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MODERN PERSPECTIVES IN HUMANITIES, COMMERCE AND MANAGEMENT

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PREFACE

In an era defined by rapid globalization, digital transformation, and evolving socio-economic paradigms, the disciplines of Humanities, Commerce, and Management have assumed renewed significance. The book *Modern Perspectives in Humanities, Commerce and Management* is a thoughtful compilation of scholarly insights that reflect contemporary trends, emerging challenges, and innovative practices across these interconnected domains.

The Humanities continue to provide critical understanding of culture, ethics, language, history, and human values—elements that shape societies and guide responsible decision-making. Commerce, driven by technological advancement and global integration, has transformed the way markets operate, businesses compete, and economies grow. Management, as a dynamic and evolving discipline, integrates strategic thinking, leadership, entrepreneurship, sustainability, and data-driven decision-making to address complex organizational realities.

This volume brings together contributions from academicians, researchers, and practitioners who explore diverse themes such as digital economy, financial innovations, marketing strategies, human resource development, organizational behavior, cultural studies, communication dynamics, public policy, and sustainable development. The chapters collectively highlight interdisciplinary approaches and practical applications, bridging theoretical frameworks with real-world relevance.

The objective of this book is not only to disseminate knowledge but also to stimulate critical thinking, research orientation, and intellectual dialogue among students, teachers, scholars, and industry professionals. By presenting modern perspectives, it aims to encourage readers to analyze emerging global trends while remaining rooted in ethical and societal considerations.

We sincerely appreciate the valuable contributions of all authors, reviewers, and editorial members whose dedicated efforts have made this publication possible. It is our hope that this volume will serve as a meaningful academic resource and inspire further research and innovation in the fields of Humanities, Commerce, and Management.

- Editors

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SOCIETY, CULTURE, AND EDUCATION IN THE TWENTY-FIRST CENTURY: CONTEMPORARY PERSPECTIVES

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Abstract

The twenty-first century is marked by significant social and cultural changes brought about by fast globalization, advancing technology, and evolving social norms. Globally, these shifts have drastically altered educational systems, changing their goals, organizational frameworks, and methods. This chapter critically analyzes how society, culture, and education are interrelated in modern settings, emphasizing how education both influences and reacts to continuing social and cultural changes. The chapter examines how curriculum design is affected by globalization, how digital technologies are increasingly influencing teaching and learning processes, and how culture shapes educational policies and classroom practices. It does this by drawing on recent interdisciplinary scholarship from sociology, cultural studies, and education. Issues of socioeconomic inequity, cultural diversity, and inclusion receive special consideration, with a focus on the potency of education as a tool for fostering social cohesiveness and democratic engagement. The chapter makes the case that traditional educational models are becoming less and less capable of handling the complexity of contemporary cultures and that educational institutions need to change in order to foster critical thinking, digital literacy, cultural responsiveness, and fair access to educational opportunities. The chapter also addresses the effects of these changes on educators, legislators, and organizations, emphasizing the necessity of creative pedagogical strategies, culturally inclusive curricula, and regulatory frameworks that support them. Through placing education in the context of larger social and cultural dynamics, this chapter advances our knowledge of how education promotes inclusive, flexible, and future-ready communities. In order to address new issues in a world that is becoming more interconnected and culturally varied, the chapter also highlights important areas for future research.

Keywords: Society, Culture, Education, Globalization, Digital Transformation, Social Change.

1. Introduction

Social structures, cultural practices, and knowledge creation methods are undergoing extraordinary and swift changes in the twenty-first century. The way societies operate and how people create identities and social interactions has been profoundly changed by processes

including globalization, digitalization, transnational migration, and the growth of mass media. Cultural diversity, technological interconnection, and rising social mobility are characteristics of the complex, heterogeneous societies that have resulted from these changes [7][11]. Education has become both a byproduct of societal development and a potent tool for influencing social and cultural futures in this changing environment.

In the past, education was often regarded as a rather stable institution with a foundation in national priorities, established curricula, and consistent teaching methods. Its main purpose was to pass down cultural values, social standards, and established knowledge from one generation to the next [8]. Modern communities, however, contest this widely held belief. Today's educational systems function in quickly shifting contexts that are influenced by shifting cultural norms, technological advancement, and international economic competition. Therefore, education must be viewed as a socially embedded and culturally positioned practice that both reflects and responds to broader societal shifts, rather than just a neutral process of information transfer [3].

Education has changed significantly as a result of globalization. As countries become more interconnected, ideas, educational models, and policy frameworks are spreading beyond national boundaries. National education systems are increasingly influenced by international evaluations, global rankings, and transnational education reforms, which frequently advance standardized ideas of performance, accountability, and quality. At the same time, as student populations have become more diverse due to migration and movement, globalization has increased cross-cultural interactions in classrooms. These changes force educational institutions to strike a balance between local cultural settings and global competences, posing important queries regarding social cohesiveness, cultural identity, and curriculum relevance.

Another characteristic that sets 21st-century society apart is technological innovation. Online platforms, artificial intelligence, and digital technology have revolutionized the ways that people communicate, work, and study. With the incorporation of digital tools into teaching, evaluation, and information exchange, education has undergone a significant transformation. This shift was further sped up by the COVID-19 epidemic, which brought to light the potential of online education as well as the ongoing disparities in access to technology and digital literacy [13]. As a result, digital literacy is becoming a fundamental educational goal, and issues like data privacy, ethical technology use, and digital divides are becoming more and more prominent in educational discourse.

Understanding cultural change is also essential to comprehending modern education. Cultural diversity, shifting identities, and constant tensions between tradition and modernity are characteristics of modern societies. By influencing students' beliefs, worldviews, and social identities, educational systems play a critical role in mediating these cultural dynamics. Frameworks for multicultural and intercultural education place a strong emphasis on the

necessity of culturally sensitive teaching that views diversity as an asset rather than a problem [4]. However, education continues to be a place where social injustices and power dynamics pertaining to caste, language, ethnicity, gender, and class are perpetuated or challenged [6][16].

This chapter explores the complex and interconnected relationship between education, culture, and society in the twenty-first century. It examines how educational institutions, methods, and aims are impacted by contemporary social and cultural changes as well as how education itself promotes social development, cultural continuity, and social change. The chapter's compass is comprised of three primary questions:

- In what ways have digital technologies and globalization changed culture and society?
- What effects do these changes have on curricula, pedagogical approaches, and educational systems?
- What opportunities and difficulties do environments that are technologically complex and culturally varied offer to modern education?

To address these issues, the chapter takes an interdisciplinary approach that draws on concepts from educational theory, cultural studies, and educational sociology. By integrating recent research and theoretical perspectives, the chapter aims to provide a comprehensive understanding of education as a dynamic social institution located within larger cultural and technical contexts. In this way, it contributes to the ongoing conversations about how education may promote equity, sustainability, and inclusivity in a world growing increasingly varied and interconnected.

2. Conceptual and Theoretical Framework

Understanding the relationship between society, culture, and education requires clear conceptual and theoretical foundations. Education is not an isolated process; it operates within social structures and cultural contexts that shape its goals, practices, and outcomes.

Society refers to organized systems of social relationships, institutions, and norms that regulate collective life, including political, economic, and educational structures [11]. Education functions as a central social institution that contributes to social integration, skill development, and the reproduction or transformation of social structures.

Culture encompasses shared beliefs, values, language, symbols, and practices through which individuals interpret social life [10]. In education, culture influences curriculum design, pedagogy, classroom interaction, and assessment.

Education is a formal and informal process through which knowledge, skills, and values are transmitted across generations. Contemporary perspectives view education as a socially situated and value-laden process shaped by power relations and cultural priorities [3].

This chapter draws on key sociological and educational theories. Structural functionalism views education as a mechanism for socialization and social cohesion by transmitting shared norms and skills [8]. Conflict theory posits that society is in a perpetual state of conflict due to competition

for limited resources, driven by class struggle between the bourgeoisie (owners of production) and the proletariat (workers) [21]. Symbolic interactionism focuses on everyday classroom interactions, highlighting how meanings, expectations, and labeling shape learner identities and outcomes [5].

Cultural theories, particularly Bourdieu's concept of cultural reproduction, explain how schools valorize dominant cultural capital, contributing to unequal educational outcomes [6]. In contrast, multicultural and culturally responsive education theories advocate valuing cultural diversity to promote equity and inclusion.

Together, these perspectives offer an integrative framework for understanding education as a dynamic social institution shaped by and shaping society and culture in the twenty-first century.

3. Societal Transformations in the Twenty-First Century

The twenty-first century has witnessed significant societal transformations driven by globalization, digitalization, and persistent social inequalities. These changes have reshaped social structures, cultural practices, and institutions, directly influenced the aims and functioning of education. Education both responds to these transformations and plays a vital role in preparing individuals to navigate an increasingly interconnected and complex world.

3.1 Globalization and Social Change

Globalization refers to intensified economic, political, and cultural interconnections across national boundaries. In education, globalization has promoted global competencies, international benchmarking, and learner mobility, leading to curriculum reforms emphasizing global citizenship, intercultural understanding, and sustainability [15]. However, tensions arise between global educational models and local cultural identities, as standardized reforms may marginalize indigenous knowledge and local contexts [16]. Research suggests that globally oriented curricula are most effective when adapted to local realities and supported by teachers [4].

3.2 Digital Society and Technological Advancements

Digitalization has transformed social interaction and education through online learning, artificial intelligence, and digital platforms. While digital technologies expand access and enable personalized learning, the digital divide remains a major challenge, exposing inequalities in access and digital skills. Ethical concerns related to data privacy, surveillance, and commercialization further complicate digital education [19]. Digital literacy has therefore become a core educational priority.

3.3 Social Inequality and Inclusion

Despite technological and global advances, educational inequalities based on socioeconomic status, gender, ethnicity, and location persist. Globalization and digitalization often intensify these disparities, making social inclusion a central goal of education reform. Inclusive education policies aim to remove systemic barriers and promote equitable participation for all learners [1].

4. Culture in a Changing World

Culture in the twenty-first century is dynamic and continuously shaped by globalization, migration, and digital media. These forces have intensified cultural interactions, diversified identities, and transformed meaning-making processes. Education occupies a central role in this changing cultural landscape, acting both as a transmitter of cultural heritage and a space for cultural negotiation and transformation.

4.1 Cultural Diversity and Multiculturalism

Cultural diversity, resulting from migration and globalization, has made multiculturalism a defining feature of contemporary education systems. Multicultural education seeks to recognize and value cultural differences while promoting equity and social justice through inclusive curricula and culturally responsive pedagogy. Intercultural education further emphasizes dialogue and mutual understanding, requiring teachers to develop intercultural competence and inclusive classroom practice. Systemic support through culturally inclusive curricula and fair assessment is essential for meaningful educational inclusion.

4.2 Media, Popular Culture, and Youth Culture

Digital media and popular culture significantly shape youth identities and informal learning. Young people actively engage in global cultural flows, creating hybrid identities through media participation. While popular culture enriches learning, dominant global media narratives risk cultural homogenization and stereotyping. Education must therefore promote critical media literacy to enable responsible and reflective cultural engagement.

4.3 Cultural Preservation and Change

Globalization and digitalization enable both cultural preservation and cultural marginalization. Education plays a key role in balancing cultural continuity and change by integrating local knowledge and indigenous perspectives while preparing learners for global participation. UNESCO (2021) emphasizes that culture and education are mutually reinforcing foundations of sustainable development and social cohesion.

5. Education in the Twenty-First Century

Education in the twenty-first century is being reshaped by rapid social, cultural, and technological change. Traditional knowledge-transmission models are increasingly insufficient for preparing learners for complex, interconnected, and uncertain global realities. Contemporary education emphasizes adaptability, critical engagement, and social responsibility.

5.1 Changing Aims and Functions of Education

While basic literacy and numeracy remain important, education now focuses on lifelong learning, critical thinking, digital literacy, and global citizenship. Lifelong learning highlights adaptability and continuous skill development in rapidly changing economies. Global citizenship education promotes intercultural understanding, ethical responsibility, and social justice.

Research also emphasizes twenty-first-century skills such as collaboration, creativity, problem-solving, and resilience as essential for holistic learner development.

5.2 Curriculum and Pedagogical Shifts

Curricula and pedagogy are shifting toward learner-centered, inquiry-based, and interdisciplinary approaches that promote active engagement and real-world problem-solving. Technology supports personalized and flexible learning, but its effectiveness depends on thoughtful pedagogical integration and equity-focused implementation.

5.3 Teachers and Educational Leadership

Teachers' roles have expanded to include facilitation, cultural mediation, and digital guidance. Cultural competence and digital literacy are essential for inclusive and effective teaching. Educational leadership plays a key role in fostering innovation, collaboration, and sustainable reform through supportive and transformative practices.

6. Intersections of Society, Culture, and Education

Society, culture, and education share a dynamic and reciprocal relationship. Education is embedded within social structures and cultural traditions while simultaneously shaping social norms, identities, and patterns of participation. In the twenty-first century, globalization, cultural diversity, and technological interconnectedness have intensified these intersections.

Education functions as a primary means of cultural transmission, socializing learners into shared values and worldviews through curriculum and pedagogy [8]. At the same time, it contributes to cultural change by exposing learners to diverse perspectives and new forms of knowledge. In multicultural societies, education promotes social integration and cohesion through inclusive and intercultural practices, though it may also reproduce inequality when dominant cultures are privileged [4].

Globalization has expanded education's role in developing global competencies, intercultural communication, and multilingualism. International programs such as the International Baccalaureate aim to foster global citizenship, though critics caution against Western-centric assumptions in global education frameworks [2]. Education also influences social mobility but may reproduce inequality through cultural capital aligned with dominant groups. Consequently, culturally responsive education is essential for promoting equity and social justice [9].

7. Challenges and Emerging Issues

Despite significant progress in educational access and innovation, education systems in the twenty-first century continue to face complex challenges arising from social inequality, cultural tensions, rapid technological change, and gaps between policy and practice. Addressing these issues is essential for developing equitable, inclusive, and sustainable education systems.

7.1 Educational Inequality

Educational inequality persists in terms of access, quality, and outcomes. Learners from disadvantaged socioeconomic, rural, and marginalized backgrounds often lack adequate infrastructure, trained teachers, and learning resources. Technological expansion has further widened disparities through the digital divide, particularly evident during the COVID-19 pandemic. Additionally, curricula and language policies often privilege dominant cultures, disadvantaging minority and indigenous learners.

7.2 Cultural Conflicts in Education

Global education frameworks and standardized curricula have created tensions between global competencies and local cultural identities. The dominance of national or global languages and homogenized curricula may marginalize indigenous knowledge and local traditions. Culturally sustaining pedagogy is therefore essential to affirm learners' identities while preparing them for global participation.

7.3 Digital Ethics and Technological Governance

The increasing use of digital platforms and AI in education raises ethical concerns related to data privacy, surveillance, and algorithmic bias. Practices such as online proctoring and learning analytics risk undermining student autonomy and reinforcing inequality. Ethical governance frameworks and digital literacy are necessary to ensure responsible and equitable use of technology.

7.4 Policy Gaps and Implementation Challenges

Although inclusive and equity-oriented education policies are widely adopted, weak implementation remains a major challenge due to limited funding, insufficient teacher training, and fragmented reforms. Effective educational change requires sustained political will, professional capacity building, coherent policy planning, and culturally informed leadership.

Overall Implication

These challenges demonstrate that educational reform is a social, cultural, and ethical process rather than a purely technical one. Addressing inequality, cultural conflict, digital ethics, and policy gaps requires systemic, context-sensitive, and justice-oriented approaches to education.

8. Future Directions and Policy Implications

The 21st century demands forward-thinking approaches focused on equality, cultural sensitivity, and evidence-based policies in order to effectively address the many interconnections of society, culture, and education. Education systems need to shift from reactive adjustments to comprehensive, sustainable strategies as societies grow more diverse and electronically mediated. This section highlights important policy implications and future directions that can lead educational change in environments that are digitally complex and culturally pluralistic.

8.1 Culturally Responsive Education

- Recognize learners' cultural backgrounds as educational assets.
- Integrate indigenous knowledge, local histories, and multiple perspectives in curricula.
- Promote teacher training in cultural competence and inclusive pedagogy.
- Involve communities in curriculum and policy decisions to enhance equity and social cohesion.

8.2 Digital Inclusion and Equitable Access

- Ensure universal access to devices, internet connectivity, and digital infrastructure.
- Provide continuous digital literacy programs for learners and teachers.
- Support meaningful pedagogical use of technology, not mere substitution.
- Embed data privacy, accessibility, and ethical AI use in digital education policies.

8.3 Global Collaboration and International Engagement

- Promote international cooperation through exchanges, research, and shared curricula.
- Encourage intercultural competence and global citizenship education.
- Support equitable South–South and North–South partnerships.
- Avoid one-size-fits-all global models by respecting local contexts.

8.4 Research, Monitoring, and Evaluation

- Strengthen evidence-based policymaking through continuous research.
- Focus research on marginalized groups and long-term policy impacts.
- Use participatory and practitioner-led research approaches.
- Integrate monitoring, evaluation, and flexible accountability mechanisms in reforms.

Conclusion

The dynamic interaction between society, culture, and education in the twenty-first century has been examined in this chapter, with particular attention paid to how migration, technological advancement, globalization, and cultural diversity are changing the goals and methods of education. Education occurs globally, requiring adaptable, inclusive, culturally aware approaches. The conversation demonstrates how globalization and digital technology create issues with cultural identity, inequality, and ethical governance even as they increase learning possibilities and foster global capabilities. The necessity for fair and responsible policy solutions is highlighted by the persistence of digital gaps and unequal access to high-quality education. Since cultural diversity has become a major issue, multicultural and culturally sensitive education is crucial for social cohesion, inclusiveness, and democratic citizenship. Long-standing educational disparities also emphasize the significance of evidence-based policymaking, teacher preparation, and structural changes. Education remains vital for addressing global challenges, fostering democracy, international understanding, sustainability through equity, cultural inclusion, and adaptive approaches.

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MALARIA, MEDICINE AND COLONIAL INTERVENTION: DISEASE, ENVIRONMENT AND GOVERNANCE IN COLONIAL ASSAM

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Abstract

Malaria was one of the most persistent and destructive diseases in colonial Assam and played a crucial role in shaping colonial medical knowledge, administrative policy, and environmental perceptions. This article examines how malaria was understood and managed during British rule and argues that the disease cannot be explained solely as a biomedical phenomenon. Instead, malaria emerged within a complex interaction between environmental change, colonial economic expansion, and evolving medical science. Early explanations connected malaria with climate and marshy landscapes through miasmatic theory, while later discoveries identified the parasite and mosquito vector. However, environmental and racial assumptions continued to shape colonial discourse even after scientific advances. By analysing medical reports, census data, and colonial writings, this study demonstrates that medical intervention functioned as a form of governance linked to labour control and economic priorities. The history of malaria in colonial Assam therefore reveals both the achievements and limitations of colonial public health and highlights the relationship between disease, environment, and imperial power.

Keywords: Assam, Malaria, Environment, Colonialism, Medicine and Impact

Introduction

Disease played a central role in shaping the experience of colonial rule in many parts of India, particularly in regions where environmental conditions, economic transformation, and administrative expansion intersected in complex ways. Colonial Assam emerged during the nineteenth century as one such region where disease, especially malaria, became deeply embedded in both everyday life and colonial governance. British officials, medical practitioners, and travellers repeatedly described Assam as an unhealthy and dangerous frontier, characterised by heavy rainfall, dense forests, marshy land and recurrent fever. These descriptions gradually constructed a powerful image of the region as naturally disease-prone and malaria came to occupy a central place in colonial representations of Assam. However, malaria in colonial Assam cannot be understood simply as a natural or biological phenomenon. The spread and persistence of the disease were closely linked to broader processes of colonial expansion and environmental transformation. The establishment of tea plantations, the clearing of forests, the construction of

roads and communication networks and the migration of labour all altered the ecological balance of the region. These changes created new breeding grounds for mosquitoes and increased the vulnerability of populations exposed to unfamiliar disease environments. At the same time, colonial medical knowledge developed within European intellectual traditions that often-explained disease through climate and geography. As a result, malaria was interpreted not only as a medical problem but also as a reflection of the tropical environment itself.

The emergence of malaria as a major administrative concern in Assam coincided with the consolidation of British rule and the expansion of plantation capitalism. The tea industry which became the economic backbone of colonial Assam and depended heavily on migrant labour recruited from different parts of India. These labourers, often living in overcrowded and poorly ventilated settlements with limited access to nutrition and medical care, suffered disproportionately from malaria and other diseases. However, colonial medical discourse frequently attributed high mortality rates to environmental conditions rather than to labour exploitation or inadequate living standards. Such interpretations reveal how medical explanations could obscure social and economic realities while reinforcing colonial assumptions about tropical environments.

During much of the nineteenth century, medical understanding of malaria remained uncertain and fluid. The disease was commonly associated with the miasmatic theory, which explained illness as the result of poisonous vapours arising from marshes and decaying organic matter. In Assam, where wetlands and riverine landscapes were widespread, this theory appeared convincing to colonial observers. Medical reports and administrative writings repeatedly emphasised swampy terrain, humidity and seasonal climatic changes as primary causes of fever. These explanations reinforced the idea that malaria was an inevitable feature of the landscape and encouraged environmental solutions such as drainage, forest clearance and settlement planning.

The late nineteenth century witnessed important scientific developments that transformed medical understanding of malaria. The identification of the malaria parasite by Alphonse Laveran and the discovery of mosquito transmission by Ronald Ross marked a major shift in medical science from environmental explanations to parasitological understanding. Malaria was increasingly recognised as a vector-borne disease rather than a product of climate or bad air. Nevertheless, in colonial Assam, older environmental and racial assumptions continued to shape medical thinking even after these discoveries. Climate, locality and the supposed habits of indigenous populations remained central to explanations of disease prevalence. This persistence suggests that colonial medicine was influenced not only by scientific progress but also by administrative convenience and ideological frameworks.

Historians of colonial medicine have shown that public health policies in British India were closely connected with imperial priorities. Medical intervention often aimed at protecting European lives, maintaining labour productivity, and ensuring administrative stability rather than improving general health conditions. In this context, malaria became a disease of particular concern because it directly affected plantation economies and colonial mobility. Medical surveys, sanitary regulations and research initiatives were therefore shaped by economic and political considerations. The study of malaria in Assam thus offers an important perspective on how medical knowledge functioned within systems of colonial governance.

This article argues that malaria in colonial Assam should be understood as a product of interaction between environment, economy and colonial knowledge rather than as a purely biological event. The persistence of malaria despite advances in scientific understanding demonstrates the limitations of colonial public health strategies. Environmental explanations often overshadowed social determinants such as poverty, nutrition and labour conditions, while medical interventions remained uneven and selective. By analysing medical writings, census data and colonial administrative records, this study seeks to explore how malaria became embedded within colonial discourses of environment and race and how these discourses shaped policy and perception. The introduction therefore sets the foundation for examining malaria not only as a disease but also as a historical process shaped by power relations. The experience of malaria in colonial Assam reveals the contradictions of colonial modernity, where scientific progress coexisted with social inequality and environmental disruption. Understanding this relationship allows us to move beyond narratives of medical advancement and instead recognise the complex ways in which disease, knowledge, and governance interacted within the colonial world. The history of malaria in Assam, therefore, provides insight into broader questions concerning colonial medicine, environmental change, and the political uses of scientific knowledge in imperial contexts.

Malaria and Early Medical Understanding

During the nineteenth century, malaria did not exist as a clearly defined medical condition but rather as a broad and flexible category used to describe different types of fevers and bodily weakness. Medical practitioners working in colonial India, including Assam, often lacked the diagnostic tools necessary to distinguish between various diseases that produced similar symptoms such as fever, chills, fatigue, and digestive disorders. As a result, the term “malarial fever” was frequently applied to a wide range of illnesses. This uncertainty reflected the limitations of contemporary medical science as well as the difficulty European doctors faced in interpreting diseases in unfamiliar tropical environments.

