they found a direction to go in their respective fields of interest.

Conclusion:

The overall discussion shows that there are enough resources available in the NE region, but they are not fully utilised. The main reason for this is the traditional mindset of the people. The majority of the population is still engaged in agricultural activities, which creates a seasonal unemployment problem.

Only a few people are involved in modern farming activities and in import-export in the open market. The government of India launches many startup programs to build entrepreneurs in the North East, but these programs have some limitations. More vocational training and skill development activities need to be adopted in the North East region so that more entrepreneurs can become self-employed by effectively using the available resources.

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