The dominant explanation for malaria during this period was the theory of miasma. According to this belief, diseases were caused by poisonous vapours or “bad air” arising from marshes,

stagnant water, and decomposing organic matter. The idea had deep roots in European medical traditions and was widely accepted before the development of bacteriology. In Assam, where wetlands, dense forests, and heavy rainfall shaped the landscape, the miasmatic explanation appeared convincing to colonial observers. Medical writings frequently linked fever with swampy terrain, seasonal flooding, and humid climatic conditions. These environmental explanations reinforced the perception that disease was an inevitable outcome of the natural surroundings rather than a result of human activity or social conditions.

The connection between malaria and environment also shaped colonial attitudes toward Assam as a whole. The region was increasingly represented as a dangerous tropical space where climate itself threatened human health, particularly that of Europeans. Early colonial reports described recurring fevers among officials, soldiers, and missionaries, strengthening the belief that Assam's environment produced disease. This perception contributed to the development of a broader discourse of "tropical unhealthiness," in which certain landscapes were considered inherently hazardous. Such views not only influenced medical understanding but also justified colonial interventions aimed at altering the environment through drainage, forest clearance, and settlement planning.

Despite the dominance of miasmatic theory, medical opinion in the nineteenth century was far from unanimous. Some practitioners observed that malaria occurred in areas that lacked marshes or stagnant water, raising doubts about the environmental explanation. Others questioned whether malaria existed as a single disease entity, suggesting instead that it was a convenient label used to group together different illnesses that were poorly understood. These debates indicate that colonial medical knowledge remained uncertain and contested rather than fixed or uniform. The lack of agreement among medical practitioners also reflected the broader transition occurring within medical science during this period, as older environmental theories gradually faced challenges from emerging scientific approaches.

Another important feature of early medical understanding was the tendency to explain disease in terms of locality and climate rather than social or economic factors. Poor housing, malnutrition, and labour conditions were rarely considered central causes of illness. Instead, disease was attributed to natural surroundings or seasonal changes. This emphasis on environment served an administrative function as well. By presenting malaria as a natural condition of tropical regions, colonial authorities could avoid acknowledging the role of plantation expansion, labour exploitation, and ecological disruption in increasing disease vulnerability. Environmental explanations therefore helped shift responsibility away from colonial policy and placed it on nature itself.

The fluidity of malaria as a medical category also allowed it to become a powerful administrative concept. Fever statistics and mortality reports often used the term broadly, making it difficult to

distinguish between different diseases. This ambiguity contributed to confusion in medical reporting but simultaneously reinforced the perception that malaria was widespread and unavoidable. In Assam, where colonial expansion coincided with unfamiliar disease environments, malaria became a convenient explanation for high mortality rates among both European settlers and indigenous populations.

Thus, early medical understanding of malaria in colonial Assam was shaped by a combination of scientific limitation, environmental determinism, and administrative necessity. The dominance of miasmatic theory reflected not only the state of medical knowledge but also the colonial need to interpret disease in ways that aligned with broader political and economic priorities. Even before the emergence of modern scientific explanations, malaria had already become embedded within colonial discourse as both a medical problem and a defining feature of the tropical environment. This early phase of understanding laid the foundation for later transformations in medical knowledge, while also ensuring that environmental interpretations continued to influence colonial thinking long after scientific discoveries reshaped the study of disease.

Scientific Discovery and Medical Transition

The late nineteenth century marked a major turning point in the medical understanding of malaria, both globally and within colonial India. Until this period, malaria had largely been explained through environmental theories that linked disease to climate, marshes, and unhealthy air. However, developments in laboratory science gradually transformed this understanding. The identification of the malaria parasite by the French physician Alphonse Laveran in 1881 and the later discovery by Ronald Ross that mosquitoes transmitted the disease fundamentally altered medical explanations. Malaria was no longer viewed simply as a product of environment but as an infectious disease caused by a specific organism and spread through a particular vector.

This shift formed part of a broader transformation in nineteenth-century medicine, often described as the transition from environmental or miasmatic theory to bacteriology and parasitology. Advances in microscopy and laboratory research allowed medical scientists to observe microorganisms directly, leading to new understandings of disease causation. In theory, this discovery should have led to major changes in colonial medical practice, since malaria prevention could now focus on controlling mosquito populations rather than simply modifying landscapes or avoiding certain climates. In practice, the transition was neither immediate nor complete, especially in regions such as Assam where older environmental assumptions remained deeply embedded in administrative thinking.

In colonial Assam, medical reports increasingly acknowledged the role of mosquitoes in transmitting malaria, but environmental explanations continued to shape interpretation and policy. Climate, rainfall, soil conditions, and vegetation were still frequently cited as primary causes of disease. The persistence of these ideas reflected not only intellectual continuity but also

the practical concerns of colonial governance. Environmental explanations were easier to integrate into existing administrative frameworks because they did not require fundamental changes to economic activities such as plantation expansion or forest clearance. Recognising malaria as a product of ecological disruption caused by colonial development would have required questioning the very foundations of the plantation economy, something colonial authorities were reluctant to do.

The coexistence of scientific discovery and older environmental thinking created what may be described as a phase of medical transition rather than complete transformation. Medical practitioners often combined new scientific knowledge with earlier assumptions about locality and climate. For example, while mosquitoes were identified as carriers of the disease, certain regions continued to be labelled as naturally malarial due to their environmental characteristics. Assam, with its riverine plains and heavy monsoon rainfall, remained categorised as inherently unhealthy even after the biological mechanism of transmission became known. This continuity demonstrates that medical knowledge was shaped not only by scientific evidence but also by established colonial perceptions of tropical space.

Another important feature of this transition was the uneven implementation of new medical knowledge. Although mosquito control, drainage, and sanitation were discussed as preventive measures, their practical application remained limited. Effective malaria control required large-scale environmental management, improved housing, and sustained administrative investment. In many parts of Assam, such measures were difficult to implement due to geographical challenges, financial constraints, and administrative priorities. Colonial governments often prioritised economic development over public health expenditure, resulting in partial or inconsistent interventions.

Scientific discovery also contributed to the institutionalisation of tropical medicine as a specialised field of study. Research on malaria became central to medical institutions in both Britain and India, and colonial territories were increasingly viewed as laboratories for studying tropical diseases. While this development advanced medical science, it also reinforced imperial hierarchies in knowledge production. Research was frequently directed toward protecting European officials and maintaining labour productivity rather than addressing the broader health needs of indigenous populations. In this sense, medical transition did not necessarily translate into improved health outcomes for the majority of the population.

At the same time, the persistence of environmental explanations reveals the limits of scientific change within colonial contexts. Even as parasitological understanding gained acceptance, older beliefs about climate and racial susceptibility continued to influence medical discourse. Europeans were often described as particularly vulnerable to tropical disease, while indigenous populations were portrayed as either naturally adapted or inherently weak. These ideas shaped

medical policy and reinforced colonial social divisions. The transition in medical knowledge therefore occurred alongside the continuation of racial and environmental assumptions inherited from earlier periods.

The scientific discovery of malaria's cause and transmission undoubtedly represented a major achievement in medical history. However, in colonial Assam, this discovery did not immediately transform medical practice or colonial attitudes toward disease. Instead, it produced a complex and layered medical discourse in which scientific innovation coexisted with older forms of environmental determinism. The persistence of malaria despite growing knowledge of its causes highlights the gap between scientific understanding and colonial public health practice. Medical transition, therefore, must be understood not as a simple story of progress but as a process shaped by political priorities, economic interests, and institutional limitations.

Malaria, Mortality and Colonial Economy

Malaria had a profound impact on mortality patterns in colonial Assam and became closely connected with the economic transformations introduced under British rule. Throughout the nineteenth and early twentieth centuries, medical reports and census data repeatedly identified malaria as one of the leading causes of death in the region. Fever-related illnesses weakened large sections of the population, reduced labour productivity, and contributed to cycles of poverty and illness. Colonial officials often described malaria as an unavoidable consequence of Assam's climate and environment, yet the spread and persistence of the disease were deeply linked to economic change, particularly the expansion of plantation agriculture.

The development of the tea industry fundamentally altered the ecological landscape of Assam. Plantation expansion required large-scale clearing of forests, excavation of land, and changes in drainage patterns. These activities unintentionally created stagnant water bodies that became ideal breeding grounds for mosquitoes. Areas that were once forested or sparsely inhabited were transformed into densely populated plantation zones, increasing human exposure to malarial infection. The concentration of labourers within plantation settlements further facilitated the transmission of disease. Thus, malaria was not simply a natural environmental problem but was closely tied to colonial economic development and environmental transformation.

Labour migration played an equally important role in shaping patterns of mortality. Tea plantations depended heavily on migrant labour recruited from central and eastern India. These workers were often unfamiliar with the local disease environment and lacked immunity to regional strains of malaria. Living conditions on plantations were frequently poor, characterised by overcrowded housing, inadequate sanitation, and limited access to medical care. Malnutrition and physical exhaustion weakened resistance to disease, making labourers particularly vulnerable to repeated malarial attacks. Contemporary medical observations occasionally

recognised this connection between labour conditions and disease susceptibility, yet structural reforms remained limited.

Colonial responses to malaria reflected the priorities of the plantation economy. Preventive measures were often introduced selectively in areas where European lives or economic productivity were directly threatened. Medical facilities and sanitary improvements were more common in plantation headquarters or administrative centres, while rural villages and labour lines received far less attention. Public health policies therefore remained uneven, reinforcing existing social and economic inequalities. The colonial state's approach to malaria demonstrates how medical intervention was shaped by economic necessity rather than a comprehensive concern for public welfare.

The relationship between malaria and mortality also had broader demographic consequences. High death rates affected population growth and contributed to instability within labour supply systems. Plantation managers frequently complained about labour shortages caused by illness and mortality, which in turn led to increased recruitment from outside regions. This cycle intensified migration and further exposed new populations to disease environments. Malaria thus became embedded within the functioning of the colonial economy itself, influencing patterns of labour movement and economic planning.

Historians have argued that diseases such as malaria in colonial India cannot be separated from processes of economic exploitation and environmental change. The transformation of landscapes for commercial agriculture often produced unintended ecological consequences that facilitated disease transmission. In Assam, the expansion of plantation capitalism created conditions that increased vulnerability to malaria while limiting the possibility of effective public health intervention. Although medical knowledge about malaria improved over time, colonial policies rarely addressed the structural causes of disease, such as poverty, nutrition, and housing conditions.

The history of malaria in colonial Assam therefore illustrates the close relationship between disease and economy. Mortality patterns were shaped not only by environmental factors but also by the organisation of labour and the priorities of colonial development. Malaria weakened populations that were essential to economic production, yet the measures taken to control the disease remained limited and selective. The persistence of malaria despite growing medical awareness reveals the contradictions of colonial governance, where economic expansion and public health crisis often developed simultaneously. Understanding malaria within this economic context allows us to see how disease became both a consequence and a condition of colonial transformation in Assam.

Environment, Race and Colonial Medical Discourse

Colonial medical discourse in nineteenth- and early twentieth-century Assam frequently connected disease with ideas of environment and race. Malaria, in particular, was not only discussed as a medical problem but also interpreted through broader colonial assumptions about tropical climate and human difference. British officials and medical practitioners often described Assam as an inherently unhealthy region, where excessive rainfall, dense vegetation, and riverine landscapes produced disease. Such environmental explanations shaped colonial perceptions of both the land and its inhabitants, reinforcing the belief that tropical environments naturally generated illness.

Within this framework, racial ideas became closely intertwined with medical thinking. Europeans were commonly portrayed as physically vulnerable to tropical diseases, while indigenous populations were described in contradictory ways. Some colonial writers suggested that local communities had developed natural resistance to malaria through long adaptation to the environment, whereas others characterised them as weak, unhygienic, or indifferent to health. These interpretations were less based on scientific observation and more on prevailing racial theories that attempted to explain differences in disease patterns through biological or cultural assumptions.

Medical and ethnographic writings often attributed disease susceptibility to lifestyle and habits rather than to structural conditions such as poverty, nutrition, or labour exploitation. Poor health among plantation workers or rural populations was frequently explained through ideas of ignorance or lack of sanitation, instead of recognising the role of overcrowded housing, inadequate wages, and difficult working conditions. This approach allowed colonial authorities to shift responsibility away from economic policies and present disease as a consequence of environment or culture. In this sense, medical discourse supported broader colonial narratives that justified administrative intervention while avoiding criticism of colonial development itself.

The emergence of tropical medicine as a specialised field further strengthened the connection between disease, climate, and race. Medical research increasingly classified regions according to climatic zones and associated particular diseases with specific environments. Assam, like many tropical regions, was categorised as a malarial zone, reinforcing the perception that disease was inseparable from geography. Such classifications influenced colonial spatial practices, including the establishment of hill stations as healthier spaces for Europeans and the segregation of living environments according to perceived health risks. Medical reasoning thus contributed to the organisation of colonial society along racial and environmental lines.

At the same time, the emphasis on environment and race obscured the human causes of disease. Environmental determinism made malaria appear inevitable, discouraging deeper examination of how economic transformation and ecological change contributed to its spread. Even after

scientific discoveries established mosquito transmission, older assumptions about tropical climate and racial susceptibility persisted in medical discourse. This continuity reveals that colonial medicine functioned not only as scientific knowledge but also as a system shaped by power relations and ideological assumptions.

In colonial Assam, therefore, malaria became more than a disease; it became part of a wider discourse through which colonial authority interpreted environment, population, and governance. The linking of disease with race and climate reinforced colonial hierarchies while shaping policies of health, settlement, and environmental management. Understanding this relationship helps explain why medical knowledge, despite scientific advances, often failed to challenge the social and economic structures that sustained disease under colonial rule.

Conclusion

The history of malaria in colonial Assam demonstrates that disease cannot be understood only through medical or biological explanations. Malaria emerged within a complex interaction between environment, colonial economic expansion, and evolving medical knowledge. Early understandings of the disease were shaped by miasmatic theories that linked illness to climate, marshes, and unhealthy air. Although later scientific discoveries identified the malaria parasite and mosquito transmission, older environmental and racial assumptions continued to influence colonial thinking and policy. This continuity reveals that medical knowledge in colonial contexts was shaped not only by scientific progress but also by administrative priorities and ideological frameworks. The expansion of plantation agriculture and the transformation of Assam's ecological landscape played an important role in shaping patterns of disease and mortality. Deforestation, changes in drainage systems, and the concentration of migrant labour created conditions favourable for the spread of malaria. However, colonial responses to the disease remained uneven and selective, often focusing on protecting economic productivity rather than improving general public health. Preventive measures were limited, and structural issues such as poverty, nutrition, and labour conditions were rarely addressed in meaningful ways. As a result, malaria persisted despite growing scientific awareness of its causes. The colonial medical discourse that linked disease with environment and race further reinforced existing hierarchies. By presenting malaria as a natural feature of tropical climate, colonial authorities avoided acknowledging the role of economic exploitation and environmental disruption in producing disease. Medicine thus functioned both as a form of knowledge and as an instrument of governance, shaping how populations and landscapes were understood and managed. The study of malaria in colonial Assam therefore highlights the contradictions of colonial modernity. Scientific advances coexisted with social inequality, and medical intervention often served administrative and economic interests rather than humanitarian goals. Understanding malaria within this historical framework allows us to recognise the deeper relationship between disease,

environment, and power in colonial society. The experience of Assam demonstrates that disease history is inseparable from broader processes of colonial transformation, reminding us that health outcomes are shaped not only by biology but also by social and political conditions.

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FOUNDATIONS OF MOBILE LEARNING (M-LEARNING) EDUCATION SYSTEM

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Abstract
Mobile learning (m-learning) is the demand of today's education system, the growing digitalization and information technology, the competitive world and the need to learn more advanced technologies, upskilling, reskilling, personalized primary education, interactive learning environment, flexibility in learning hours and robustness in the feedback system is shifting the learning paradigm from traditional classroom to modern online programmes. Availability of the vast learning materials, global platform and cost-effective tutorials, certification from the reputed institutes, companies make it more popular for all ages. Portable devices, IoT Tools, Infrastructure like cloud computing, small learning apps, fast Internet and communication devices, augmented reality, online simulators, collaborative work provide flexible, inclusive, and personalized learning opportunities. This chapter explores the concept of mobile learning, its core themes, and its benefits for students. Drawing on recent literature and policy frameworks such as India's National Education Policy (NEP) 2020, the study highlights how mobile learning reshapes traditional classroom practices, fosters accessibility, and empowers learners however lacking social belongings, responsibilities and ethical values.

Keywords: Mobile Learning, M-Learning, NEP 2020, Microlearning, Inclusiveness, Global Platform, School, Student, Education.

1. Introduction to Mobile Learning

The word "mobile learning" (or m-learning) is about the flexibility in learning through the portable devices like our smart phones, tablets, and smartwatches etc. [1]. Keeping mobile doesn't mean our phone system. It refers to the learner or the student seeking to learn with the portable devices while sitting at home, going on a walk or while travelling at any place or any time based on our priority. Education is not tied to the physical classrooms.[2] Mobile learning allow the accessing of the reading materials or the training or practical material online via connected through the Internet and collaborating with the other on their projects and code writing at any time, anywhere based on their requirements [1,3, 4, 9, 12]. Getting the flexibility in reading, whatever the time we get, we can read any subject notes, any topics based on our choice and our moods and and also able to pursue the various more courses nowadays available in blending mode the distance learning or the online tutorial videos etc [2]. The mobile learning is

not just about the playing games on the system, but it's about learning the new methods, theories, courseworks, new technologies, new skills, or even the formal Undergraduate, post graduate programmes especially significant after implementation of NEP 2020. Distance learning can also be the part of mobile learning that benefits the employed persons or daily wagers in their free time, on holidays [2, 10, 13]. It is a new way of thinking about education, breaking the walls of the past where we have to sit in the class, looking at the blackboard or have to stay on the desktop computer in our laboratories or at home [1]. It is also provide learning opportunities for the females that were forbidden in the past from going to school in some off areas or the rural areas, but now with the mobile learning, it also empowering those girls making aware about the surrounding, new technologies, methods, government schemes and provide opportunities even the earning through thee E-commerce and promoting their products [3, 5, 7, 9, 10, 12, 16].

Basic Difference between E- Learning and Learning through Mobile (M-Learning)

M-learning and e-learning are both targeted to promote education digitally, however learning in both the categories are slightly different in context though can be done on the same platform, the key difference is how m-learning and e-learning are experienced and applied. E-learning is typically accessed through computers or laptops, making it suitable for well-defined, structured, in-depth courses having a dashboard, course content, duration, certification, formal organization that demand focus and sustained attention suitable for complex simulations, core courses and programmes, professional & skill development programmes having different learning levels from basic to high professional, multimedia presentations, and comprehensive assessments etc. M-learning, in contrast, is designed for mobile devices like smartphones mainly or handy devices, emphasizing portability and quick access on the go. This format works best for short, focused lessons that last only a few minutes, providing just-in-time clarification and contextual learning opportunities. Mobile learning can also support academics by allowing them to quickly review topics or new themes, prepare lectures, draft reports, form conclusions, deliver speeches, or grasp key points during meetings and presentations. While e-learning supports deep knowledge building, m-learning enables learners to make immediate decisions and apply solutions in real time. Rather than competing, the two approaches complement each other: e-learning lays the foundation for thorough understanding in an organized way, while m-learning offers quick references, and supports everyday learning needs [2, 6].

2. The Core Themes of M-Learning

Following are the few main pillars of mobile learning that are founding the next generation education system:

- **Portability:** With the advancement of information technology and the developments of smart devices, students can learn anywhere, anytime. Even with the developments of various E-libraries, now it is quite easy to learn the online content with the small cost of

the Internet and the affordable devices. This is the most obvious part. You can carry an entire library in your pocket [2, 4, 5, 6].

- **Development of the various application software tools**: The learner now can edit their own documents with the open-source software and the very affordable application software, and can perform the data analysis on various online tools [4, 6].
- **Social Interactivity:** Students can talk to each other and their teachers instantly. Learning becomes a conversation, not just a lecture. Learners can repeatedly watch the various videos and they read the content multiple times without asking or requesting the teacher. Online data is so vast that the explainability of even the small terms can be found on the Internet [7, 8, 9].
- **Context-Awareness:** Because phones have GPS and cameras, learning can happen based on where you are. For example, a student at a museum can scan a code to learn about a specific painting or the student can ask the copilot to ChatGPT to make the further clarifications of the code or write the codes for their program or the project work. It saves time in searching the long documents and avoids irrelevant listed documents [6, 11].
- **Connectivity:** Being linked to the internet means the information is always fresh. Textbooks get old; websites stay updated though sometimes lacking the trustworthy data and the official websites [11, 12].
- **Microlearning:** Tutorials available is divided into many subparts or the units where the learner can learn in the chunks and also sometimes the videos are very small. This micro learning the big complex content is further broken into very small sized modules. And the videos are mainly made for 5 to 10 minutes so that the learner does not get bored, followed by the creative and interactive small tests to increase the learners interest in the content [1, 12, 13, 15].
- **Easily downloadable and accessible:** Due to the small modules, the data or the notes can be downloaded with the slow Internet.The text content is powered by the videos along with the captions so that the user feels more connected [13].
- **Inline with the NEP and the trending education system:** Nowadays, most of the courses or the technical programs, the core courses are connected with the online small modular programmes. Having the test and the credit systems, the students are now engaged online and get familiar with the advanced topics supported by the various IT companies and educators [2, 10].
- **The biggest paradigm shift in the education system:** In the older time the teacher was the only the source of the knowledge, but in the mobile learning, a teacher is act as the guide and the student Interests are shifting from the memorizing the various things to the

Information gathering say finding topics, analyzing data using the various search engines through browsers like Google search into very few seconds [16].

- **Learning by Doing:** Mobile devices let students create things like animations, small stories, e-content, learning modules, videos, blogs, or digital art. This helps the brain remember better with visualization than just reading.
- **Best for the people who have the least focus on mobile devices like smartphones:** Mobile learning works best when it is broken into 5-minute or 10-minute tasks. This is why apps like Duolingo, Coursera, Khan academy, Edx etc. are so popular. This way every student can go with their own learning speed and the physical capabilities [8, 13, 14, 15, 16].

Benefits for Students

Though the benefit of the physical classrooms cannot be ignored as it benefits the health of the student as well as make them more disciplined. The physical social interactions, the way of presentation, meeting people, one to one relationship, watching the surroundings while visiting the school, the uniform & prayers, the fixed schedule makes the student more disciplined with valued education.However, nowadays the present scenario changes, the students wants to become more competitive, learning more and more and late hours study during night time, so, student who just want to read and may be getting bored with those physical smooth going processes and schedules required to fulfill at the school time. So, in student's point of view, who are under pressure of covering the syllabus very fast, nowadays the benefit can be as follows.

- **Using the smart systems during the class hours:** Now avoiding the heavy loads of the books and notebooks and bags and lunches, large content can be downloaded and saved in the system like tablet or the workbook. Nowadays the students are using and they can learn it from anywhere as per their convenience and all of the resources like online labs and simulators are available along with all the resources at one place. The only requirement is the connection with the Internet.
- **The feedback system in the Micro learning:** Most of the online content are divided into modules as small parts. After completing the small part or watching the video, there will be a test that can be in the form of small questions or the small laboratory questions with the immediate feedback and show the score of the student. If the feedback is not up to the mark of the student, he can enhance his performance by taking the test again. There are so many mobile applications and the quizzes that make the learning very interactive and challenging with the brain storming questions as well as game theory [12, 15, 16].
- **Cost- effective:** Apart from the flexibility in the learning, most of the online courses are worldwide and there are thousands or hundreds of the students who are learning that course. So, the cost or fees of that course is very low compared to physical coaching or

learning and going to school. students now can learn from anywhere and those are living in off areas were visiting the schools on all the days is not possible. It benefits those making education more inclusive and much reach to the people & bridging the gaps [7, 11, 12].

- **Earning while learning:** The mobile learning can benefit the workers as well as the employees who want to learn more skills or upskilling themselves or doing a part time job.
- **Real time update:** Mobile learning supports the real-time information, learning about a context, topic that requires an urgent solution or clarification of a topic and quickly updations [11].

Implementation of the mobile learning even in the schools

As it is already discussed that most of the modern schools are now allowing the tabs or laptops in their schools while taking the class. Most of the modern schools now have the school apps that can be opened and used at the mobiles for their homework as well as the learning at home. So in the case while the student is sick or not possible to visit the schools due to some reasons, they can go with the school's classworks by watching the videos on the school apps and by taking the tests that are available online so avoiding the gaps of lagging behind in the learning and homework due to leaves from the school [8, 13].

Making the learning more interactive, inclusive, effective, schools can opt for the methods and software. The various school apps like the Toad, ABCmouse, Quick Maths, Khan academy, color kids and Kahoot make the learning more interactive. Students may be asked to watch their videos at home and the next day; classroom revisions and the small questions make the student understand the concept more clearly [13]. Nowadays, the option of the QR codes where the student by scanning the QR code opens a project, a test or some content for their homework as well as completing the project or filling up some form or the registration [3, 4]. Also, the learning can be based on the games, game game theory is nowadays popularizing even in the primary schools where the students learn through games. There are the various options and the apps that can make the education more personalized by using the many small apps for the students with special needs like, if the student is hard of hearing, there are the various attractive videos, simulators, augmented reality based real world visualization,small gadgets, supporting the student learn the concept very clearly and those are not able to see, there are so many audios and smart IoT tools through which students can learn, touch and feel. The various text to speech or speech to text options for the students who are facing difficulties in reading or speaking. One of the most beautiful parts of mobile learning is how it helps students who struggling in learning. Nowadays there are the lots of applications who are offering the personal style of writing, changing the form size, the brightness or even the background color as well as. or even the color

of the screen aiding students with dyslexia or visual impairments. Mobile devices make it easy to work in groups without being in the same location. With the advancement of cloud computing, users can share documents like Google Docs project development codes and help students write a report together in real-time. It fosters teamwork and digital communication, faster learning, instant feedback inclusiveness of students with different learning styles or disabilities or untouched areas along with efficient well structured learning modules, physical space and motivating the use of shared resources, revisiting the study materials, global access and getting more opportunities in digitalworld [5, 9, 12, 13, 16].

Conclusion

Mobile learning has become an essential dimension of modern education, its core strengths portability, microlearning, interactivity, flexibility and inclusivity make it particularly valuable for learners in remote areas, working professionals seeking to upskill, and students with special needs who benefit from personalized digital tools. By integrating mobile platforms into formal education systems, schools and universities can bridge gaps in accessibility, availability while reducing costs, and fostering inclusiveness i.e. learning for all through global platforms, online apps and development of IOT tools, cloud computing and micro-learnings. Mobile learning is not a replacement for traditional education but a complementary approach that enriches the learning experiences, upskilling and a paradigm shift toward a more inclusive, student-centered, personalised model of education, preparing supporting learners though lacking personal attentions, social connectivity, belongingness, discipline, value added courses and ethical learnings.

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DIGITAL SHADOW BANKING AND REGULATORY OVERSIGHT: INNOVATION, INCLUSION, AND SYSTEMIC RISK IN EMERGING ECONOMIES

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Abstract

The digital transformation of financial intermediation has spawned a globally significant yet architecturally opaque sector commonly designated as digital shadow banking — comprising non-bank, technology-driven entities that replicate credit creation, maturity transformation, and liquidity provision while operating at the margins of, or entirely outside, conventional prudential regulatory frameworks. In emerging market economies, these structures have proliferated with remarkable velocity, simultaneously advancing financial inclusion for underserved populations and amplifying novel vectors of systemic vulnerability.

This chapter delivers a rigorous interdisciplinary examination of digital shadow banking through three mutually reinforcing analytical lenses: the innovation dynamics that undergird its ascendancy, the inclusion pathways through which it extends financial access to the economically marginalised, and the systemic risk dimensions that challenge conventional macroprudential governance. Drawing upon comparative evidence from South and Southeast Asia, Sub-Saharan Africa, and Latin America, the chapter critically evaluates regulatory architectures, identifies structural gaps, and proposes a principled framework for calibrated oversight that preserves the developmental benefits of financial innovation while containing contagion risk.

The analysis establishes that regulatory inaction in this domain is not a neutral posture — it constitutes a de facto subsidy to risk-taking entities that externalise systemic costs onto the broader financial system and public balance sheets. Equally, disproportionate regulatory responses risk suppressing precisely the credit flows and payment infrastructure that support inclusive economic development. The chapter advocates for proportionality-based, activity-focused regulation, enriched by supervisory technology and anchored in cross-border coordination architecture.

Keywords: Financial Instruments, Social Impact, Historical Evolution, Economic Development, Financial Innovation, Social Stratification, Capital Markets.

1. Introduction: The Anatomy of a Transformation

The global financial system is undergoing a structural reconfiguration whose scale and pace have few historical precedents. Since the early 2010s, technology-enabled non-bank financial intermediaries — operating through peer-to-peer lending platforms, digital credit marketplaces, stablecoin networks, decentralised finance protocols, and algorithmic wealth management systems — have assembled balance sheets and payment flows that now rival, and in certain jurisdictions exceed, those of licensed banking institutions. This phenomenon, which scholars and policymakers increasingly designate as digital shadow banking, occupies a liminal regulatory space: substantively equivalent to banking in its economic functions, yet structurally differentiated in its ownership, liability profile, and supervisory obligations.

For emerging market and developing economies, the stakes are particularly acute. The architecture of formal financial exclusion in these economies — rooted in asymmetric information, weak collateral regimes, inadequate credit infrastructure, and the high fixed costs of branch-based banking — has created a structural demand vacuum into which digital shadow banking entities have expanded with considerable social legitimacy. Yet the same institutional weaknesses that generate demand for these services also amplify the prudential risks they carry: thin supervisory capacity, underdeveloped deposit insurance and resolution frameworks, shallow capital markets, and high macro-financial vulnerabilities all compound the systemic consequences of a digital credit disruption.

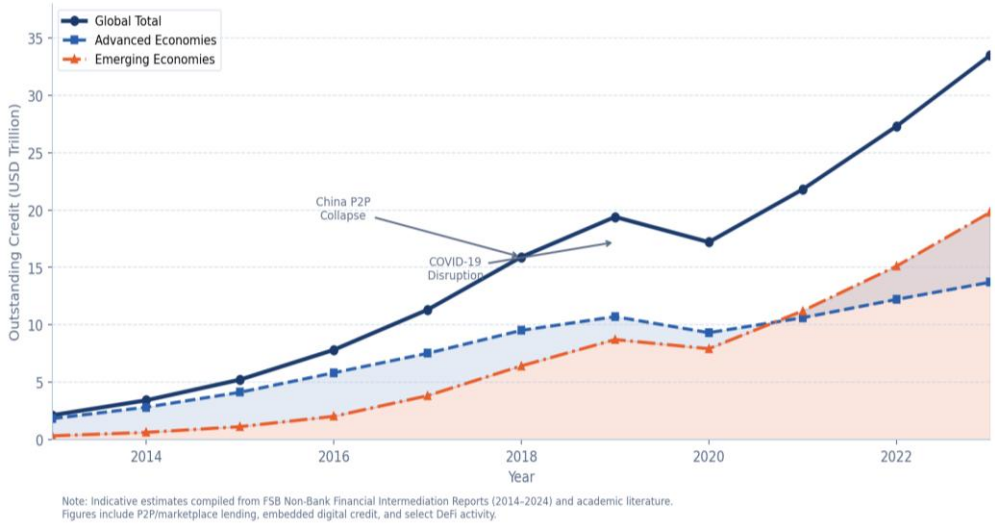

Figure 1: Global digital shadow banking - Outstanding credit volumes (2013-2023)

The trajectory depicted above is not uniform across geographies. Advanced economies, while home to larger absolute volumes, have experienced comparatively stable growth moderated by regulatory interventions. Emerging economies, by contrast, have shown exponential expansion — punctuated by disruptive episodes such as the China P2P collapse and COVID-19 — driven by structural demand factors and lower regulatory barriers.

2. Conceptual Framework and Taxonomy

2.1 Defining Digital Shadow Banking

For purposes of this analysis, digital shadow banking is defined as technology-mediated non-bank financial intermediation that performs one or more of the following core banking functions: credit provision and risk absorption; maturity and liquidity transformation; payment and settlement facilitation; or leverage amplification — while operating without a banking licence or equivalent prudential authorisation, and typically without access to public safety nets including lender-of-last-resort facilities or deposit insurance protection.

2.2 Taxonomic Classification

A functional taxonomy of digital shadow banking entities in emerging economies reveals four primary archetypes with distinct risk profiles:

Table 1: Functional Taxonomy of Digital Shadow Banking Archetypes.

Archetype	Core Function	Funding Structure	Primary Risk	Regulatory Gap
Digital Marketplace Lenders	Credit intermediation	Investor capital / ABS	Credit quality; liquidity mismatch	Prudential standards
Embedded Finance Providers	Micro-credit in ecosystems	Data-driven; retained earnings	Over-indebtedness; algo bias	Consumer protection; data governance
Stablecoin & Crypto Lenders	Collateralised lending; payments	Token issuance; repo-like	Liquidity spirals; de-pegging	Monetary regulation; reserves
DeFi Protocols	Automated lending & liquidity	Smart-contract collateral	Smart contract; oracle risk	Jurisdiction; AML/identity
Digital Investment Platforms	Wealth management	Retail investor flows	Run risk; MTM losses	Suitability; systemic links

2.3 Theoretical Anchors

2.3.1 Financial Intermediation Theory

Classical intermediation theory (Diamond and Dybvig, 1983; Diamond, 1984) establishes banks as institutions uniquely positioned to resolve information asymmetries in credit markets through monitoring, diversification, and the creation of liquidity from illiquid assets. Digital shadow banks replicate these functions but substitute algorithmic processing for relationship-based information acquisition. The critical distinction lies in the absence of a publicly insured deposit

base — which, paradoxically, removes the acute run-vulnerability of demand deposits while introducing subtler forms of liquidity risk associated with investor redemption, platform runs, and wholesale funding dry-ups.

2.3.2 Regulatory Arbitrage and Competitive Dynamics

A substantial strand of regulatory economics identifies regulatory arbitrage as a primary driver of shadow banking growth — the migration of credit activity toward the regulatory perimeter to exploit the implicit cost advantage of unregulated or lightly regulated structures. In emerging markets, this dynamic is intensified by regulatory fragmentation, weak enforcement capacity, and the politicisation of financial sector oversight. Digital technologies lower the entry barriers to regulatory arbitrage by enabling rapid platform replication, jurisdictional forum-shopping, and technology-mediated opacity.

3. Innovation Dynamics: Engines of Disruptive Growth

3.1 Technological Enablers

The proliferation of digital shadow banking in emerging economies is underpinned by a genuine technological revolution that has lowered the information and transaction costs of financial intermediation to levels unimaginable within branch-based banking constraints. Five developments are of primary analytical significance: mobile penetration and digital identity infrastructure; big data analytics and machine learning for alternative credit scoring; API architecture and open banking frameworks enabling ecosystem embedding; blockchain and DeFi protocols; and cloud computing enabling near-zero marginal cost scaling.

3.2 Structural Drivers in Emerging Economies

Table 2: Structural Drivers of Digital Shadow Banking Expansion

Structural Driver	Mechanism	Key Markets
Formal banking exclusion	High branch costs create demand vacuum filled by digital alternatives	Sub-Saharan Africa, South Asia, rural SE Asia
Weak credit infrastructure	Absent credit bureaus incentivise alternative data scoring	Nigeria, Indonesia, Kenya, Bangladesh
Mobile > bank penetration	Mobile-first populations reachable before banking infrastructure	Ethiopia, Uganda, Cambodia, Pakistan
Underdeveloped SME finance	Large unmet working capital demand among micro-enterprises	India, Vietnam, Ghana, Tanzania
Remittance corridor dependence	High-cost formal remittances create demand for digital alternatives	Philippines, Mexico, Nepal, Senegal

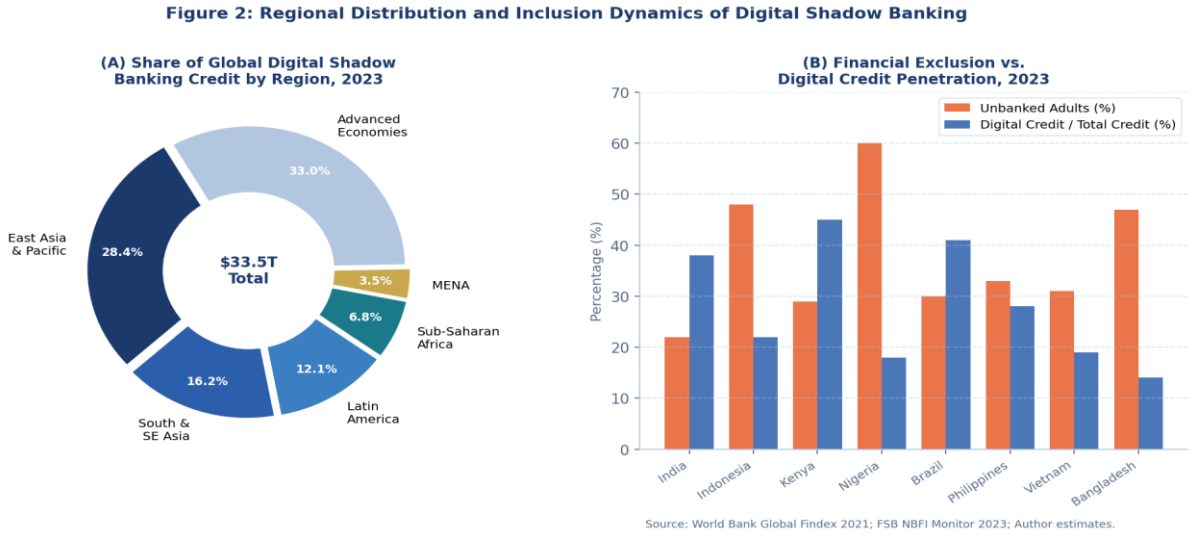

Figure 2: Regional Distribution and Financial Inclusion Dynamics of Digital Shadow Banking

Panel (A) illustrates that while advanced economies still account for one-third of global digital shadow banking credit by volume, emerging markets now collectively represent the majority share — with East Asia and Pacific dominating, driven principally by China's large embedded finance ecosystem. Panel (B) reveals the inclusion paradox: markets with highest unbanked populations (Nigeria, Kenya) are often those with fastest-growing digital credit penetration, validating the demand-pull hypothesis.

4. Financial Inclusion: Access, Welfare, and Structural Limits

4.1 The Promise: Expanding Access to the Underserved

The development case for digital shadow banking is grounded in demonstrable empirical realities. In economies characterised by persistent formal financial exclusion, the platforms and institutions classified under this framework have materially extended access to credit, payment infrastructure, and savings instruments for populations whose economic participation was previously constrained by financial inaccessibility. Estimates from the Global Findex Database indicate that approximately 1.4 billion adults globally remain without any formal financial account as of 2023, the majority residing in emerging market economies; digital financial services have demonstrably accelerated account ownership and credit access among these populations.

4.2 The Limits: Indebtedness, Predation, and Algorithmic Exclusion

The inclusion benefits of digital shadow banking must be assessed against an equally significant body of evidence documenting its harmful dimensions. The structural features that enable rapid credit provision at scale — algorithmic decisioning, thin underwriting standards, data advantage relative to borrowers — also create conditions conducive to over-indebtedness, predatory pricing, and systematic consumer harm.

4.3 The Inclusion–Stability Matrix

The conventional framing of an inclusion-stability trade-off suggests necessary tension between the developmental benefits of financial access expansion and the prudential imperatives of systemic stability. The scatter matrix below reframes this relationship empirically, mapping fifteen key emerging economies across both dimensions simultaneously.

5. Systemic Risk: Channels, Amplifiers, and Emerging Vulnerabilities

5.1 Channels of Systemic Risk Transmission

The systemic risk posed by digital shadow banking operates through multiple transmission channels that differ qualitatively from those associated with traditional banking system instability. Understanding these channels is a prerequisite for the design of macroprudential frameworks adequate to the task of containing them.

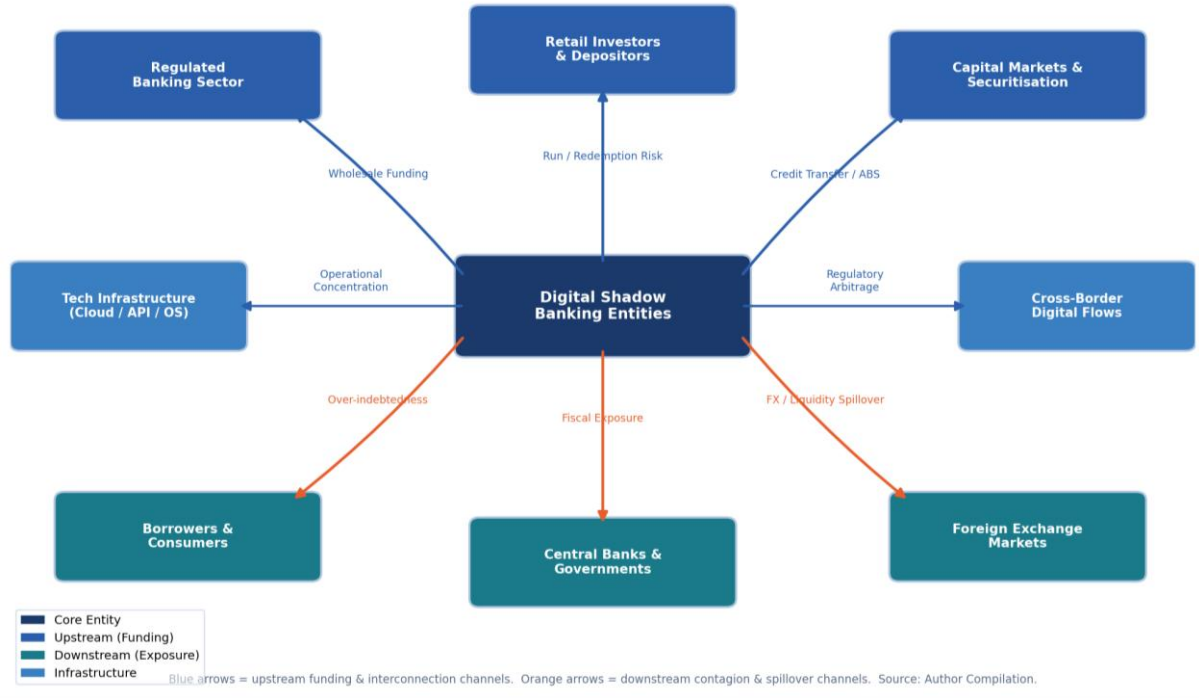

Figure 3: Systemic Risk Transmission Channels — Digital Shadow Banking Network

The network diagram illustrates three distinct transmission layers. Upstream (blue) channels encompass the funding and operational interdependencies through which digital shadow banks draw resources from regulated institutions and retail investors. Downstream (orange) channels capture the contagion pathways through which platform distress propagates to borrowers, government balance sheets, and foreign exchange markets. The shared technology infrastructure node represents a cross-cutting concentration risk that simultaneously affects both upstream and downstream channels.

5.2 Emerging Market-Specific Risk Amplifiers

Table 3: Systemic Risk Amplifiers in Emerging Market Digital Shadow Banking Contexts.

Risk Amplifier	Description	EM Intensity
Thin regulatory buffers	Limited supervisory capacity to identify emerging stress	High
Currency & capital flow volatility	Cross-border digital platforms expose borrowers to FX risk	High
Weak insolvency frameworks	Platform failure resolution lacks efficient legal mechanisms	Very High
Retail investor concentration	Retail-funded platforms subject to behavioural run dynamics	High
Social media amplification	Negative sentiment spreads at speed outpacing regulatory response	High
Dollarisation & crypto exposure	USD-denominated liabilities or crypto holdings amplify volatility	Medium-High

6. Regulatory Landscape: A Comparative Analysis

6.1 Regulatory Readiness Assessment

A comparative assessment of regulatory readiness across key emerging market jurisdictions reveals substantial heterogeneity across seven critical dimensions. The heatmap below synthesises this assessment, drawing on FSB peer reviews, IMF Financial Sector Assessment Programme reports, and published regulatory inventories.

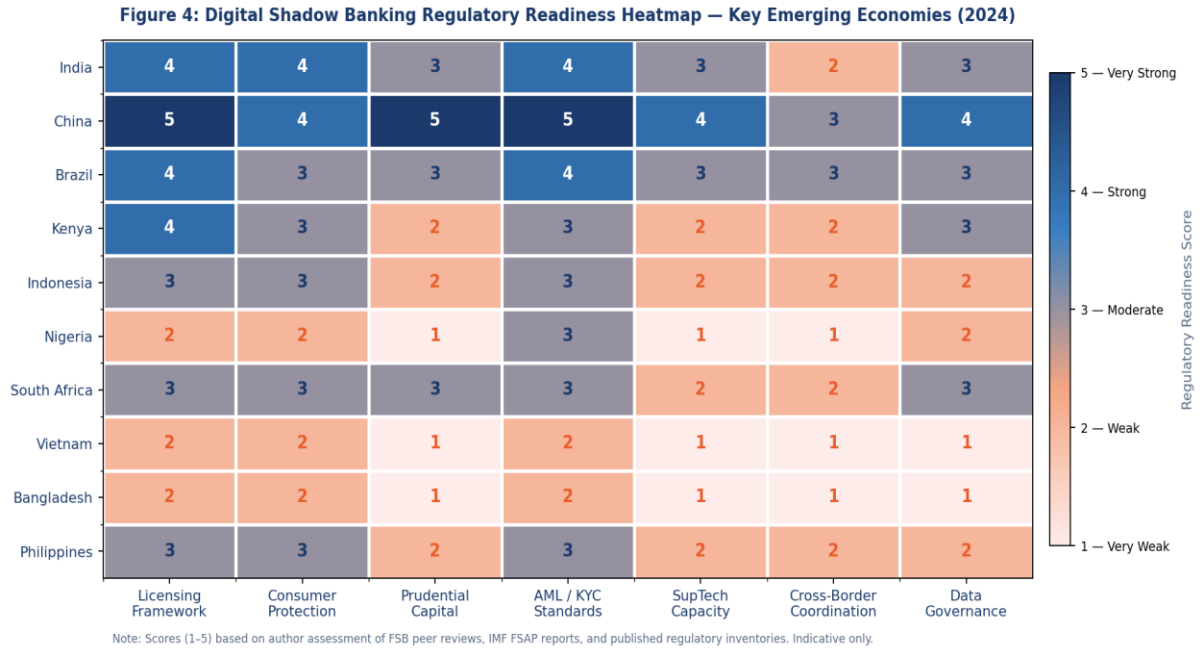

Figure 4: Regulatory Readiness Heatmap — Digital Shadow Banking in Key Emerging Economies (2024)

The heatmap reveals three clusters. China stands alone in scoring highly across all dimensions — reflecting its post-2020 comprehensive regulatory rectification. India and Brazil occupy a strong intermediate tier, having enacted substantive licensing and consumer protection frameworks. A large lower tier — comprising Nigeria, Vietnam, Bangladesh, and others — reflects significant regulatory gaps across virtually all dimensions, representing the jurisdictions at greatest systemic risk from digital shadow banking expansion.

6.2 Jurisdiction Case Studies

6.2.1 India: From Permissiveness to Structured Oversight

India presents a particularly instructive case study in the political economy of digital shadow banking regulation. The initial phase of digital lending growth — approximately 2015 to 2020 — was characterised by broad regulatory permissiveness, underpinned by a policy preference for digital financial inclusion. This permissive phase produced significant credit expansion but also a proliferation of predatory lending applications, many operating through offshore corporate structures to circumvent Reserve Bank of India jurisdiction, employing aggressive and in several cases criminally coercive collection practices. The Reserve Bank of India's Working Group on Digital Lending (2021) documented these harms comprehensively, and subsequent master directions (2022) fundamentally restructured the framework.

6.2.2 China: Comprehensive Rectification and Its Consequences

China's experience is defined by its extraordinary scale in both growth and correction phases. The period 2013 to 2018 witnessed an expansion of online P2P lending to over RMB 1.3 trillion across more than 6,000 platforms, followed by effective elimination of the entire sector by 2020. The rectification extended to large technology platforms — most visibly Ant Group, whose planned IPO was suspended in November 2020 following a regulatory determination that its lending activities required bank-equivalent capital requirements, resulting in its restructuring into a financial holding company.

6.2.3 Kenya: The Mobile Money Model and Its Limits

Kenya pioneered mobile money at scale through M-Pesa from 2007 and subsequently experienced the full lifecycle of digital credit expansion and its attendant problems. The proliferation of mobile loan applications — over 50 active by 2019 — produced documented consumer harm at scale, including mass credit bureau negative listings. The subsequent Central Bank of Kenya Digital Credit Providers Regulations 2022 imposed licensing requirements, minimum capital standards, fair lending obligations, and data governance requirements on digital credit providers for the first time.

7. Towards a Principled Regulatory Framework

7.1 Foundational Principles

Functional Equivalence	Regulatory obligations determined by economic functions performed, irrespective of legal form or technology architecture. Entities engaging in credit intermediation should face commensurate prudential requirements.
Proportionality	Requirements calibrated to risk profile, employing tiered frameworks that impose lighter obligations on smaller, simpler entities and progressively more stringent requirements as size and systemic interconnection increase.
Consumer Centricity	Robust consumer protection as a core, non-negotiable element: minimum standards for disclosure, pricing transparency, fair collection practices, algorithmic explainability, and accessible redress mechanisms.
Supervisory Technology	Investment in SupTech — automated reporting, network analysis, behavioural surveillance tools — as a necessary complement to legal framework reform, especially in resource-constrained emerging market contexts.
Cross-Border Coordination	Effective governance requires international information-sharing mechanisms, coordinated licensing standards, and multilateral resolution frameworks commensurate with platforms' cross-border operating footprints.

7.2 Tiered Regulatory Architecture

Operationalising these principles within the institutional constraints of emerging market regulatory authorities requires a tiered architecture that matches oversight intensity to systemic risk exposure. The pyramid below illustrates the proposed structure:

The pyramid architecture serves three strategic purposes. First, it prevents regulatory burden from disproportionately suppressing innovation by small entrants (Tier 1) while ensuring that systemically significant entities (Tier 4) face standards commensurate with their risk footprint. Second, it creates incentive-compatible promotion pathways — entities that grow and acquire systemic importance automatically face escalating requirements, internalising the regulatory costs of scale. Third, it aligns with the institutional capacity of emerging market supervisors, who can implement lighter-touch Tier 1 frameworks immediately while building capacity for more intensive Tier 3-4 supervision over time.

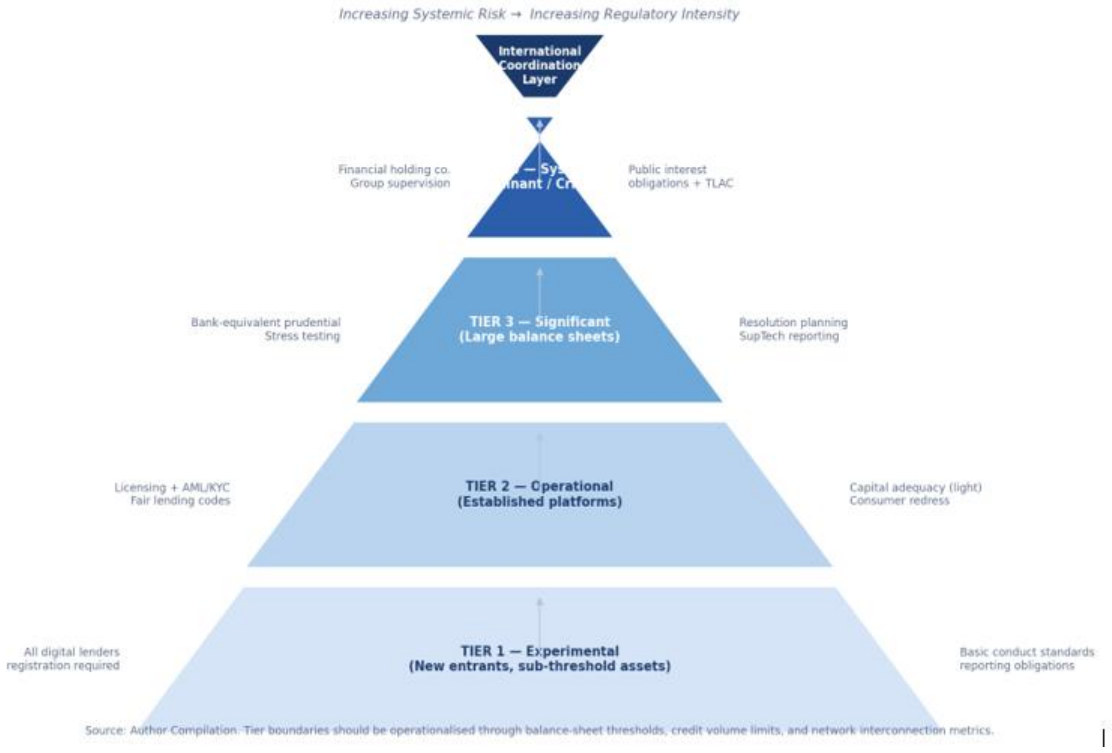

Figure 5: Proposed Tiered Regulatory Architecture for Digital Shadow Banking in Emerging Economies

Table 4: Proposed Tiered Regulatory Architecture.

Tier	Entity Characteristics	Core Requirements	Supervisory Intensity
Tier 1: Experimental	New entrants; sub-threshold assets; limited scope	Registration; basic conduct; reporting	Light-touch; sandbox monitoring
Tier 2: Operational	Established platforms; moderate balance sheet	Licensing; capital (light); AML; consumer codes	Moderate; regular engagement
Tier 3: Significant	Large balance sheets; complex structures	Bank-equivalent prudential; stress tests; resolution	Intensive; on-site supervision
Tier 4: Systemic	Dominant market position; critical infrastructure	Financial holding co.; group supervision; TLAC	Full macroprudential + cross-border

Conclusion

Digital shadow banking represents one of the defining regulatory challenges of early twenty-first century political economy. In emerging market economies, it simultaneously embodies the most compelling promise of technology-enabled financial development — the extension of credit,

payment, and savings access to populations historically excluded from formal finance — and the most consequential risks: systemic instability propagated through channels that conventional regulatory architecture was not designed to detect or contain.

This chapter has argued that the appropriate regulatory response is neither uncritical embrace of digital innovation nor reflexive imposition of constraints calibrated for traditional banking institutions. It is the construction of a regulatory architecture that is functional in its scope, proportional in its demands, technologically capable in its supervisory instruments, consumer-protective in its orientation, and internationally coordinated in its ambitions. The six figures presented throughout this chapter — charting growth trajectories, regional distributions, systemic risk networks, regulatory readiness, inclusion-stability dynamics, and the proposed governance structure — collectively illustrate the empirical landscape within which this architecture must operate.

The stakes of regulatory design in this domain are not merely technical. They are distributional and developmental: the quality of the regulatory framework that governs digital shadow banking in emerging economies will materially shape the terms on which billions of people participate in the formal financial system, the degree to which their participation is predatory or protective, and the resilience of the financial architecture upon which their economic security ultimately depends.

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A STUDY ON EFFECTIVENESS OF IN-SERVICE TRAINING OFFERED TO PRIMARY TEACHERS

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Abstract

In-service training has become an essential component of professional development aimed at enhancing the instructional competencies of primary school teachers. Rapid changes in educational policies, curriculum frameworks, learner diversity, and technological integration require teachers to continuously upgrade their pedagogical knowledge and classroom practices. Traditionally, teacher preparation focused mainly on pre-service education; however, continuous professional learning through in-service training programs plays a crucial role in improving teaching effectiveness and student learning outcomes. Educational institutions and governments increasingly organize structured training initiatives to strengthen teachers' instructional skills, classroom management strategies, assessment techniques, and use of innovative teaching methodologies.

While in-service training offers significant benefits such as improved teaching performance, enhanced confidence, and adoption of learner-centered approaches, challenges remain regarding training relevance, implementation support, and long-term impact assessment. This chapter critically examines the effectiveness of in-service training programs offered to primary teachers by analyzing training practices, professional development outcomes, institutional support mechanisms, and implementation challenges. The study further proposes a conceptual framework explaining how participation in in-service training influences teaching effectiveness through mediating and moderating variables. The discussion highlights the importance of continuous professional development, practical training approaches, and organizational support systems to ensure meaningful improvements in classroom teaching. The chapter contributes to educational research and administrative practice by providing strategic recommendations for designing effective teacher training programs that promote quality primary education.

Keywords: In-Service Training, Teacher Professional Development, Primary Education, Teaching Effectiveness, Teacher Training, Educational Improvement.

1. Introduction

Education systems worldwide recognize teachers as the cornerstone of quality education, particularly at the primary level where foundational learning is established. Primary teachers

play a critical role in shaping students' cognitive development, learning habits, and social skills. However, evolving educational demands, curriculum reforms, and technological advancements require teachers to continuously update their knowledge and teaching competencies.

In-service training refers to structured professional development programs conducted for teachers while they are actively engaged in teaching service. Unlike pre-service education, which prepares individuals before entering the profession, in-service training focuses on improving existing teaching practices through continuous learning and skill enhancement.

Modern classrooms require teachers to adopt innovative instructional strategies, inclusive teaching practices, and technology-supported learning methods. As a result, educational authorities increasingly organize workshops, seminars, refresher courses, and training sessions to improve teacher performance. Despite widespread implementation, questions remain regarding whether these programs effectively translate into improved classroom practices and student outcomes. Therefore, evaluating the effectiveness of in-service training offered to primary teachers is essential for strengthening educational quality and professional development systems.

2. Literature Review

Research in teacher education consistently highlights the importance of continuous professional development in improving teaching effectiveness. Earlier teaching models emphasized content delivery, whereas modern educational approaches focus on learner-centered pedagogy, collaborative learning, and experiential instruction.

Studies indicate that effective in-service training enhances teachers' pedagogical knowledge, classroom management skills, and assessment practices. Professional development programs help teachers adapt to curriculum changes and address diverse learning needs among students. Evidence suggests that teachers who participate in regular training demonstrate improved instructional planning and increased confidence in classroom delivery.

However, scholars also report limitations in training effectiveness. Short-duration workshops often lack practical orientation, reducing their impact on real classroom situations. Additionally, insufficient follow-up support and limited institutional encouragement hinder implementation of newly learned techniques.

Recent literature emphasizes the importance of sustained professional learning models involving mentoring, peer collaboration, and reflective practice. Researchers argue that training effectiveness depends not only on program content but also on teacher motivation, institutional support, and opportunities for practical application.

Overall, existing literature suggests that in-service training positively influences teaching outcomes when designed as a continuous and practice-oriented professional development process.

3. In-Service Training Practices for Primary Teachers

In-service training programs address multiple dimensions of teaching competence.

3.1 Pedagogical Skill Development

Training programs introduce modern instructional methods such as activity-based learning, cooperative learning, and experiential teaching approaches.

3.2 Curriculum and Instructional Updates

Teachers receive guidance on revised curriculum standards, lesson planning strategies, and competency-based education practices.

3.3 Technology Integration in Teaching

Training enhances teachers' ability to use digital tools, multimedia resources, and online learning platforms to improve classroom engagement.

3.4 Classroom Management Techniques

Programs help teachers manage student behavior, promote inclusive classrooms, and maintain effective learning environments.

3.5 Assessment and Evaluation Methods

Teachers learn formative and summative assessment strategies to monitor student progress and improve learning outcomes.

4. Benefits of In-Service Training

4.1 Improvement in Teaching Competency

Training enhances subject knowledge and instructional skills.

4.2 Adoption of Innovative Teaching Methods

Teachers become more confident in implementing student-centered learning approaches.

4.3 Enhanced Classroom Management

Teachers develop strategies to manage diverse learners effectively.

4.4 Increased Professional Confidence

Participation in training strengthens teachers' motivation and professional identity.

4.5 Improved Student Learning Outcomes

Effective teaching practices contribute to better student participation and academic performance.

5. Challenges and Issues

Despite its advantages, several challenges affect training effectiveness.

5.1 Lack of Practical Orientation

Some programs emphasize theory rather than classroom application.

5.2 Insufficient Follow-Up Support

Teachers often lack mentoring after training completion.

5.3 Time Constraints

Heavy teaching workloads limit teachers' ability to implement new practices.

5.4 Resource Limitations

Schools may lack infrastructure required to apply training outcomes.

5.5 Variation in Teacher Motivation

Individual attitudes toward professional learning influence training success.

6. Teacher–Institution Collaboration

In-service training becomes more effective when supported by institutional leadership.

6.1 Role of School Administration

Administrative encouragement promotes implementation of new teaching strategies.

6.2 Collaborative Learning Culture

Peer discussions and professional learning communities enhance knowledge sharing.

6.3 Teacher Acceptance and Engagement

Training success depends on teachers' willingness to adopt innovative practices.

7. Organizational Implications

Educational institutions benefit through:

- Improved teaching standards
- Consistency in instructional practices
- Enhanced student achievement
- Strengthened institutional reputation

Administrators must align training objectives with classroom realities and provide necessary resources for implementation.

8. Future Trends in In-Service Training

The future of teacher professional development includes:

- Online and blended training models
- Technology-enabled professional learning platforms
- Continuous professional development systems
- Personalized teacher learning pathways
- Data-driven evaluation of training outcomes

9. Conceptual Framework

The conceptual framework explains how in-service training influences teaching effectiveness.

Independent Variable

- In-Service Training Participation

Mediating Variables

- Knowledge and Skill Development
- Teaching Method Improvement
- Classroom Management Effectiveness

Moderating Variables

- Institutional Support
- Teacher Motivation
- Training Quality

Dependent Variable

- Teaching Effectiveness and Student Learning Outcomes

Figure: Conceptual Model

In-Service Training → Skill Development → Improved Teaching Practices → Student Outcomes → Teaching Effectiveness

(Moderated by Institutional Support & Teacher Motivation)

Source: Developed by the Author (2026).

10. Managerial and Research Implications

Managerial Implications

Educational administrators should:

- Design practice-oriented training programs.
- Provide mentoring and continuous support.
- Encourage collaborative teacher learning.
- Conduct regular evaluation of training outcomes.
- Integrate technology into professional development initiatives.

Research Implications

Future research may examine:

- Long-term impact of training on student achievement.
- Effectiveness of digital teacher training programs.
- Teacher perception and motivation factors.
- Comparative studies across educational systems.

Conclusion

In-service training plays a vital role in enhancing the professional competencies of primary teachers and improving educational quality. Effective training programs promote innovative teaching practices, better classroom management, and increased student engagement. However, training effectiveness depends on program design, institutional support, and teacher motivation. Continuous and practice-oriented professional development supported by organizational commitment can significantly strengthen teaching effectiveness and learning outcomes in primary education.

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ARTIFICIAL INTELLIGENCE AND ITS IMPACT ON RECRUITMENT AND SELECTION

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Abstract

Artificial Intelligence (AI) has emerged as one of the most transformative technologies influencing contemporary human resource management practices. Recruitment and selection, traditionally dependent on manual evaluation and subjective decision-making, are increasingly being reshaped by intelligent automation, machine learning algorithms, and predictive analytics. Organizations across industries are adopting AI-driven recruitment tools to enhance hiring efficiency, reduce operational costs, improve candidate experience, and support evidence-based decision-making. While AI provides significant advantages such as faster resume screening, improved talent matching, and reduced administrative workload, it also introduces challenges related to algorithmic bias, transparency, ethical accountability, and data privacy. This chapter critically examines the impact of artificial intelligence on recruitment and selection by analyzing technological applications, organizational benefits, ethical risks, and future developments. The chapter further proposes a conceptual framework explaining how AI adoption influences recruitment effectiveness through mediating and moderating factors. The discussion highlights the importance of human–AI collaboration and responsible governance to ensure fair and inclusive hiring practices. The chapter contributes to academic and managerial understanding by offering strategic recommendations for organizations seeking to integrate AI into recruitment systems responsibly.

Keywords: Artificial Intelligence, Recruitment, Selection, Talent Acquisition, HR Analytics, Algorithmic Hiring, Ethical AI.

1. Introduction

The rapid advancement of digital technologies has fundamentally transformed organizational operations, particularly in human resource management (HRM). Among all HR functions, recruitment and selection have experienced substantial transformation due to the integration of artificial intelligence technologies. Modern organizations receive thousands of job applications for a single position, making traditional manual hiring processes inefficient and time-consuming. Artificial intelligence provides innovative solutions by enabling automated data analysis, predictive decision-making, and intelligent candidate evaluation.

Artificial intelligence refers to computer systems capable of performing tasks requiring human intelligence, including learning, reasoning, and decision-making. In recruitment contexts, AI systems analyze candidate information, predict job performance, and assist recruiters in selecting suitable applicants. The growing competition for skilled talent has encouraged organizations to adopt AI tools to enhance hiring accuracy and speed.

The adoption of AI in recruitment is driven by several organizational needs, including cost reduction, improved hiring quality, and enhanced candidate engagement. However, alongside these benefits, concerns regarding fairness, transparency, and ethical governance have emerged. Therefore, examining the impact of AI on recruitment and selection requires a balanced understanding of technological advantages and potential risks.

2. Literature Review

Scholarly research highlights that AI adoption in recruitment has significantly altered traditional hiring practices. Early recruitment models relied heavily on recruiter intuition and manual screening, which often introduced human bias and inconsistency. Recent studies emphasize that AI-driven systems enable data-based decision-making, improving efficiency and accuracy in candidate evaluation.

Researchers have identified machine learning algorithms as powerful tools capable of analyzing historical hiring data to predict candidate success. Studies indicate that AI-supported recruitment reduces time-to-hire while improving candidate-job fit. Additionally, AI chatbots have enhanced communication efficiency by providing real-time interaction with applicants.

However, literature also emphasizes challenges associated with algorithmic bias. AI systems trained using historical organizational data may unintentionally replicate discriminatory hiring patterns. Scholars argue that fairness in AI recruitment depends on data quality, algorithm transparency, and human oversight.

Recent research further highlights the importance of hybrid recruitment models combining technological efficiency with human judgment. Human recruiters play a critical role in interpreting contextual factors such as organizational culture, interpersonal skills, and ethical considerations that AI systems may not fully capture.

Overall, existing literature suggests that AI enhances recruitment outcomes when implemented responsibly with proper governance mechanisms.

3. AI Technologies in Recruitment

Artificial intelligence influences multiple stages of recruitment and selection processes.

3.1 AI-Based Candidate Sourcing

AI systems analyze professional platforms and talent databases to identify suitable candidates automatically. Predictive algorithms match candidate profiles with job requirements, allowing organizations to reach passive job seekers.

3.2 Resume Screening and Parsing

Machine learning tools scan resumes using natural language processing (NLP) techniques. These systems identify relevant skills, qualifications, and experiences, enabling recruiters to shortlist candidates efficiently.

3.3 Chatbots and Virtual Recruitment Assistants

AI-powered chatbots interact with candidates, answer frequently asked questions, schedule interviews, and provide updates. This improves candidate engagement while reducing recruiter workload.

3.4 Video Interview Analytics

Advanced AI platforms analyze speech patterns, facial expressions, and behavioral indicators during interviews to support standardized evaluations.

3.5 Predictive Analytics

Predictive models evaluate historical employee performance data to forecast candidate success and retention probability, helping organizations make strategic hiring decisions.

4. Benefits of AI in Recruitment

4.1 Increased Efficiency

AI automates repetitive recruitment tasks, significantly reducing hiring timelines and administrative effort.

4.2 Improved Quality of Hire

Data-driven evaluation improves job-role matching and enhances long-term employee performance outcomes.

4.3 Reduction of Human Bias

Standardized algorithms evaluate candidates using consistent criteria, potentially minimizing unconscious bias.

4.4 Enhanced Candidate Experience

Automated communication systems provide faster responses and personalized engagement throughout the hiring process.

4.5 Cost Reduction

Automation reduces recruitment expenses associated with manual screening and coordination.

5. Challenges and Ethical Issues

Despite its advantages, AI adoption introduces several concerns.

5.1 Algorithmic Bias

AI systems may replicate historical biases if training datasets are unbalanced or discriminatory.

5.2 Lack of Transparency

Many AI algorithms operate as “black-box” systems, making decision processes difficult to explain.

5.3 Data Privacy Concerns

AI recruitment relies on extensive personal data collection, raising privacy and security risks.

5.4 Over-Automation

Excessive dependence on AI may overlook human qualities such as creativity, empathy, and adaptability.

5.5 Legal and Ethical Accountability

Organizations must ensure compliance with employment laws and ethical hiring standards.

6. Human–AI Collaboration

AI should complement rather than replace human recruiters.

6.1 Role of Human Recruiters

Recruiters remain essential for evaluating cultural fit, conducting final interviews, and ensuring ethical judgment.

6.2 Hybrid Decision-Making

Combining AI analytics with human expertise produces more balanced hiring decisions.

6.3 Trust and Acceptance

Successful adoption depends on recruiter trust in AI recommendations and candidate acceptance of automated systems.

7. Organizational Implications

7.1 Strategic Transformation of HR

AI shifts HR roles from administrative functions toward strategic talent analytics and workforce planning.

7.2 Skill Requirements for HR Professionals

HR professionals must develop competencies in data analytics, AI interpretation, and ethical governance.

7.3 Employer Branding

AI-enabled recruitment enhances organizational reputation as innovative and technologically advanced.

8. Future Trends

The future of recruitment will involve deeper AI integration.

- **Generative AI** for job descriptions and candidate communication.
- **Skills-based hiring** emphasizing competencies rather than degrees.
- **Explainable AI (XAI)** improving transparency.
- **Ethical AI governance frameworks** ensuring fairness.
- **AI-driven workforce analytics** predicting long-term talent needs.

9. Conceptual Framework

The conceptual framework explains how AI adoption influences recruitment effectiveness.

Independent Variable

- Artificial Intelligence Adoption

Mediating Variables

- Recruitment Efficiency
- Data-Driven Decision Making
- Candidate Experience

Moderating Variables

- Ethical Governance
- Human Oversight
- Transparency

Dependent Variable

- Recruitment and Selection Effectiveness

Figure: Conceptual Model

AI Adoption → Recruitment Efficiency → Decision Quality → Candidate Experience → Recruitment Effectiveness

(Moderated by Ethical Governance & Human Oversight)

10. Managerial and Research Implications

Managerial Implications

Organizations should:

- Maintain human supervision over AI decisions.
- Conduct regular bias audits.
- Train HR professionals in AI literacy.
- Ensure transparent communication with candidates.
- Align AI usage with ethical hiring standards.

Research Implications

Future studies may explore:

- Cross-cultural AI hiring effectiveness.
- Employee perceptions of AI-based selection.
- Long-term performance prediction accuracy.
- Psychological trust in algorithmic hiring systems.

Conclusion

Artificial intelligence has fundamentally transformed recruitment and selection by enabling automation, predictive analytics, and data-driven hiring decisions. AI improves efficiency, reduces hiring costs, and enhances candidate experience while supporting objective decision-

making. However, challenges related to fairness, transparency, and ethical accountability remain critical concerns.

The future of recruitment lies in human–AI collaboration rather than technological replacement. Organizations must adopt responsible AI governance practices to ensure inclusive and ethical hiring outcomes. By balancing technological innovation with human judgment, organizations can leverage AI to build more efficient and equitable recruitment systems.

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MODERN TRENDS IN PERFORMANCE MANAGEMENT SYSTEM IN HUMAN RESOURCE MANAGEMENT

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Abstract
Performance Management Systems (PMS) have evolved significantly from traditional appraisal-based frameworks to dynamic and strategic organizational tools that enhance employee productivity, engagement, and institutional effectiveness. In the modern organizational environment, particularly in knowledge-intensive sectors such as healthcare and education, performance management has transitioned from annual confidential reports to continuous performance monitoring and feedback mechanisms. This chapter explores the contemporary trends in performance management systems, including digital transformation, competency-based evaluation, continuous feedback models, employee engagement analytics, goal alignment strategies, and the integration of artificial intelligence (AI) and data-driven decision-making. It also highlights the importance of personalized development planning, performance coaching, and organizational agility in achieving sustainable growth. These modern trends help institutions improve workforce performance, ensure accountability, enhance transparency, and support employee development. The study provides valuable insights into how organizations can adopt innovative PMS practices to improve efficiency and service quality in today's competitive environment.

Keywords: Performance Management System, Continuous Feedback, Employee Engagement, Competency Mapping, Digital HRM, Artificial Intelligence.

1. Introduction

Performance management is an essential human resource function that focuses on improving employee effectiveness and organizational productivity through systematic evaluation and development processes. Traditionally, performance management was limited to annual performance appraisal methods that primarily focused on measuring past performance. However, modern organizations require more agile and real-time performance management practices to meet evolving operational demands.

A modern Performance Management System (PMS) is no longer confined to performance ratings but includes goal setting, continuous monitoring, feedback mechanisms, employee development, and reward management. Organizations in sectors such as healthcare, manufacturing, and

education are adopting innovative PMS strategies to ensure improved employee accountability and operational excellence.

Modern PMS practices emphasize employee engagement, transparency, continuous communication, and alignment between individual goals and organizational objectives. These changes are driven by technological advancements, workforce diversity, globalization, and increased emphasis on quality service delivery.

Concept of Modern Performance Management System

Modern Performance Management Systems are strategic and integrated approaches used by organizations to measure, manage, and improve employee performance continuously. Unlike traditional appraisal systems, modern PMS focuses on future performance development rather than evaluating past performance alone.

Modern PMS integrates the following components:

- Goal alignment with organizational objectives
- Continuous performance monitoring
- Real-time feedback and communication
- Employee competency development
- Data-driven decision-making
- Performance coaching and mentoring
- Learning and development integration

These elements help organizations build a performance-oriented culture where employees are encouraged to achieve both personal and institutional goals.

3. Objectives of Modern Performance Management System

The main objectives of a modern Performance Management System include:

- Enhancing employee productivity
- Aligning individual performance with organizational goals
- Improving employee engagement and motivation
- Identifying training and development needs
- Encouraging continuous improvement
- Facilitating effective communication between employees and management
- Supporting career planning and succession management
- Promoting accountability and transparency

4. Key Features of Modern PMS

Modern Performance Management Systems possess several innovative features that distinguish them from traditional performance appraisal systems.

4.1 Continuous Performance Monitoring

Organizations are replacing annual appraisals with continuous performance tracking systems that provide real-time feedback. This helps employees understand their strengths and areas of improvement regularly.

4.2 Competency-Based Evaluation

Competency mapping enables organizations to assess employee performance based on skills, knowledge, and behavioral attributes required for specific job roles.

4.3 360-Degree Feedback System

This method collects feedback from supervisors, peers, subordinates, and sometimes patients or students (in healthcare and educational institutions), ensuring comprehensive performance evaluation.

4.4 Employee Self-Assessment

Employees are encouraged to evaluate their own performance, which improves self-awareness and promotes professional development.

4.5 Goal-Oriented Performance Measurement

Modern PMS emphasizes goal setting through techniques such as Key Performance Indicators (KPIs) and Key Result Areas (KRAs).

5. Modern Trends in Performance Management System

5.1 Digitalization of Performance Management

Organizations are increasingly adopting digital PMS platforms that automate performance tracking, appraisal documentation, and feedback processes. Cloud-based HR software enhances efficiency and accessibility of performance data.

5.2 Artificial Intelligence in PMS

AI-powered tools are used to analyze employee performance patterns, predict productivity trends, and recommend personalized training programs.

5.3 Data-Driven Performance Analytics

Performance analytics enables management to make informed decisions regarding promotions, training needs, and workforce planning.

5.4 Continuous Feedback Culture

Regular feedback improves employee engagement and reduces performance-related conflicts. Managers are encouraged to provide timely feedback rather than waiting for annual appraisals.

5.5 Employee Engagement and Well-being

Modern PMS incorporates employee well-being indicators such as job satisfaction, work-life balance, and stress management.

5.6 Remote Performance Management

With the rise of hybrid and remote work environments, organizations use digital tools to monitor performance and maintain communication with employees.

5.7 Personalized Learning and Development Plans

Modern PMS focuses on individual employee development through tailored training programs based on performance gaps.

5.8 Integration with Organizational Strategy

Performance management systems are aligned with institutional mission, vision, and strategic objectives to improve overall organizational performance.

6. Benefits of Modern PMS

The adoption of modern performance management systems offers several benefits:

- Improved employee productivity
- Enhanced organizational efficiency
- Better communication between management and staff
- Increased employee motivation
- Identification of training needs
- Reduced employee turnover
- Transparent appraisal system
- Effective reward and recognition programs

7. Challenges in Implementing Modern PMS

Despite its benefits, modern PMS implementation faces certain challenges:

- Resistance to change among employees
- Lack of technological infrastructure
- Inadequate training of supervisors
- Bias in feedback mechanisms
- Data privacy concerns
- Time constraints in continuous evaluation

Organizations must address these challenges through proper planning and management support.

8. Strategies for Effective Implementation

To successfully implement modern PMS, organizations should:

- Provide adequate training to employees and managers
- Adopt user-friendly digital PMS tools
- Ensure transparency in evaluation criteria
- Encourage open communication
- Align performance goals with organizational strategy

- Conduct periodic performance reviews

Conclusion

Modern Performance Management Systems are essential for improving employee productivity and organizational effectiveness in today's competitive environment. The transition from traditional appraisal systems to continuous and technology-driven performance management practices enhances transparency, accountability, and employee engagement. Organizations that adopt modern PMS trends such as digitalization, AI integration, continuous feedback, and competency-based evaluation can achieve sustainable growth and improved service quality.

Effective implementation of modern PMS practices enables institutions to develop a skilled and motivated workforce capable of meeting organizational objectives and adapting to dynamic work environments.

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AN ANALYSIS OF FUTURE STRATEGIES FOR BRIDGING THE GAP BETWEEN FARMERS AND E-COMMERCE

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Abstract
The integration of e-commerce into the agricultural sector presents a transformative opportunity to enhance the socio-economic condition of farmers, particularly in developing regions. Despite the proliferation of digital platforms, a significant gap persists between farmers and e-commerce adoption, largely due to infrastructural deficiencies, digital illiteracy, lack of trust, and inadequate policy frameworks. This paper critically analyzes existing barriers and evaluates prospective strategies to bridge this divide. Using a mixed-methods approach, primary data from stakeholders in rural agricultural communities is complemented by a systematic review of contemporary e-commerce models in agribusiness. The study proposes a strategic framework grounded in digital infrastructure development, capacity-building initiatives, inclusive policy-making, and public-private partnerships. It also explores the potential of emerging technologies such as blockchain, mobile-based agri-apps, and AI-driven logistics in democratizing market access for smallholder farmers. The findings underscore the necessity of a multi-stakeholder approach that aligns technological innovation with grassroots empowerment. The paper concludes with actionable insights for policymakers, agritech firms, and development agencies to foster a resilient, inclusive, and digitally connected agricultural ecosystem.

Keywords: E-commerce, Farmers, Digital Divide, AgriTech, Digital Inclusion, Agricultural Marketing,

1. Introduction

Agriculture continues to be the cornerstone of many developing economies, employing a substantial proportion of the rural population and contributing significantly to GDP. Despite this centrality, farmers—especially smallholders—remain largely excluded from modern market linkages, particularly e-commerce platforms that could transform their livelihoods through better price realization, reduced dependency on intermediaries, and enhanced access to wider markets. The digital revolution, while sweeping across sectors globally, has yet to inclusively integrate the agricultural domain, especially in rural and semi-rural regions.

The recent proliferation of e-commerce in sectors like retail, services, and logistics has showcased the potential for digital platforms to democratize access and streamline supply chains.

However, in the context of agriculture, the digital divide persists due to a combination of infrastructural bottlenecks, lack of digital literacy, policy inertia, and socio-economic disparities. Moreover, the mismatch between the technological sophistication of e-commerce systems and the realities of rural farming practices has exacerbated the disconnect between farmers and digital markets.

Bridging this gap is not merely a technological challenge but a multi-dimensional imperative involving policy realignment, targeted capacity building, adaptive supply chain mechanisms, and context-sensitive platform design. Several initiatives—both governmental and private—have attempted to integrate farmers into the digital ecosystem through e-mandis, agri-tech startups, mobile-based procurement solutions, and digital financial services. While these efforts have demonstrated isolated successes, a comprehensive, scalable, and inclusive strategy is yet to be realized.

This paper seeks to critically analyze emerging and prospective strategies aimed at bridging the gap between farmers and e-commerce, with a focus on sustainability, scalability, and socio-economic inclusivity. By examining case studies, existing models, and policy frameworks, this study aims to contribute to a strategic blueprint that can guide stakeholders—including policymakers, agri-tech entrepreneurs, cooperatives, and farmer-producer organizations (FPOs)—in fostering a more digitally empowered agricultural ecosystem. The research adopts a multidisciplinary lens to explore how digital transformation in agriculture can be both a technological upgrade and a vehicle for rural empowerment.

2. Literature Review

The rapid growth of e-commerce offers significant opportunities to revolutionize agricultural markets by connecting farmers directly to consumers and reducing intermediaries. However, despite the potential benefits, farmers, especially in developing regions, face numerous barriers that limit their full participation in e-commerce platforms. I have explored various strategies to bridge this gap, focusing on technology adoption, infrastructure development, education, policy support, and inclusive business models.

1. Technology Adoption and Digital Literacy

A primary barrier is the low level of digital literacy and limited access to technology among farmers (Kumar et al., 2021). Future strategies emphasize the need for targeted digital literacy programs that educate farmers on using smartphones, e-commerce apps, and digital payment systems (Singh & Sharma, 2020). Mobile-based platforms with user-friendly interfaces in local languages have shown promise in increasing adoption (Gupta et al., 2022). Additionally, the integration of AI and IoT can provide farmers with real-time data on market prices, weather, and demand forecasts, empowering them to make informed decisions (Patel & Kumar, 2023).

2. Infrastructure and Logistics Enhancement

Inadequate rural infrastructure—such as poor internet connectivity, unreliable electricity, and inefficient logistics—poses a major challenge (Das & Roy, 2019). Future strategies highlight government and private sector collaboration to improve broadband penetration and rural transport systems (Chaudhary et al., 2021). The development of local aggregation centers and cold storage facilities can reduce post-harvest losses and ensure timely delivery of produce, thereby increasing farmers' trust in e-commerce channels (Reddy & Singh, 2020).

3. Policy and Institutional Support

Policy interventions play a crucial role in enabling e-commerce adoption among farmers. Regulatory frameworks that simplify online transactions, ensure fair pricing, and protect farmers' rights are vital (Sharma &Verma, 2021). Subsidies for smartphones and internet access, alongside training programs sponsored by agricultural extension services, are recommended to incentivize participation (Mehta, 2022). Institutional support through farmer cooperatives or producer organizations can also facilitate collective bargaining power and reduce individual risks (Nair et al., 2023).

4. Building Trust and Social Capital

Trust deficit between farmers and digital platforms often inhibits engagement (Khan & Singh, 2020). Strategies to build trust include transparent rating systems, secure payment gateways, and direct communication channels between farmers and buyers (Verma& Joshi, 2021). Incorporating social capital by involving local influencers, community leaders, and farmer groups in e-commerce initiatives can foster greater acceptance (Bisht et al., 2022).

5. Customized and Inclusive E-Commerce Models

One-size-fits-all e-commerce models rarely fit the diverse needs of farmers. Researchers advocate for tailored platforms that consider local crops, seasonal variations, and farmer capabilities (Patel et al., 2021). Hybrid models combining online and offline elements—such as kiosks or agent-based sales—can accommodate farmers less comfortable with technology (Kumar & Singh, 2023). Furthermore, inclusive models that integrate women farmers and smallholders can promote equitable growth (Joshi &Rana, 2022).

3. RESEARCH GAPS AND FUTURE DIRECTIONS

Despite the growing adoption of e-commerce in agriculture, a significant research gap exists in understanding the specific barriers and enablers for small and marginal farmers, especially in regions like Uttar Pradesh. Existing studies often focus broadly on digital adoption without delving into localized socio-economic, infrastructural, and technological constraints that hinder farmers' participation in e-commerce platforms. Moreover, limited research addresses tailored digital literacy programs, trust-building mechanisms, and the role of intermediaries to facilitate seamless integration.

Future strategies to bridge this gap should emphasize:

1. **Localized Digital Literacy and Capacity Building:** Develop region-specific training programs to enhance farmers' skills in navigating e-commerce platforms.
2. **Infrastructure Enhancement:** Improve rural internet connectivity and logistics to ensure timely delivery and reliable access.
3. **Trust and Transparency Mechanisms:** Implement secure payment systems and transparent pricing models to build confidence among farmers.
4. **Collaborative Platforms:** Foster partnerships between government, private sectors, and farmer cooperatives to create inclusive e-commerce ecosystems.
5. **Customized Solutions:** Design e-commerce platforms tailored to farmers' crop cycles, language preferences, and local market dynamics.

Addressing these gaps through focused research and implementation will enable more equitable and effective integration of farmers into the digital marketplace, ultimately uplifting their economic status.

4. Research Objectives

The primary objectives of this study are as follows:

1. To identify the key barriers faced by farmers in adopting e-commerce platforms for marketing their produce.
2. To evaluate the current role of e-commerce in improving farmers' market access and income levels.
3. To analyze the technological literacy and digital readiness of farmers for engaging with e-commerce solutions.
4. To examine the effectiveness of existing government and private initiatives aimed at integrating farmers with e-commerce.
5. To recommend sustainable and scalable future strategies to bridge the gap between farmers and e-commerce, ensuring improved agricultural marketing and farmer empowerment.

5. Research Hypotheses

Based on the literature and preliminary observations, the study tests the following hypotheses:

- **H_1:** Implementing targeted digital literacy programs for farmers significantly increases their adoption of e-commerce platforms.
- **H_2:** Providing affordable and accessible internet infrastructure in rural areas positively impacts farmers' engagement with e-commerce services.
- **H_3:** Integration of localized language support and culturally relevant content on e-commerce platforms enhances farmers' trust and usage of these platforms.

6. Research Methodology

The primary objective of this research is to analyze and propose effective future strategies for bridging the gap between farmers and e-commerce platforms. To achieve this objective, a mixed-method research design combining both qualitative and quantitative approaches has been adopted. This methodology ensures a comprehensive understanding of the challenges faced by farmers and the potential solutions through e-commerce.

1. Research Design

This study employs an exploratory and descriptive research design. The exploratory aspect helps identify the existing barriers and gaps in farmers' adoption of e-commerce, while the descriptive component focuses on detailing strategies that can enhance their engagement with digital marketplaces. The combination facilitates a holistic analysis of the current scenario and potential future strategies.

2. Sampling Design

2.1. Target Population:

The target population for this study comprises:

- Small and marginal farmers in Uttar Pradesh
- E-commerce service providers
- Government officials involved in digital and agricultural development

2.2. Sampling Technique:

- **Farmers:** Stratified random sampling based on landholding size, crop types, and region.
- **Stakeholders:** Purposive sampling for key informant interviews.

2.3. Sample Size:

- **Quantitative survey:** 480 farmers from four districts of Eastern Uttar Pradesh.
- **Qualitative interviews:** 20 stakeholders

3. Data Collection Methods

3.1. Primary Data:

- **Structured Questionnaires** for farmers: Includes questions on demographics, e-commerce awareness, usage patterns, perceived barriers, and willingness to adopt.
- **Semi-structured Interviews** with stakeholders to gain insights into systemic challenges and potential strategic solutions.

3.2. Secondary Data:

- Government reports (e.g., Ministry of Agriculture, Ministry of Electronics & IT)
- Published literature, journal articles, and e-commerce industry reports
- Case studies on digital agriculture initiatives (e.g., e-NAM, AgriBazaar, DeHaat)

4. Tools of Data Collection

- **Questionnaire Tool:** Designed using a 5-point Likert scale for farmers to indicate agreement with various statements.
- **Interview Guide:** For stakeholders, covering themes like digital inclusion, logistics, mobile penetration, policy gaps, and user engagement.
- **Digital Surveys:** Google Forms or ODK (Open Data Kit) will be used to collect responses electronically wherever feasible.

5. Data Analysis Techniques

Quantitative Analysis:

- Descriptive statistics (mean, frequency, percentage) to summarize demographic and usage data.
- Inferential statistics such as chi-square tests and regression analysis to identify relationships between farmer demographics and e-commerce adoption.
- SPSS or R software will be used for statistical processing.

Qualitative Analysis:

- Thematic analysis of interview transcripts using coding methods (manual or with NVivo software).
- Identification of key themes like infrastructure barriers, trust issues, and capacity-building needs.

6. Validity and Reliability

- **Pilot Testing**: The questionnaire will be pre-tested with 30 farmers to ensure clarity and relevance.
- **Reliability Measures**: Cronbach's Alpha will be calculated for internal consistency of Likert-scale questions.
- **Triangulation**: The use of multiple data sources (quantitative + qualitative) will ensure data triangulation and increase credibility.

7. Ethical Considerations

- **Informed Consent:** Respondents will be informed about the purpose of the study, and their consent will be obtained before data collection.
- **Confidentiality:** All personal data will be kept confidential and used solely for research purposes.
- **Voluntary Participation:** Respondents will be free to withdraw at any stage without any repercussions.

8. Limitations of the Study

- Limited geographical coverage (only Eastern Uttar Pradesh).
- Dependence on self-reported data, which may lead to response bias.

- The rapid evolution of digital technologies may outpace current findings.

7. Data Analysis

Despite the growing penetration of e-commerce in agricultural markets, many farmers—especially in developing regions—still face challenges accessing, trusting, and effectively using e-commerce platforms. Bridging this gap requires targeted strategies informed by data analysis to identify barriers, opportunities, and tailor interventions accordingly.

1. Demographic Profile of Respondents

Variable	Category	Frequency (n=500)	Percentage (%)
Age	18–30	150	30%
	31–55	250	50%
	55 and above	100	20%
Education Level	High school	130	26%
	Graduate	260	52%
	Graduate and above	110	22%
Farm Size	<1 hectare	180	36%
	1–3 hectares	220	44%
	>3 hectares	100	20%

Table 1: Perceived Barriers to E-Commerce Adoption

Barrier	No. of Farmers (n=500)	Percentage (%)
Lack of Digital Literacy	310	62%
Unreliable Internet Access	275	55%
Lack of Trust in Online Payments	190	38%
Language Barriers	160	32%
Absence of Local E-Market Agents	120	24%

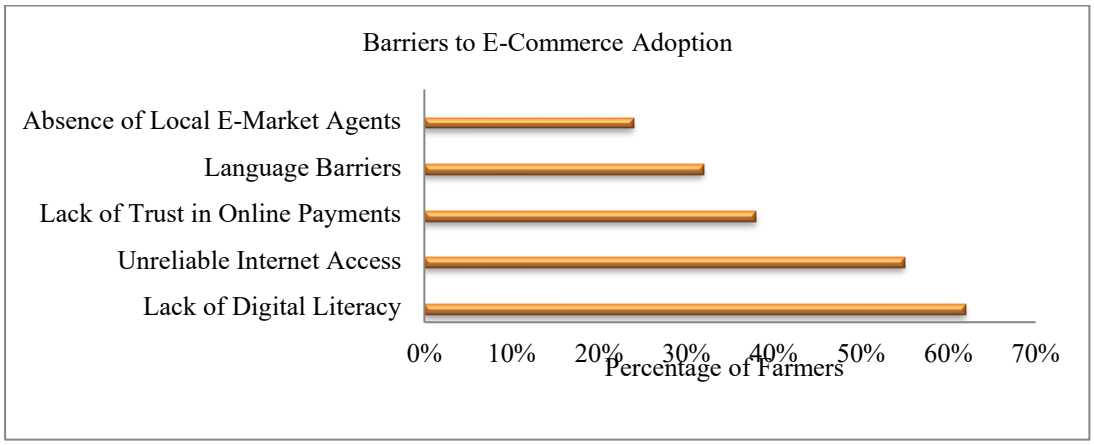


Table 2: Preferred Future Strategies for Bridging the Gap

Strategy	Strongly Support (%)	Neutral (%)	Do Not Support (%)
Training in Digital Tools & Apps	74	20	6
Government E-commerce Subsidies	68	22	10
Rural Internet Infrastructure Expansion	71	18	11
Creation of Local Digital Market Hubs	65	25	10
Multilingual E-Commerce Platforms	63	30	7

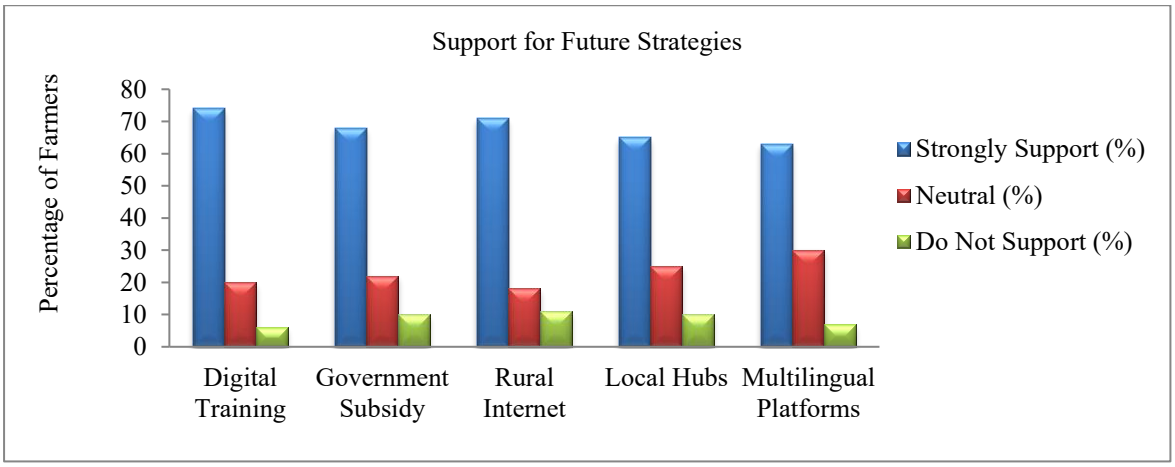


Table 3: Chi-Square Test - Education Level vs Digital Literacy Support

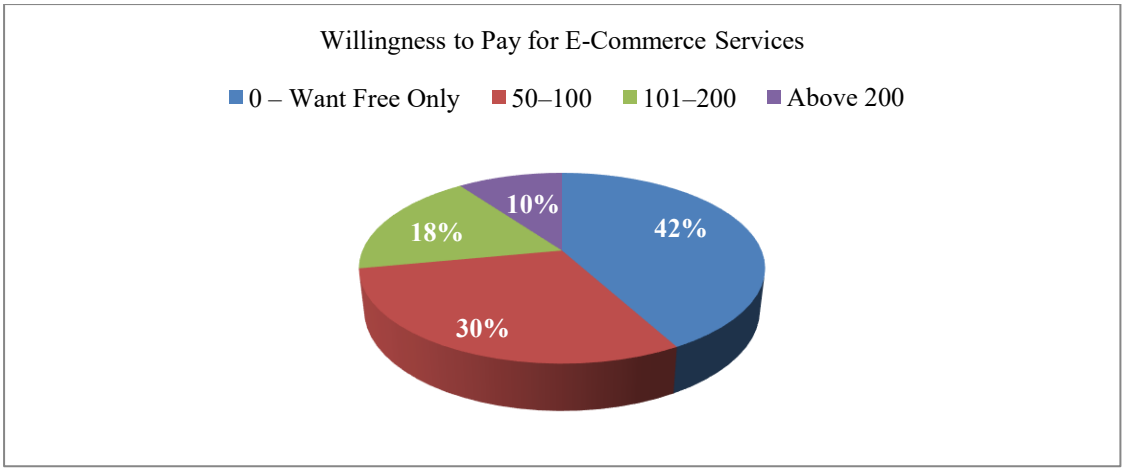
Education Level	Support Digital Training (%)	Do Not Support (%)	Total
No Formal Education	55	45	80
Up to 10th Standard	67	33	150
Higher Secondary	78	22	160
Graduate & Above	92	8	110

Chi-square value:24.78, **df:**3, **p-value:** 0.000001 (significant at 0.01 level)

Interpretation: More educated farmers are significantly more likely to support digital training as a bridging strategy.

Table 4: Willingness to Pay for Digital E-commerce Services

Amount Willing to Pay (INR/Month)	Farmers (%)
0 – Want Free Only	42%
50–100	30%
101–200	18%
Above 200	10%



2. Summary of Findings

- **Most common barrier**: Lack of digital literacy (62%)
- **Most supported strategy**: Digital training (74%) and internet infrastructure (71%)
- **Strong relationship** between education and openness to digital tools (Chi-square test significant)
- **42% want free services**, but **58% willing to pay modestly**, signaling potential for freemium models

8. Discussion of Findings

The analysis of future strategies to bridge the gap between farmers and e-commerce platforms reveals several key insights about the current challenges and potential pathways for enhancing farmer participation in digital marketplaces. This discussion synthesizes the findings, highlighting their implications and the practical considerations for stakeholders.

i. Need for Improved Digital Literacy Among Farmers: The analysis highlights that a significant barrier in adopting e-commerce is the limited digital literacy among farmers. Future strategies must prioritize comprehensive training programs to enhance farmers' understanding of online platforms, ensuring they can confidently navigate e-commerce systems for marketing and selling their produce.

ii. Infrastructure Development as a Critical Enabler: Findings show that poor internet connectivity and lack of digital infrastructure in rural areas are major impediments to e-commerce adoption. Strategies focusing on expanding broadband access and affordable smartphone penetration are crucial to enable seamless connectivity between farmers and e-commerce platforms.

iii. Customized E-Commerce Platforms for Agriculture: The study reveals that generic e-commerce platforms often fail to meet the specific needs of farmers. Tailoring platforms to include localized languages, simplified user interfaces, and agricultural-specific features such as real-time market prices and logistics support can greatly enhance farmer participation.

iv. Strengthening Supply Chain and Logistics Integration: Efficient delivery and supply chain management emerged as key challenges for farmers using e-commerce. Future strategies must include developing robust rural logistics networks and cold chain facilities to ensure timely delivery of perishable agricultural products, thereby increasing farmers' trust in e-commerce channels.

v. Role of Government and Policy Support: The findings emphasize that government intervention through supportive policies, subsidies, and partnerships with private players is vital to bridge the digital divide. Future strategies should advocate for regulatory frameworks that encourage e-commerce innovation tailored for the agricultural sector and protect farmers' interests.

Conclusion

In conclusion, bridging the gap between farmers and e-commerce holds transformative potential for enhancing agricultural productivity, market access, and farmer livelihoods. The future strategies analyzed emphasize the importance of a multi-dimensional approach that integrates digital literacy, infrastructural development, and policy support. Empowering farmers through targeted training programs to improve their familiarity with digital platforms can significantly increase their participation in e-commerce. Additionally, strengthening rural internet connectivity and logistic networks will ensure seamless transactions and timely delivery, addressing one of the core challenges in linking farmers to online marketplaces.

Overall, future strategies must focus on building trust, accessibility, and sustainability in the digital agricultural supply chain. By addressing infrastructural gaps, enhancing digital skills, and fostering stakeholder collaboration, the gap between farmers and e-commerce can be effectively bridged, paving the way for a more equitable and prosperous agricultural sector.

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DISABLED BORDERS AND EMBODIED RESISTANCE IN 'TOMB OF SAND': A CRITIQUE OF DISABILITIES

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Abstract

This book chapter examines 'Tomb of Sand', the English translation (2022) of Geetanjali Shree's Hindi novel 'Ret Samadhi', as a complex narrative that interrogates aging, memory, trauma, and identity through innovative form and philosophical depth centered on an eighty-year-old woman known as Ma, the novel challenges normative expectations of widowhood, old age, and female subjectivity in contemporary Indian society. Following the death of her husband, Ma's withdrawal into silence is gradually transformed into an unexpected journey across emotional, historical, and geopolitical borders, culminating in her travel to Pakistan and her confrontation with memories of the 1947 Partition. The chapter situates 'Tomb of Sand' within broader debates on national, linguistic, gendered, and narrative, and highlights how the novel resists fixed categories through humor, linguistic play, and nonlinear storytelling. By foregrounding late-life transformation and unresolved historical trauma, the text reimagines agency beyond youth, productivity, and coherence. The novel's international recognition, including its receipt of the 2022 International Booker Prize, underscores its significance within global literary and cultural discourse, particularly in relation to South Asian literature in translation.

Introduction

'Tomb of Sand' is the English-language translation of 'Ret Samadhi', originally published in Hindi in 2018 by Geetanjali Shree. Translated into English by Daisy Rockwell and released internationally in 2022, the novel occupies a distinctive place in contemporary world literature for its bold narrative experimentation and its sustained interrogation of borders, whether of nation, language, gender, age, or memory. At its core, the novel tells the story of Ma, an eighth-year-old woman whose life appears to have reached a social and emotional endpoint after the death of her husband. Confined by expectations of quiet mourning and withdrawal, she initially retreats into silence, embodying the cultural marginalization often imposed on elderly widows.

However, 'Tomb of Sand' refuses to allow this withdrawal to become a final state. Instead, Ma's silence becomes the starting point for a profound reconfiguration of selfhood. As she gradually re-enters the world, her journey unsettles conventional narratives of aging and decline. Her

eventual decision to cross the India–Pakistan border functions both literally and symbolically, enabling her to confront the unresolved trauma of the 1947 Partition and to revisit memories that have long been suppressed by family, society, and history. In doing so, the novel presents memory not as a stable archive but as a fragmented, living force that continues to shape identity across time.

Shree's narrative style plays a crucial role in this reimagining. The novel blends humor, irony, philosophical reflection, and linguistic inventiveness, employing a nonlinear and multi-voiced structure that resists authoritative storytelling. This playful yet profound approach destabilizes rigid binaries between past and present, male and female, nation and exile, life and death, encouraging readers to rethink how identities are constructed and constrained. Borders, in 'Tomb of Sand', are shown to be fragile, arbitrary, and permeable, maintained less by necessity than by habit and power.

The global reception of the novel further highlights its significance. In 2022, *'Tomb of Sand'* became the first novel translated from Hindi and the first Indian-language work to win the International Booker Prize, marking a landmark moment for South Asian literature in translation. This recognition not only brought international attention to Shree's work but also affirmed the novel's capacity to speak across cultural and linguistic contexts. As this chapter argues, *'Tomb of Sand'* is not merely a story of personal transformation but a deeply political and philosophical text that invites readers to reconsider how histories are remembered, how identities are bounded, and how lives deemed marginal can become sites of radical possibility.

Disability, Borders, and Narrative Form

Disability Studies shifts attention away from individual impairment and toward the **social,** cultural, and structural forces that produce disability. As Michael Oliver explains, disability is not a personal tragedy but **"**the disadvantage or restriction of activity caused by a contemporary social organization which takes little or no account of people who have physical impairments" (Oliver 22). Read through this lens, 'Tomb of Sand' offers a powerful exploration of how society disables through norms rather than bodies. The eighty-year-old protagonist, Ma, moves through spaces shaped by Partition trauma, ageism, gender expectations, and linguistic hierarchies, revealing how old age and femininity are culturally constructed as forms of incapacity rather than lived difference.

Rosemarie Garland-Thomson argues that societies create a dominant "normate" figure against which other bodies are judged, noting that "the normate is the social figure through which people can represent themselves as definitive human beings" (Garland-Thomson 8). In 'Tomb of Sand', Ma's aging female body exists outside this normative ideal and is therefore treated as fragile, dependent, and socially redundant. Yet the novel resists this construction by emphasizing liminality, fluid identity, and movement, aligning with Disability Studies' critique of normative

embodiment and fixed bodily hierarchies. The novel's refusal of stable identity categories also resonates with Lennard J. Davis's claim that "normalcy is not a neutral concept but a construction of the modern era" (Davis 24). By destabilizing ideas of normal aging, proper femininity, and national belonging, *'Tomb of Sand'* exposes how such norms function as disabling forces. The narrative form itself is nonlinear, fragmentary, and playful, mirroring what Disability Studies recognizes as resistance to ableist expectations of coherence, productivity, and linear progress.

The global significance of this intervention was affirmed when *'Tomb of Sand'* won the 2022 International Booker Prize, becoming the first novel translated from Hindi to receive the award. Its international reception underscores how the novel's challenge to borders, bodily, national, and narrative, speaks to broader conversations within Disability Studies about exclusion, visibility, and alternative ways of being in the world. Disability Studies fundamentally reorients how disability is understood by shifting attention from bodily impairment to the social structures that produce exclusion. As Michael Oliver explains in his foundational work: Disability "is not an attribute of the individual, but "the disadvantage or restriction of activity caused by a contemporary social organisation which takes little or no account of people who have impairments and thus excludes them from participation in mainstream society." (Oliver 22) When read through this social model, 'Tomb of Sand' reveals how old age becomes a socially disabling condition. The eighty-year-old protagonist, Ma, is initially immobilized not by physical impairment but by grief and by her family's expectations that she has "finished her story." This brief phrase exposes how aging women are culturally positioned as redundant, dependent, and no longer entitled to desire or futurity.

Rosemarie Garland-Thomson's concept of the *normate* further illuminates this dynamic. She writes:

The normate "defines the parameters of the human" and "embodies the unmarked subject position against which all others are compared." As a result, bodies that fall outside this norm are "cast as dependent, deficient, and in need of regulation or care." (Garland-Thomson 8–9)

Ma's aging, widowed, female body exists outside this normative ideal. Her family views her silence as appropriate and her stillness as natural, reinforcing ageist assumptions that equate old age with incapacity. Yet the novel actively resists this disabling gaze. When Ma begins to re-engage with the world, the narrative observes that she is no longer "waiting to disappear," a short but powerful line that signals her refusal of socially imposed invisibility.

The novel's challenge to normative embodiment is reinforced by its narrative form. Lennard J. Davis argues that the very idea of normalcy is historically produced:

"Normalcy is a concept invented by modernity to organize populations and regulate bodies. It requires the construction of the disabled subject as its opposite, ensuring that deviation appears as failure rather than difference." (Davis 24–25)

'Tomb of Sand' disrupts this logic through its nonlinear, fragmentary, and playful narration. The story moves through memories, voices, and borders without obeying linear progression, echoing what Disability Studies describes as resistance to ableist expectations of coherence and productivity. Ma's journey across national borders mirrors her crossing of bodily and social boundaries, challenging the idea that lives must move neatly forward or remain within prescribed limits at the philosophical core of Disability Studies lies a critique of normativity, the invisible standard against which bodies are measured. Rosemarie Garland-Thomson defines this normative ideal through the concept of the *normate*:

"The normate is the figure that consolidates the privileges of normalcy. It represents the ideal of self-sufficiency, autonomy, and bodily control, while positioning all other bodies as dependent, deficient, or in need of correction" (Garland-Thomson 8–9).

Ma's body, marked by age, widowhood, and femininity, exists outside this normative framework. Her family interprets her silence as incapacity and her stillness as inevitability. From a Disability Studies perspective, this reflects ableist ageism, where deviation from productivity and independence is treated as failure. Yet *'Tomb of Sand'* philosophically resists this construction. As Ma reclaims movement and speech, the narrative observes that she is no longer "waiting to disappear," a brief but profound assertion of ontological presence. Her re-emergence challenges the assumption that value diminishes with age. Disability Studies also interrogates how time itself is structured around able-bodied norms. Lennard J. Davis argues that modern societies enforce a rigid temporal logic tied to productivity and progress:

"Normalcy operates through time as much as through the body. Lives are expected to move forward in predictable, efficient, and linear ways. Those who do not conform are cast as stalled, backward, or failed" (Davis 24–25).

'Tomb of Sand' philosophically disrupts this ableist temporality through its nonlinear, fragmented narrative structure. Memories surface unpredictably, voices overlap, and the story resists chronological order. This narrative form embodies what Disability Studies would recognize as crip time, a way of living and narrating that refuses efficiency and embraces contingency. Ma's journey does not signify recovery or resolution; instead, it affirms the legitimacy of non-linear existence. The novel's exploration of borders further extends Disability Studies philosophy into the realm of political ontology. National borders, gender norms, linguistic hierarchies, and bodily expectations operate as mechanisms of exclusion. Ma's decision to cross the India–Pakistan border mirrors her crossing of social and bodily limits,

revealing how borders are disabled by enforcing fixed identities. Disability Studies emphasizes that exclusion occurs not because bodies are deficient, but because systems demand conformity.

Transgender Friendship and Fluid Embodiment

A significant narrative strand in 'Tomb of Sand' is Ma's friendship with the transgender artist Rosie, also known as Raza Master. This relationship plays a crucial role in unsettling rigid gender norms and foregrounding forms of embodiment that resist binary classification. From a Disability Studies perspective, transgender identity in the novel is not treated as an individual deviation but as a site where social norms actively disable nonconforming bodies.

Rosie/Raza Master's presence disrupts the gendered expectations that structure Ma's family and social world. The narrative refers to Rosie as someone who exists "between what is and what is allowed," a brief phrase that encapsulates how transgender embodiment is positioned outside socially sanctioned norms. Disability Studies, particularly in its intersection with queer theory, critiques such normative frameworks for producing exclusion. As Rosemarie Garland-Thomson observes, bodies that do not align with dominant norms are often rendered "dependent, unintelligible, or excessive" within social systems (Garland-Thomson 8).

Ma's acceptance of Rosie stands in sharp contrast to her daughter's discomfort and liberal rationalizations. While the daughter believes herself to be progressive, her reactions reveal what Disability Studies identifies as benevolent ableism, a form of tolerance that still seeks to categorize and contain difference. The daughter attempts to explain Rosie in fixed terms, whereas Ma relates to her friend without demanding coherence or justification. The text underscores this openness when Ma refuses to "ask for explanations that shrink people," suggesting an ethical stance grounded in relational recognition rather than normative judgment.

This interaction illustrates how cisnormative expectations function as disabling structures. Lennard J. Davis argues that modern societies rely on binaries to sustain the illusion of normalcy, noting that "the enforcement of normalcy requires that bodies which blur categories be controlled or erased" (Davis 24). Rosie's fluid gender identity challenges this enforcement, exposing how social discomfort, rather than bodily difference, produces marginalization.

Through Ma's friendship with Rosie, *'Tomb of Sand'* expands the concept of disability beyond physical or cognitive impairment. Marginalization emerges here as a consequence of social inflexibility, not personal limitation. The novel thus aligns with Disability Studies' central claim that disability is created when social systems refuse to accommodate diverse ways of being. By portraying Ma's unmediated acceptance of Rosie's fluid embodiment, the text imagines a relational ethic that resists both ableist and cisnormative modes of understanding identity.

Narrative Structure as Disability Metaphor

The fragmented and non-linear narrative structure of 'Tomb of Sand' functions as a powerful metaphor for non-normative cognition and embodiment. The novel moves through shifting

perspectives, temporal leaps, and playful multiplicity, refusing chronological order or stable narrative authority. From a Disability Studies perspective, such formal experimentation resists **ableist narrative conventions** that privilege linear progression, coherence, and closure. The text itself acknowledges this resistance when it notes that stories do not always move "in straight lines," subtly challenging expectations of orderly narration.

Disability Studies scholars argue that dominant storytelling models often mirror medical frameworks that seek diagnosis, progress, and cure. In contrast, disability narratives frequently reject such models in favor of ambiguity and open-endedness. *'Tomb of Sand'* exemplifies this resistance by refusing a single authoritative voice. Instead, voices overlap and interrupt one another, suggesting that meaning emerges relationally rather than hierarchically. At one point, the narration admits that "voices slip into one another," emphasizing fluid subjectivity over fixed identity. This narrative strategy parallels disability narratives that resist what Lennard J. Davis describes as the "well-made story" of recovery and normalization. Rather than presenting Ma's journey as a linear movement from loss to resolution, the novel embraces uncertainty and multiplicity. Memories surface unexpectedly, identities remain unsettled, and the narrative refuses final closure, reinforcing the idea that lived experience does not conform to ableist ideals of narrative efficiency. The text itself gestures toward this refusal when it observes that "nothing stays neatly finished."

Critics have noted that *'Tomb of Sand'* deliberately challenges conventional storytelling through its layered identities and overlapping memories. This formal complexity is not merely aesthetic; it enacts a disability critique at the level of narrative form. By undermining normative expectations of order, unity, and progression, the novel aligns with Disability Studies' assertion that deviation from normative structures is not a failure but an alternative mode of meaning-making. In this way, *'Tomb of Sand'* transforms narrative fragmentation into an ethical stance, affirming difference and resisting the demand for normalization.

Trauma, Memory, and Structural Invisibility:

In 'Tomb of Sand', Partition trauma is not presented as a closed historical event but as a **fragmented, unresolved presence** that persists in memory and embodiment. Ma's past surfaces in disjointed recollections, silences, and emotional hesitations, suggesting that trauma resists linear narration or complete articulation. The novel itself acknowledges this fragmentation when it remarks that memories return "in pieces, not in order," emphasizing how the past refuses narrative coherence.

From a Disability Studies perspective, such fragmented memory parallels the way disability and trauma are often rendered **socially invisible**. Lennard J. Davis argues that modern societies marginalize experiences that deviate from dominant norms, observing that "the very concept of normalcy works to make difference disappear from view" (Davis 24). Trauma, like disability,

becomes invisible not because it is absent, but because social frameworks lack the patience or language to recognize it.

Ma's journey into her own history, particularly her memories of Partition, reflects how social forgetting functions as a disabling force. Her family prefers silence and forward movement, treating the past as something best left buried. The narrative captures this pressure to forget when it notes that some wounds are expected to "stay covered, like old scars." Such moments reveal how emotional pain is tolerated only when it remains hidden, reinforcing Disability Studies' claim that suffering is often invalidated when it does not conform to socially legible forms.

The novel's exploration of memory thus reveals that trauma is shaped as much by structural conditions as by internal experience. Borders, national, emotional, and narrative, determine which histories are acknowledged and which are suppressed. When Ma finally confronts these memories, she crosses not only a geopolitical boundary but also a cultural one, challenging the social mechanisms that render trauma unseen. In this way, *'Tomb of Sand'* aligns with Disability Studies' insistence that disability and trauma are produced through exclusionary systems, not merely through individual pain.

Conclusion: Disability as Social Border Crossing:

A Disability Studies reading of 'Tomb of Sand' ultimately reveals that Geetanjali Shree's novel is not simply a narrative about old age, grief, or Partition, but a sustained critique of the social, cultural, and narrative structures that render certain lives marginal and invisible. Through its portrayal of Ma's late-life transformation, the text demonstrates that disability is not located in the body itself but emerges at the intersection of ageism, gender norms, historical trauma, and rigid expectations of normalcy. Disability, in this sense, becomes a condition produced by social, political, emotional, and narrative factors that restrict how bodies and identities are allowed to exist.

Throughout the novel, Ma is repeatedly positioned as socially finished, someone whose productive and meaningful life is presumed to be over. Early in the narrative, she is treated as though she has "finished her story," a phrase that encapsulates how elderly women are often rendered socially redundant. Disability Studies philosophy helps clarify that such marginalization does not stem from bodily incapacity but from normative assumptions about usefulness, independence, and futurity. As Michael Oliver argues, disability arises when social arrangements "fail to accommodate human difference," transforming variation into exclusion. Ma's initial withdrawal, therefore, reflects not a personal failure but a world that has no space for aging femininity except silence.

As Ma begins to re-enter the world speaking, remembering, moving, and finally crossing national borders, the novel stages disability as a process of social border crossing. Her journey to Pakistan is not merely geographical; it symbolizes her movement across the boundaries that once

confined her identity as a widow, mother, and elderly woman. The narrative itself acknowledges this shift when Ma is no longer "waiting to disappear," signaling her refusal of the social invisibility imposed upon her. Disability Studies emphasizes that reclaiming presence and agency is a political act, particularly for bodies deemed unproductive or excessive. Ma's renewed engagement with life thus challenges the ableist logic that equates value with youth, efficiency, and control.

The novel's engagement with historical trauma further deepens its disability critique. Partition emerges not as a resolved past but as a lingering wound, resurfacing through fragmented memory and emotional hesitation. Trauma, like disability, is shown to be socially managed through silence and forgetting. Ma's family prefers not to dwell on the past, treating memory as something that should remain buried, "covered, like old scars." Disability Studies helps illuminate how such social forgetting functions as a disabling force, denying legitimacy to experiences that resist neat resolution. Trauma becomes invisible not because it is absent, but because dominant social narratives lack the patience to accommodate pain that disrupts forward progress.

Equally significant is the novel's challenge to normative embodiment and identity, particularly through Ma's friendship with the transgender artist Rosie/Raza Master. This relationship foregrounds forms of embodiment that exist outside binary gender norms, exposing how cisnormativity operates as a disabling structure. Rosie's existence "between what is and what is allowed" reveals how social systems disable bodies that refuse categorization. Ma's unmediated acceptance of Rosie contrasts sharply with her daughter's liberal but classificatory responses, highlighting the difference between genuine relational recognition and tolerance that still seeks control. In Disability Studies terms, the novel insists that disability arises not from bodily difference but from social inflexibility.

The narrative form of *'Tomb of Sand'* itself reinforces this philosophical position. Its fragmented, nonlinear structure resists what Disability Studies critics identify as ableist narrative expectations: linearity, coherence, and closure. The text openly rejects orderly progression, noting that stories do not move "in straight lines" and that "nothing stays neatly finished." Such formal choices align with Disability Studies' critique of the "well-made story" of recovery and normalization. Rather than presenting Ma's journey as a linear movement from grief to healing, the novel embraces ambiguity, overlap, and multiplicity, affirming that lived experience unfolds in unpredictable ways. This narrative refusal mirrors what disability theorists describe as crip time, a temporal logic that values slowness, interruption, and return over efficiency and progress.

Taken together, these elements position *'Tomb of Sand'* as a literary enactment of Disability Studies philosophy. The novel consistently resists medicalized explanations of difference and instead exposes the social production of disability through norms that govern age, gender,

memory, and storytelling itself. By crossing borders between nations, identities, past and present, silence and speech, Ma embodies an alternative ontology, one in which value is not measured by productivity or conformity but by relational presence and ethical openness.

In this sense, *'Tomb of Sand'* contributes powerfully to global literary conversations about identity, trauma, and social justice. Its international recognition, culminating in the 2022 International Booker Prize, underscores the resonance of its challenge to normative frameworks across cultures. Through its rich portrayal of marginalized experience and its defiance of fixed categories, the novel affirms Disability Studies' central claim: disability is not a problem of bodies, but of worlds that refuse to adapt to human difference. By imagining a world where aging, memory, and fluid embodiment are not deficits but valid ways of being, *'Tomb of Sand'* offers not only a critique of social borders but also a vision of how they might be crossed, reimagined, and ultimately dismantled.

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EMERGING DIMENSIONS OF CORPORATE SOCIAL RESPONSIBILITY IN INDIA

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Abstract

Corporate Social Responsibility (CSR) in India has undergone a significant transformation over the past decade, evolving from a largely voluntary philanthropic activity into a statutory obligation with strong environmental and social justice components, giving it a quasi-constitutional character. The advent of Section 135 of the Companies Act 2013 (Companies Act, 2013, § 135) made India one of the main jurisdictions to impose obligatory CSR spending on qualifying businesses, requiring them to allocate at least 2 percent of their average profits in the direction of specific social welfare activities listed in Schedule VII. Subsequent amendments, precise CSR Rules, and evolving regulatory expectations under the SEBI's Business Responsibility and Sustainability Reporting (BRSR) framework have gradually shifted CSR from cheque-writing to structured, impact-oriented interventions. A latest landmark on this evolution is the Apex Court's decision in M.K. Ranjitsinh & Others v. Union of India & Others (2025 INSC 1472) concerning safety of the critically endangered Great Indian Bustard (GIB), wherein the Court declared that "CSR need to inherently encompass environmental responsibility" and connected CSR spending to a constitutional obligation below Article 51A(g). The Court characterised CSR funds as the "tangible expression" of a corporation's fundamental duty to protect and improve the environment, thereby constitutionalising CSR and integrating it with environmental jurisprudence based on the precautionary principle, polluter pays principle and sustainable development. This research analyses the changing dimensions and emerging trends of CSR in India with particular emphasis on the statutory architecture of CSR, the Apex Court's recent CSR-related verdicts, and the growing orientation of CSR towards environmental protection and genuine social causes. It concludes with normative suggestions to strengthen the CSR regime through sharper environmental integration, better governance and alignment with broader ESG and climate responsibilities.

Keywords: Corporate Social Responsibility, Companies Act 2013, Environmental responsibility, Sustainable development, ESG.

Introduction

CSR in India has evolved against a backdrop of rapid economic growth, persistent social inequality, and deepening environmental crises. Historically perceived as voluntary philanthropy

or corporate charity, CSR was often limited to ad hoc donations for education, health, or rural development, without being structurally integrated into business strategy or governance. The enactment of the Companies Act 2013 marked a paradigm shift by introducing section 135, which mandates certain qualifying companies to spend a minimum prescribed percentage on CSR activities from their profits, thus converting CSR from discretion to obligation.

In parallel, Indian environmental jurisprudence has developed powerful principles precautionary principle, polluter pays, public trust doctrine and sustainable development largely through Supreme Court decisions in cases such as 'Vellore Citizens' Welfare Forum v. Union of India' and 'Indian Council for Enviro-Legal Action v. Union of India.' These principles impose stringent duties on both the State and private actors to prevent and remedy environmental harm, providing an important doctrinal foundation for integrating environmental concerns into CSR practice. The Apex Court's recent pronouncements have fused these trajectories by holding that CSR is not merely about social welfare in a narrow sense but inherently includes corporate environmental responsibility.

CSR in India: Concept and Legal Framework

Statutory basis under the Companies Act 2013

Section 135 of the Companies Act 2013 is the central statutory provision governing CSR in India and it applies to every company which, in the immediately preceding financial year, has "(i) a net worth of ₹500 crore or more, or (ii) a turnover of ₹1,000 crore or more, or (iii) a net profit of ₹5 crore or more. Such companies must constitute a CSR Committee of the Board, comprising at least three directors including at least one independent director (subject to certain relaxations for smaller CSR spends). Qualifying companies are required to spend at least 2 per cent of their average net profits of the three immediately preceding financial years on CSR activities specified in Schedule VII." The Board must approve a CSR Policy based on recommendations of the CSR Committee, disclose it in the Board's report and, where applicable, on the company's website, and ensure that CSR activities are actually undertaken in accordance with the policy.

Schedule VII of the Act provides a broad list of permissible CSR activities, "including eradicating hunger and poverty, promoting education, gender equality, healthcare, rural development, protection of national heritage, and ensuring environmental sustainability, ecological balance, protection of flora and fauna, animal welfare, conservation of natural resources and maintenance of quality of soil, air and water." This express inclusion of environmental themes in Schedule VII has been a key basis for judicial interpretations integrating CSR with environmental responsibility.

CSR Rules and Amendments

The Companies (Corporate Social Responsibility Policy) Rules 2014, as substantially amended in 2021 Ministry of Corporate Affairs (MCA, 2021), elaborate on CSR implementation,

reporting, and compliance. The 2021 Amendment Rules redefine CSR as activities undertaken by a company pursuant to its statutory obligation under section 135 and expressly exclude "specified activities such as those undertaken in the normal course of business, contributions to political parties, activities benefiting employees beyond certain limits, and sponsorship activities aimed at marketing or brand promotion. Amounts unspent on ongoing projects must be transferred to a designated Unspent CSR Account within 30 days from the end of the financial year and utilised within three financial years, failing which they must be transferred to funds specified in Schedule VII." Section 135(7) now prescribes monetary penalties on both the company and its officers for failure to spend or transfer the required CSR amounts, thereby giving CSR obligations real teeth.

Doctrinal Foundations of Environmental Duties

Indian environmental jurisprudence has for decades read the right to a clean and healthy environment into Article 21's guarantee of the right to life, and into Articles 14, 47, 48A and 51A(g). Article 48A directs "the State to protect and improve the environment and safeguard forests and wildlife", while Article 51A(g) imposes "a fundamental duty on every citizen to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures." In the Great Indian Bustard litigation, the Apex Court extended the reach of Article 51A(g) to corporations, holding that a corporation, as a legal person and a key organ of society, shares this fundamental duty. The Court described CSR funds as the "tangible expression" of this duty and characterised allocation of CSR funds for environmental protection not as voluntary charity but as fulfilment of a constitutional obligation. In a related articulation, "the Court also recognised freedom from the adverse effects of climate change as part of the fundamental rights under Articles 14 and 21, further strengthening the constitutional basis for environmental CSR."

Environmental Principles

The precautionary principle and polluter pay principle have been integral to Indian environmental law since the 1990s. In *Vellore Citizens' Welfare Forum v. Union of India* (1996) 5 SCC 647, the Supreme Court expressly "adopted the precautionary principle, holding that State authorities must anticipate, prevent and attack causes of environmental degradation and that lack of scientific certainty cannot be a ground to defer environmental protection." In *Indian Council for Enviro-Legal Action v. Union of India* (1996) 3 SCC 212 and subsequent cases, the Court invoked the polluter pays principle, imposing absolute liability on polluters to compensate victims and bear the costs of remediation, beyond mere indemnification.

These principles now inform the Court's understanding of corporate responsibility, including CSR. In the GIB case, the Court emphasised that corporations whose activities threaten endangered species or fragile ecosystems must bear the cost of conservation and ecological

restoration, aligning CSR allocations with the polluter pays and precautionary principles. The judgment explicitly ties CSR spending for environmental protection to these doctrines, signalling that CSR can no longer be divorced from a company's environmental footprint.

Corporate Governance Duties

Section 166(2) of the Companies Act 2013 obliges "directors to act in good faith in the best interests not only of the company and its shareholders but also of employees, the community and the environment." In the Great Indian Bustard judgment, the Apex Court reads section 135 together with section 166 to conclude that directors' fiduciary duties now structurally include environmental and community interests and that CSR institutionalises this broader conception of corporate purpose. The Court further observed that section 135 codifies "the principle that corporate profit is not solely the private property of shareholders but is partly owed to the society that enables its generation, echoing trusteeship and stakeholder-oriented theories of the firm." This doctrinal shift reimagines CSR as a legally enforceable dimension of corporate governance rather than a peripheral benevolent activity.

Emerging Trends in CSR Regulation and Practice

The early years of CSR in India were dominated by philanthropic giving, often disconnected from core business operations and long-term impact assessment. With the advent of section 135 and its subsequent strengthening, CSR in India has shifted towards a more structured, statutory regime with detailed compliance and governance requirements. Companies are now required to formulate annual action plans, identify ongoing projects, specify modalities of utilisation of funds, and monitor implementation through the CSR Committee and Board oversight.

Indian regulators have progressively aligned CSR with broader Environmental, Social and Governance (ESG) expectations. SEBI's introduction of the "Business Responsibility and Sustainability Report (BRSR) in 2021, replacing earlier Business Responsibility Reports, requires the top 1,000 listed entities to disclose detailed quantitative and qualitative information on ESG performance under regulation 34(2)(f) of the SEBI (LODR) Regulations 2015." BRSR Core further mandates independent assurance of key ESG indicators, including greenhouse gas emissions, water consumption, waste management and workforce composition.

CSR and Genuine Social Impact

Genuine social causes under CSR encompass a wide spectrum from primary health care, nutrition and education to women's empowerment, skill development, financial inclusion, rural infrastructure and support for marginalised communities. The move towards mandatory impact assessment and detailed CSR reporting is intended to ensure that CSR funds translate into tangible, measurable improvements in human development indicators rather than short-term events or branding exercises. The integration of environmental and social dimensions is particularly salient in projects focused on climate-resilient agriculture, livelihood support in

climate-vulnerable regions, disaster risk reduction, and urban resilience, where environmental protection and social welfare are inseparable.

Apex Court's Recent Environmental-Related Jurisprudence

The Great Indian Bustard case: *M.K. Ranjitsinh & Others v. Union of India & Others* [2025 INSC 1472]

The GIB litigation began as a writ petition seeking urgent measures to protect the Great Indian Bustard and Lesser Florican, critically endangered grassland birds threatened by habitat loss, overhead power lines and other anthropogenic pressures in Rajasthan and Gujarat. In an earlier 2021 order, the Supreme Court had imposed a blanket restriction on overhead transmission lines in identified priority and potential GIB areas and directed conversion of overhead lines to underground cables where feasible. Facing concerns about energy transition commitments and grid feasibility, the Court revisited these directions and, in its March 2024 decision and final judgment of 19 December 2025, adopted a more calibrated, science-based approach. It accepted an expert committee's identification of "Revised Priority Areas" covering approximately 14,013 sq. km in Rajasthan and 740 sq. km in Gujarat, within which stringent mitigation measures, bird diverters and corridor-based transmission planning would apply.

Beyond these technical directions, the December 2025 judgment made path-breaking observations on CSR and corporate environmental responsibility. The Court held that:

- The definition of "social responsibility" for corporations must inherently include environmental responsibility and protection of ecosystems and other beings.
- Corporations, as legal persons and significant societal actors, share the fundamental duty under Article 51A(g) to protect and improve the natural environment.
- CSR funds are the tangible expression of this constitutional duty, and allocation of funds for environmental protection is not charity but a constitutional obligation.
- Section 135 institutionalises this duty by mandating CSR spending once specified financial thresholds are met and codifies the idea that profit is partly owed to society and the environment.

The Court further invoked the concepts of polluter pays and precautionary principles, directing that corporations whose activities adversely affect the GIB's habitat must bear the costs of in-situ and ex-situ conservation, habitat restoration and long-term monitoring.

M/s. Rhythm County and M/s. Keystone Properties Case [2026 INSC 102]

On January 30 2026, India's Apex Court delivered a judgment that is a major game changer in environmental accountability. In the cases of M/s. Rhythm County and M/s. Keystone Properties [2026 INSC 102], Justices Dipankar Datta and Vijay Bishnoi upheld environmental compensation of ₹5 crores and ₹4.47 crore respectively against Pune-based real estate developers who constructed residential and commercial complexes without environmental clearances and

defied stop-work orders from pollution control boards. The Court expressed it with great precision, "If a company has a high turnover, it reflects the sheer scale of its operations. Such a company, if found to contribute generously to environmental damage, its turnover can have a direct correlation with the extent of damage that is caused."

Challenges and Gaps in the CSR Regime

Despite significant legal and jurisprudential advances, several challenges impede the full realisation of CSR's transformative potential in India.

- First, there is a persistent risk of "box-ticking" compliance, where companies focus on meeting the 2 per cent spending requirement and producing glossy CSR reports without ensuring genuine, long-term impact. Although impact assessment is now mandated for larger portfolios, many smaller CSR programmes remain weakly evaluated, and outcome-oriented metrics are still evolving.
- Second, CSR spending tends to be geographically and sectorally concentrated, with a disproportionate share flowing to relatively developed states and more visible themes such as urban education or tertiary healthcare, while ecologically fragile and socio-economically marginal regions receive less attention. This raises questions of distributive justice and alignment with national priorities in climate adaptation, biodiversity conservation and rural resilience.
- Third, the growing ESG and sustainability disclosure landscape raises concerns of greenwashing, where companies overstate their environmental or social performance without commensurate changes in core operations. SEBI's move towards BRSR and independent assurance of key ESG indicators is designed to address these risks, but capacity constraints, data quality issues and lack of standardised methodologies remain obstacles.
- Finally, at the governance level, integrating CSR and environmental responsibility into board-level strategy and risk management remains uneven across sectors, with many boards still treating CSR as a peripheral function rather than a core element of fiduciary duty under section 166. The Supreme Court's recent judgments push towards such integration, but internalisation within corporate cultures and incentive structures will take time.

Conclusion

The Indian CSR framework has travelled a long distance from voluntary philanthropy to a sophisticated, multi layered regime grounded in statutory mandates, constitutional values and environmental jurisprudence. Section 135 of the Companies Act 2013 and its implementing Rules have institutionalized CSR as a mandatory corporate obligation, while SEBI's BRSR framework has embedded CSR within broader ESG and sustainability expectations. The Apex

Court's recent interventions mark a new phase in this evolution by explicitly declaring that CSR must inherently include environmental responsibility and by treating CSR spending on environmental protection as a constitutional duty rather than charity. By weaving together the precautionary principle, polluter pays, sustainable development, public trust doctrine and climate rights jurisprudence, the Court has recast CSR as a vehicle for ecological stewardship and inter-generational equity. Going forward, the challenge lies in transforming these normative and legal advances into concrete practice: ensuring that CSR funds are strategically directed towards genuine social causes and environmental priorities, that impact is rigorously measured, and that corporate governance structures internalize CSR as part of core fiduciary duties. If implemented with integrity, India's evolving CSR regime has the potential to play a significant role in advancing sustainable development, climate resilience and social justice in the decades ahead.

Suggestions

In light of the foregoing analysis, the following measures may be considered to deepen and refine the emerging CSR regime in India, especially in relation to environmental protection and genuine social causes.

- **Prioritising environment-linked CSR in high-impact sectors**: Corporations in sectors with significant ecological footprints such as energy, mining, infrastructure, chemicals and heavy manufacturing should be encouraged, and where appropriate to allocate a substantial proportion of CSR funds to projects directly addressing the environmental and climate impacts of their operations.
- **Deepening integration with ESG and climate risk management**: Companies should explicitly link CSR strategies with ESG materiality assessments and climate-risk analyses outlined in BRSR and related disclosures. This could involve using CSR resources to support communities most vulnerable to climate impacts associated with the company's value chain, thereby operationalising the recognition of climate rights under Articles 14 and 21.
- **Promotion of collaborative, landscape-level environmental CSR mechanisms:** For complex ecological challenges such as river-basin restoration, urban air quality, coastal resilience or species conservation individual company projects may be insufficient. Policy should incentivise pooled CSR funds and multi-stakeholder platforms involving multiple companies, government agencies, local communities and experts to undertake landscape-level interventions with shared governance structures.

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DIGITAL RIGHTS *VIS-À-VIS* CONSTITUTIONAL SHIELD: A JURIDICAL STUDY

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Abstract
The rapid expansion of digital technology has significantly altered the way individuals exercise their rights and interact with the State. Today, everyday activities from communication and commerce to governance and public discourse takes place within digital spaces shaped by data collection, artificial intelligence, and algorithmic decision-making. This transformation raises important constitutional questions: Are digital rights simply an extension of existing fundamental rights, or do they require independent recognition within constitutional jurisprudence? This chapter examines digital rights through a juridical lens, analysing their relationship with constitutionally guaranteed fundamental rights. With particular reference to the Indian constitutional framework, it explores how courts have interpreted and protected rights such as privacy, freedom of speech and expression, equality, and due process in the context of digital technologies. The study reflects on recent judicial developments and legislative measures relating to data protection, online regulation, state surveillance, and intermediary accountability. Instead, constitutional morality and the spirit of transformative constitutionalism must guide the interpretation of rights in digital spaces. By placing digital rights within the broader framework of rule of law and democratic governance, this study seeks to contribute to the ongoing discourse on how constitutional values can be preserved and strengthened in an increasingly digital society.

Keywords: Digital Rights, Juridical Analysis, Digital Constitutionalism, Right to Privacy, Freedom of Expression, Data Protection.

Prologue

The rapid expansion of digital technologies has fundamentally reshaped the way individuals interact with the State, participate in democratic life, and exercise constitutional freedoms. Communication, access to welfare schemes, financial transactions, education, and political engagement increasingly occur through digital platforms. As a result, rights that were historically exercised in physical spaces are now asserted and regulated within technologically mediated environments. This transformation requires constitutional law to evolve so that its guarantees remain effective in contemporary governance structures.

Constitutional democracies are anchored in the protection of liberty, equality, dignity, and accountability. Yet digital governance introduces new configurations of power that operate through algorithmic systems, biometric identification, and large-scale data analytics. These forms of authority are often diffuse and opaque. Balkin (2018) observes that the digital age has redistributed regulatory power, with private platforms exercising substantial control over speech and public discourse. This development complicates the traditional vertical model of fundamental rights, which primarily constrains State action. When private digital intermediaries shape public communication and access to information, constitutional principles must grapple with overlapping spheres of public and private power.

Indian constitutional jurisprudence has begun responding to these shifts. A decisive turning point emerged in *Justice K.S. Puttaswamy (Retd.) v. Union of India* (2017), where the Supreme Court affirmed that privacy is intrinsic to the right to life and personal liberty under Article 21. The Court recognized informational autonomy and control over personal data as essential to human dignity in the digital era. By grounding privacy within constitutional doctrine, the judgment acknowledged that technological change alters the conditions under which liberty is exercised. However, privacy represents only one dimension of the broader discourse on digital rights.

Freedom of speech and expression under Article 19(1)(a) has likewise acquired renewed significance online. Digital platforms have become central arenas for political debate and civic participation. At the same time, regulatory responses to misinformation, hate speech, and national security concerns have generated tensions between State control and expressive freedom. In *Shreya Singhal v. Union of India* (2015), the Supreme Court invalidated Section 66A of the Information Technology Act, 2000, holding that vague and overbroad restrictions on online speech violate constitutional protections. The decision affirmed that constitutional safeguards extend fully into cyberspace. Nonetheless, complexities persist when algorithmic moderation by private intermediaries influences visibility and reach of speech.

The principle of equality under Article 14 is also implicated in digital governance. Automated decision-making systems used in credit scoring, recruitment, predictive policing, and welfare distribution may reproduce structural biases. When algorithmic tools generate discriminatory outcomes, constitutional scrutiny becomes necessary to ensure non-arbitrariness and fairness. Eubanks (2018) demonstrates how data-driven systems can disproportionately affect marginalized communities, raising concerns about transparency and accountability. The opacity of algorithmic processes challenges conventional judicial review and complicates procedural safeguards.

State surveillance further intensifies constitutional concerns. Expanding technological capabilities enable large-scale monitoring, often justified on grounds of national security or public order. Such measures must, however, satisfy constitutional standards of legality,

necessity, and proportionality. In *Anuradha Bhasin v. Union of India* (2020), the Supreme Court emphasized that restrictions on internet access must meet proportionality requirements and cannot be imposed indefinitely. The judgment acknowledged the integral role of internet access in facilitating the exercise of fundamental freedoms, reflecting a growing recognition of the digital sphere as embedded within constitutional life.

Beyond State action, the commercialization of personal data has transformed individual autonomy. Data-driven markets rely on profiling and behavioural tracking practices that operate largely beyond meaningful user control (Zuboff, 2019). Formal consent mechanisms frequently lack substantive transparency, weakening the assumption that agreement ensures fairness. From a constitutional perspective, such practices raise questions concerning informational self-determination and the adequacy of legal safeguards in protecting dignity and autonomy.

These developments have intensified scholarly debate on the nature of digital rights. Some argue that technological transformation necessitates recognition of a distinct category of rights, while others view digital rights as contemporary manifestations of established constitutional guarantees (Celeste, 2021). This chapter proceeds on the latter understanding while critically examining whether existing constitutional doctrines are sufficiently equipped to address algorithmic governance, data-driven administration, and the diffusion of regulatory power to private actors.

The study therefore pursues three objectives. First, it analyses the conceptual foundations of digital rights within constitutional theory. Second, it evaluates how Indian constitutional jurisprudence has addressed privacy, online expression, equality, and surveillance in digital contexts. Third, it assesses whether current doctrinal tools—particularly proportionality, non-arbitrariness, and procedural safeguards—adequately protect autonomy and democratic participation in the digital era.

The scope of this inquiry is confined primarily to the Indian constitutional framework, with limited comparative references where analytically necessary. The methodology is doctrinal, grounded in constitutional provisions, landmark judgments, and relevant statutory frameworks. Judicial decisions such as *Puttaswamy* (2017), *Shreya Singhal* (2015), and *Anuradha Bhasin* (2020) are examined to trace the evolution of digital jurisprudence. By combining doctrinal interpretation with normative analysis, the chapter seeks to articulate a principled account of digital constitutionalism rooted in constitutional morality and the rule of law.

Digital transformation presents both opportunity and risk. While technological innovation enhances connectivity and participation, it also generates new asymmetries of power and vulnerability. The continued vitality of constitutional governance depends upon its capacity to respond to these changing realities. Protecting digital rights is therefore not merely a policy objective but a constitutional necessity essential to preserving liberty, dignity, and democratic accountability in the digital age.

1. Conceptual Framework of Digital Rights

Digital rights have emerged as one of the most significant constitutional conversations of the twenty-first century. At a foundational level, digital rights refer to the protection and exercise of fundamental human rights within digital environments. As societies increasingly rely on the internet, digital platforms, algorithmic governance, and data-driven systems, the traditional understanding of rights such as privacy, freedom of expression, dignity, and equality requires reinterpretation. Digital rights therefore do not arise in isolation; they grow out of established constitutional and human rights principles and adapt them to technologically mediated realities (Media Defence, 2020; International IDEA, 2025).

The evolution of digital rights reflects the transformation of public and private life. Initially, digital concerns revolved around access to the internet and the ability to communicate online. Over time, the focus expanded to include state surveillance, data harvesting, intermediary liability, algorithmic decision-making, and platform governance. As International IDEA (2025) notes, digital technologies reshape political participation, governance, and social interaction, thereby affecting how rights are realised in practice. The digital sphere is no longer peripheral; it has become central to democratic functioning and individual autonomy.

The distinction between human rights and digital rights must be carefully understood. Digital rights are not separate from human rights; rather, they are human rights exercised in a digital context. The United Nations Human Rights Council has affirmed that the same rights people enjoy offline must also be protected online. This principle underscores continuity rather than rupture. However, digital environments introduce new complexities. For example, while privacy traditionally concerned protection against physical intrusion, digital privacy involves mass data collection, metadata analysis, and algorithmic profiling.

This expanded understanding of privacy was constitutionally recognised by the Supreme Court of India in *Justice K.S. Puttaswamy (Retd.) v. Union of India* (2017), where the Court declared privacy a fundamental right under Article 21 of the Constitution. Importantly, the judgment acknowledged informational privacy and emphasised the individual's control over personal data. The Court recognised that in the digital age, personal information constitutes an extension of individual personality and dignity. This decision firmly located digital privacy within the constitutional framework.

Similarly, freedom of expression in the digital realm received judicial protection in *Shreya Singhal v. Union of India* (2015), where Section 66A of the Information Technology Act, 2000 was struck down for violating Article 19(1)(a). The Court held that vague and overbroad restrictions on online speech undermine democratic discourse. This case illustrates how constitutional guarantees must extend robustly into digital platforms.

The question whether digital rights are new rights or merely extensions of existing rights continue to generate scholarly debate. One perspective argues that constitutional rights are sufficiently dynamic to accommodate digital realities through purposive interpretation. The Puttaswamy judgment itself demonstrates that existing constitutional text can evolve to address contemporary technological concerns. Another perspective suggests that certain digital phenomena, such as the right to be forgotten, protection from algorithmic bias, or access to the internet may require more explicit normative articulation.

The Kerala High Court, in *Faheema Shirin v. State of Kerala* (2019), recognised access to the internet as integral to the right to education and privacy, thereby suggesting that digital access may function as a derivative but indispensable right. Likewise, in *Anuradha Bhasin v. Union of India* (2020), the Supreme Court held that indefinite suspension of internet services is impermissible and that freedom of speech and trade through the internet enjoys constitutional protection. These cases indicate that courts increasingly view digital infrastructure as essential to the meaningful exercise of fundamental rights.

The principle of informational self-determination, originally articulated in German constitutional jurisprudence, affirms that individuals must have control over the disclosure and use of their personal information. In the Indian context, the Puttaswamy decision implicitly adopted this approach by recognising informational privacy as intrinsic to dignity and autonomy. Informational self-determination shifts the focus from mere secrecy to meaningful control.

Constitutional morality provides another important framework. It demands that constitutional interpretation remain faithful to core values such as liberty, equality, and dignity, even when new technologies emerge. When digital surveillance, online censorship, or algorithmic governance threaten these values, constitutional morality requires judicial vigilance. The reasoning in *Navtej Singh Johar v. Union of India* (2018), though not strictly a digital case, reinforces how constitutional morality guides progressive rights interpretation, a principle equally relevant in digital contexts.

Closely related is the doctrine of transformative constitutionalism, which views the Constitution as a living document capable of responding to social and technological change. Digital transformation has altered power structures, creating new asymmetries between individuals, corporations, and the state. Transformative constitutionalism ensures that constitutional interpretation addresses these imbalances. Judicial recognition of privacy, internet access, and online speech reflects this transformative approach.

Finally, digital constitutionalism represents a broader normative movement seeking to adapt constitutional principles to digital governance. It involves articulating norms that regulate both state and private actors operating in digital spaces (Celeste, 2019). Unlike traditional constitutionalism, which primarily limits state power, digital constitutionalism also examines the

regulatory role of platforms and technology companies. It recognises that constitutional values must inform the architecture of digital ecosystems themselves.

Taken together, these judicial developments and theoretical foundations demonstrate that digital rights are neither entirely new nor merely rhetorical extensions of existing rights. They represent an evolving constitutional conversation shaped by technological realities. Courts, scholars, and policymakers are engaged in redefining how autonomy, dignity, equality, and democratic participation operate in a digitally mediated society.

Digital rights thus function as a bridge between enduring constitutional values and rapidly changing technological landscapes. They reaffirm that constitutional guarantees are not confined to physical spaces but extend wherever human interaction, governance, and identity unfold including the digital realm.

2. Constitutional Foundations of Digital Rights in India

The constitutional foundations of digital rights in India are deeply embedded within Part III of the Constitution. Although the Constitution does not explicitly refer to the internet, data protection, or digital governance, the judiciary has interpreted fundamental rights in a manner that accommodates technological change. Through purposive interpretation, Indian courts have ensured that constitutional guarantees remain meaningful in an increasingly digital society. Articles 14, 19, and 21 form the core constitutional pillars supporting digital rights jurisprudence.

2.1 Right to Privacy (Article 21): The right to privacy under Article 21 has become the central axis of digital rights discourse in India. In *Justice K.S. Puttaswamy (Retd.) v. Union of India* (2017), the Supreme Court unequivocally recognised privacy as a fundamental right intrinsic to life and personal liberty. Significantly, the judgment expanded privacy beyond physical and spatial dimensions to include informational privacy. The Court acknowledged that in the digital age, personal data constitutes an extension of individual personality and autonomy.

Informational privacy concerns the individual's ability to control the dissemination and use of personal information. With increasing digitisation of governance, commerce, and social interaction, individuals routinely share data with both state and private actors. The Puttaswamy judgment recognised that unchecked data collection and surveillance could undermine dignity and autonomy, thereby violating Article 21.

The concept of data autonomy flows directly from this recognition. Data autonomy implies that individuals must retain meaningful control over how their data is processed, stored, and shared. It shifts the discourse from secrecy to control, aligning with global principles of informational self-determination. Subsequent debates surrounding data protection legislation in India have drawn normative legitimacy from the constitutional foundations laid in Puttaswamy.

Scholarly analysis further suggests that privacy in India must be understood not merely as a negative right against state intrusion but as a positive obligation requiring regulatory safeguards

against misuse of digital information (Law Journals, 2026). Thus, Article 21 has evolved into a constitutional safeguard against digital overreach.

2.2 Freedom of Speech and Expression (Article 19(1)(a)): Freedom of speech and expression under Article 19(1)(a) has also undergone significant reinterpretation in the context of digital platforms. The internet has transformed the scale and speed of communication, enables participatory democracy but also creating regulatory challenges.

In *Shreya Singhal v. Union of India* (2015), the Supreme Court struck down Section 66A of the Information Technology Act, 2000, holding that vague and overbroad restrictions on online speech violate constitutional guarantees. The Court emphasised that restrictions on speech must satisfy the reasonable restrictions under Article 19(2) and cannot be arbitrary or disproportionate. The judgment was crucial in affirming that online speech enjoys the same constitutional protection as offline expression. It also clarified the doctrine of intermediary liability, distinguishing between active participation and mere hosting of content. By limiting liability to circumstances involving actual knowledge and failure to act upon lawful orders, the Court prevented excessive censorship by digital intermediaries.

The digital public sphere today is largely shaped by private platforms. This raises concerns regarding content moderation, algorithmic amplification, and de-platforming. While constitutional rights traditionally operate vertically (against the state), the increasing role of private digital actors has prompted discussions about horizontal application of fundamental rights principles. Contemporary scholarship highlights that digital inclusion and platform accountability are essential for preserving democratic discourse (CyberPeace Foundation, 2025). Thus, Article 19(1)(a) serves not only as a shield against state censorship but also as a normative benchmark for evaluating regulatory frameworks governing digital platforms.

2.3 Right to Equality (Article 14): Article 14 guarantees equality before the law and equal protection of the laws. In digital governance, equality concerns arise in the context of automated decision-making systems and algorithmic profiling.

Algorithms increasingly influence access to credit, employment, welfare benefits, and law enforcement surveillance. However, algorithmic systems may embed biases reflecting flawed data sets or discriminatory design. Such bias can result in indirect discrimination, disproportionately affecting marginalised communities.

The Indian constitutional doctrine of non-arbitrariness, developed through cases such as *E.P. Royappa v. State of Tamil Nadu* (1974), establishes that arbitrariness is antithetical to equality. If algorithmic decision-making lacks transparency, accountability, or rational basis, it may violate Article 14. Digital systems that produce discriminatory outcomes without procedural safeguards could therefore be constitutionally suspect.

Recent discussions in legal scholarship emphasise that digital governance must incorporate fairness, transparency, and review mechanisms to comply with constitutional mandates (Law Journals, 2026). Equality in the digital age thus demands algorithmic accountability and safeguards against technological discrimination.

Moreover, digital disparities in access to technology can reinforce structural inequality. Commentary in *Economic and Political Weekly* (2025) argues that meaningful digital access is increasingly essential for realising constitutional rights, particularly in education, welfare, and participation in governance. Without equitable access, digital transformation risks deepening social divides.

2.4 Due Process and Procedural Safeguards: The doctrine of proportionality has emerged as a central constitutional test in digital rights adjudication. Proportionality requires that any restriction on fundamental rights must pursue a legitimate aim, be rationally connected to that aim, be necessary, and maintain a balance between rights and state interests.

In the context of surveillance and internet regulation, proportionality ensures that security measures do not disproportionately infringe individual freedoms. The Supreme Court in *Anuradha Bhasin v. Union of India* (2020) examined the legality of internet shutdowns in Jammu and Kashmir. The Court held that indefinite suspension of internet services is impermissible and that orders restricting internet access must be temporary, proportionate, and subject to judicial review.

The judgment recognised that freedom of speech and trade through the internet enjoys constitutional protection. Importantly, it reinforced procedural safeguards, requiring publication of suspension orders and periodic review. This decision marked a significant step toward constitutional oversight of digital restrictions.

Surveillance regulation similarly engages Article 21 and proportionality principles. Mass surveillance without adequate statutory safeguards risks violating privacy and due process. Scholars argue that effective oversight mechanisms and clear legislative frameworks are necessary to prevent abuse of digital surveillance powers (Law Journals, 2026).

The constitutional demand for procedural fairness ensures that digital governance measures are transparent, reviewable, and limited in scope. Proportionality thus functions as a balancing tool between state security concerns and individual liberties in the digital age.

3. Digital Governance, State Power and Surveillance

The digital age has ushered in unprecedented forms of governance that extend beyond traditional state functions. While technological innovation has facilitated efficient service delivery, digital inclusion, and expanded civic participation, it has also enabled forms of state power that exert significant control over individuals through data collection and surveillance. The integration of digital technologies into governance structures has transformed state capacity, giving rise to

powerful surveillance systems capable of monitoring private and public activities at scale. In this context, constitutional safeguards become essential to ensure that the exercise of state power does not erode civil liberties or undermine democratic accountability.

The expansion of surveillance technologies is evident across both authoritarian and democratic regimes. In India, digital governance initiatives such as Aadhaar, the Unified Payments Interface (UPI), and government data repositories represent both administrative achievements and points of privacy concern. Surveillance technologies include biometric databases, Internet monitoring tools, and algorithmic profiling systems that can trace individual behaviour, location, and communication patterns. While these systems are often justified on grounds of administrative efficiency, they also pose risks of intrusive state oversight if deployed without clear legal boundaries and oversight mechanisms (GIGA, 2024). The possibility of extensive behavioural data being accessed, stored, and analysed without adequate procedural safeguards raises fundamental questions about the limits of state power in a constitutional democracy.

Data collection by the state occurs in multiple contexts such as welfare delivery, national security, law enforcement, and public health systems. Digital identity systems, for example, collect biometric and demographic information to facilitate targeted delivery of services. Although such systems have demonstrable public utility, the absence of robust data protection frameworks exposes citizens to potential misuse of their personal information. The concern is not merely hypothetical. Without statutory limits on data retention, sharing, and access, personal information can be vulnerable to secondary use by state or non-state actors. This structural issue highlights the tension between public administrative needs and individual privacy rights.

The tension between national security and civil liberties is particularly acute in the digital context. States often invoke national security to justify expansive surveillance measures and access to private communications. Encryption backdoors, bulk data collection, and real-time interception capabilities are defended as necessary tools to combat terrorism, cybercrime, and organised crime. Yet, without transparent legal frameworks, such powers risk extending into generalised surveillance, treating ordinary citizens as subjects of suspicion. The emphasis on security can, therefore, undermine the very freedoms that constitutional orders seek to protect. Similar patterns have been observed in other jurisdictions where anti-terror laws have been used to justify intrusive digital monitoring, often without adequate judicial oversight.

Constitutional scrutiny of digital surveillance must therefore be founded on the principle of proportionality in an analytical framework that balances state interests against individual rights. Proportionality requires that any restriction of fundamental rights be necessary, reasonable, and logically connected to a legitimate state objective. In *Anuradha Bhasin v. Union of India* (2020), the Supreme Court emphasised that restrictions such as internet shutdowns must be narrowly tailored, time-bound, and subject to periodic judicial review. Although the case did not directly

address surveillance per se, its reasoning underscores the constitutional expectation that digital restrictions cannot be arbitrary or indefinite. When surveillance is justified on security grounds, proportionality demands clear evidence of necessity and procedural mechanisms that prevent overreach.

Regulating digital surveillance poses significant challenges. Surveillance infrastructures are often controlled by powerful technology intermediaries and private vendors that provide software, cloud storage, or analytical tools to the state. This intermingling of state and private power complicates the accountability framework. Traditional constitutional remedies constrain state action, but when private platforms are involved, the application of fundamental rights becomes murky. For example, facial recognition technologies supplied by private firms for law enforcement use can operate beyond direct statutory regulation, raising concerns about unchecked surveillance and lack of redress mechanisms.

Another challenge arises from the opacity of surveillance algorithms. The technical complexity of digital systems often places them beyond the comprehension of laypersons and, critically, outside the routine scope of judicial scrutiny. Without transparency requirements, individuals subject to automated monitoring have limited ability to challenge the legality or necessity of surveillance practices. Opacity undermines the principles of procedural fairness, as meaningful participation in judicial review requires access to the rationale behind state actions that affect personal rights.

Comparative experiences illustrate that these challenges are not unique to India. Research on digital surveillance finds that without robust legislative safeguards and independent oversight bodies, surveillance technologies easily outpace constitutional protections, even in mature democracies (IJRTI, 2025). Countries that rely heavily on digital monitoring for policing or border control often face civil liberties backlash precisely because legal frameworks lag behind technological capabilities. Thus, the constitution must not only restrain immediate abuses but also anticipate future expansions of surveillance power.

The Indian legal system has witnessed some efforts to address these concerns. Following the Puttaswamy judgment, privacy jurisprudence has laid foundational principles for assessing digital intrusion. However, the absence of a comprehensive data protection statute with constitutional anchoring leaves citizens vulnerable to encroachments. Legislative proposals such as the Personal Data Protection Bill sought to create statutory limits on data collection, processing, access, and sharing. Yet, without enactment and proper judicial enforcement, constitutional safeguards alone cannot fully mitigate the risks posed by digital surveillance technologies.

Public interest litigation and civil society interventions have also played a role in raising judicial awareness about the intrusive potential of state surveillance. Courts are increasingly called upon

to assess whether executive actions that impinge on digital freedoms are justifiable in light of constitutional values. The judiciary's continued engagement is crucial, but judicial pronouncements must be backed by clear statutory frameworks to ensure enforceability and predictability.

Fundamentally, the regulation of digital surveillance must operate within a constitutional paradigm that upholds civil liberties without undermining legitimate state functions. Proportionality and transparency should guide the design and implementation of surveillance systems, ensuring that they are subject to meaningful oversight, periodic review, and judicial accountability. Surveillance powers must be limited in scope and duration, with mechanisms for redress and public scrutiny.

4. Private Power and Constitutional Accountability

The digital transformation of public discourse has significantly altered the distribution of constitutional power. Traditionally, constitutional law was concerned primarily with restraining the State. Fundamental rights under Part III of the Indian Constitution were conceived as safeguards against governmental excess. However, in the contemporary digital ecosystem, private technology corporations increasingly perform functions that shape public debate, regulate speech, and influence democratic participation. This concentration of private authority raises critical questions regarding constitutional accountability in spaces that are formally private but functionally public.

Digital platforms such as Meta, X (formerly Twitter), and Google have evolved beyond neutral intermediaries. Through algorithmic curation, content ranking, and moderation policies, these platforms determine the visibility and dissemination of speech. Their infrastructure effectively constitutes a digital public square where political mobilisation, electoral campaigning, social activism, and public deliberation occur.

Unlike traditional media institutions, these platforms operate at unprecedented scale and speed. Their governance mechanisms are primarily contractual, governed by terms of service drafted unilaterally by the platform. While this structure enables operational flexibility, it lacks the procedural safeguards typically associated with constitutional governance. Scholars have described this phenomenon as a shift from state-centred constitutionalism toward "digital constitutionalism," where private actors exercise quasi-regulatory power over fundamental freedoms (Celeste, 2019).

The normative concern is not merely economic dominance but regulatory dominance. When a platform suspends an account or alters algorithmic visibility, it can significantly affect democratic participation. The absence of transparency in algorithmic decision-making intensifies concerns about arbitrariness and lack of accountability.

Content moderation illustrates the intersection between private governance and constitutional values. Under Section 79 of the Information Technology Act, 2000, intermediaries were granted conditional safe harbour protection, shielding them from liability for user-generated content provided they exercised due diligence. This framework was clarified by the Supreme Court in *Shreya Singhal v. Union of India* (2015), where the Court held that intermediaries are required to remove content only upon receiving actual knowledge through a court order or government notification consistent with Article 19(2).

This judgment was significant because it prevented private platforms from becoming instruments of indiscriminate censorship. By restricting takedown obligations to lawful orders, the Court protected online speech from excessive privatised regulation.

However, regulatory developments such as the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 have increased compliance burdens on intermediaries. The expanded due diligence requirements and time-bound takedown obligations create incentives for platforms to remove content proactively, often erring on the side of over-censorship. Automated moderation tools, though efficient, frequently lack contextual sensitivity, raising concerns about disproportionate restrictions on political speech and dissent.

The tension between liability avoidance and free expression demonstrates the fragility of the digital public sphere when governance is driven by both commercial risk and regulatory pressure.

The central constitutional question is whether fundamental rights can apply in disputes involving private digital platforms. Traditionally, fundamental rights are enforceable against the "State" as defined under Article 12, reflecting a vertical model of constitutional protection. However, comparative constitutional jurisprudence, particularly the German doctrine of Drittwirkung, recognises that fundamental rights may have indirect horizontal effect in private law relationships (Alexy, 2002).

Indian constitutional jurisprudence has gradually shown openness to similar reasoning. In *Vishaka v. State of Rajasthan* (1997), the Supreme Court imposed binding guidelines affecting private employers, grounding its reasoning in constitutional guarantees of equality and dignity. Although the case arose in the context of sexual harassment, it established that constitutional norms can shape private conduct where fundamental rights are implicated.

More recently, in *Kaushal Kishore v. State of Uttar Pradesh* (2023), the Supreme Court observed that fundamental rights may not always be confined strictly to vertical application and that the State has a positive obligation to protect individuals from rights violations even by non-state actors. While the Court stopped short of declaring full horizontal enforceability, the judgment signals doctrinal evolution.

In digital contexts, where private platforms regulate speech at scale and perform public-facing functions, scholars argue that constitutional values must inform statutory regulation and judicial oversight (Bhatia, 2016; Celeste, 2019). The issue is not to convert every private dispute into a constitutional claim, but to recognise that when private power significantly affects democratic participation, constitutional principles cannot remain irrelevant.

The challenge lies in designing regulatory frameworks that ensure accountability without undermining innovation or enabling excessive state control. Self-regulation has proven insufficient to address concerns such as algorithmic bias, opaque content removal, and manipulation of information ecosystems.

Regulatory mechanisms must incorporate transparency obligations, procedural fairness, and proportionality. The proportionality doctrine now firmly embedded in Indian constitutional law following *Justice K.S. Puttaswamy (Retd.) v. Union of India* (2017), requires that restrictions on rights pursue legitimate aims, be necessary, and strike a balance between competing interests. Any statutory framework governing platform liability or content moderation must therefore withstand constitutional scrutiny.

Oversight bodies such as Grievance Appellate Committees attempt to introduce review mechanisms. However, their effectiveness depends on independence, transparency, and procedural fairness. Without these safeguards, regulatory interventions risk becoming tools of indirect censorship rather than instruments of accountability.

The digital public sphere plays a central role in contemporary democracy. It enables rapid communication, grassroots mobilisation, and dissemination of diverse viewpoints. At the same time, it is vulnerable to misinformation, coordinated disinformation campaigns, and AI-generated deepfakes.

Preserving democratic integrity requires a multi-layered approach. Platform accountability must be complemented by digital literacy initiatives and structural transparency. Rather than relying solely on punitive takedown frameworks, governance models should emphasise “safe by design” principles, ensuring that platform architecture promotes informed participation rather than polarisation.

Ultimately, constitutional accountability in the digital age demands rethinking the rigid separation between public and private power. When private corporations exercise control over spaces central to democratic life, constitutional values must guide both legislative frameworks and judicial interpretation. The objective is not to constitutionalise all private conduct, but to ensure that fundamental rights remain meaningful within the digital environments where citizens increasingly live, speak, and participate.

5. Emerging Legal Frameworks and Regulatory Responses

The rapid digitisation of governance, commerce and everyday social interaction in India has compelled the law to respond to new forms of vulnerability, power imbalance and data concentration. Over the past decade, concerns regarding surveillance, data misuse, profiling and intermediary accountability have shifted digital regulation from a peripheral policy issue to a central constitutional question. The emerging legal frameworks in India reflect an attempt to reconcile technological innovation with constitutional guarantees of privacy, dignity and free expression. However, significant structural and enforcement challenges remain.

The recognition of privacy as a fundamental right in *Justice K.S. Puttaswamy (Retd.) v. Union of India* (2017) 10 SCC 1 marked a decisive constitutional moment. The Supreme Court located informational privacy within Article 21 and affirmed that individuals must retain control over personal data. The judgment also underscored that any limitation on privacy must satisfy legality, necessity and proportionality. This constitutional backdrop directly influenced the evolution of India's statutory data protection framework.

India's earlier regime under the Information Technology Act, 2000, particularly Section 43A and the 2011 SPDI Rules, was limited in scope and largely focused on corporate negligence rather than comprehensive data governance. Scholars have noted that these provisions lacked clarity regarding consent standards, state accountability and independent oversight (IJIRL, 2025). The fragmented nature of this framework resulted in regulatory uncertainty and weak enforcement mechanisms.

In response to these gaps, India enacted the Digital Personal Data Protection Act, 2023 (DPDP Act). The Act introduces concepts such as lawful processing based on consent, purpose limitation, data fiduciary obligations and the establishment of a Data Protection Board. It attempts to strike a balance between facilitating digital innovation and safeguarding personal autonomy. However, commentators have raised concerns regarding broad state exemptions, limited independence of the regulatory authority and the absence of a fully articulated rights-based enforcement culture (IJIRL, 2025; ResearchGate, 2025).

A comparative reading of international frameworks demonstrates that effective data protection regimes require institutional autonomy, transparency in data processing and meaningful remedies for individuals. The experience of other jurisdictions suggests that strong enforcement architecture is as important as substantive rights.

Digital governance in India is also shaped significantly by intermediary regulation under the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, as amended. These Rules impose due diligence obligations on intermediaries, mandate grievance redressal mechanisms and require traceability in certain cases involving significant social media platforms.

The regulatory objective behind these provisions is to address misinformation, online harm and unlawful content. However, critics argue that the compliance burdens placed on intermediaries may indirectly affect freedom of speech and privacy, particularly when traceability requirements risk weakening end-to-end encryption (IJIRL, 2025). The Supreme Court's decision in *Shreya Singhal v. Union of India* (2015) 5 SCC 1 remains central to this debate. In striking down Section 66A of the IT Act, the Court emphasised that vague restrictions on online speech cannot survive constitutional scrutiny under Article 19(2).

Intermediary liability frameworks must therefore navigate a delicate constitutional balance: ensuring accountability without converting private platforms into instruments of excessive censorship. The risk of "over-compliance" or defensive content removal is real, especially when regulatory standards lack precision. Comparative scholarship indicates that intermediary regulation should be transparent, proportionate and subject to judicial review (iPleaders, 2024).

A brief comparative reference to the European Union's General Data Protection Regulation (GDPR) is instructive. The GDPR represents one of the most comprehensive data protection frameworks globally. It recognises rights such as data portability, the right to be forgotten and stringent obligations for data controllers and processors. Importantly, it is backed by independent supervisory authorities with significant enforcement powers.

Comparative analyses highlight that the GDPR's strength lies not merely in its textual safeguards but in its enforcement design, including heavy penalties for non-compliance (iPleaders, 2024). Unlike India's earlier framework, the GDPR embeds accountability, transparency and impact assessment mechanisms at its core. Scholars have observed that while India's DPDP Act draws conceptual inspiration from global standards, it diverges in its approach to state exemptions and regulatory independence (ResearchGate, 2025).

This comparison is not to suggest direct transplantation of foreign models. Rather, it underscores that digital rights protection requires a robust institutional culture of accountability, which goes beyond legislative drafting.

Despite legislative progress, several structural challenges continue to weaken the effectiveness of India's digital regulatory architecture. *First*, broad exemptions granted to the State under the DPDP Act raise concerns about the dilution of constitutional privacy protections. While national security is a legitimate state interest, unchecked executive discretion risks undermining proportionality safeguards articulated in *Puttaswamy*. Without clear procedural safeguards and independent oversight, exemptions may erode public trust.

Second, regulatory fragmentation persists. Digital governance intersects with sectoral regulators, cybersecurity authorities and telecommunications frameworks, often leading to overlapping jurisdiction. This multiplicity can create ambiguity in enforcement and weaken accountability mechanisms.

Third, access to remedies remains limited. For digital rights to be meaningful, individuals must have affordable, accessible and timely grievance redressal systems. The absence of widespread digital literacy further compounds enforcement difficulties, particularly in rural and marginalised communities.

Fourth, cross-border data flows and global technology corporations complicate jurisdictional enforcement. Comparative scholarship demonstrates that effective regulation in the digital age requires international cooperation and harmonised standards (iPleaders, 2024).

Finally, algorithmic decision-making and automated profiling introduce new challenges that traditional legal doctrines may struggle to address. While constitutional principles such as equality and non-arbitrariness offer normative guidance, regulatory clarity on algorithmic accountability remains underdeveloped.

India's emerging legal frameworks on digital governance reflect a transitional moment. The constitutional recognition of privacy, judicial protection of online speech and enactment of a dedicated data protection statute signal a maturing rights discourse. Yet, the real test lies in implementation. A rights-oriented digital order requires more than statutory compliance; it demands transparency, independent oversight and a culture of constitutional accountability.

As digital technologies become deeply embedded in governance and everyday life, the challenge for Indian law is to ensure that efficiency and innovation do not overshadow dignity and liberty. The future of digital rights will depend on whether regulatory responses remain anchored in constitutional morality and proportionality rather than expedient administrative convenience.

6. Towards Digital Constitutionalism: A Juridical Reconstruction

The rapid integration of digital technologies into governance, commerce and civic participation has fundamentally altered the terrain on which constitutional law operates. Decisions that affect speech, mobility, welfare benefits and reputation are increasingly mediated by algorithms, data analytics and platform policies rather than visible state actors alone. In this evolving landscape, digital constitutionalism has emerged as a normative and institutional response that seeks to extend core constitutional values, liberty, dignity, equality and the rule of law into the digital sphere (Digi-Con, n.d.; Ensure IAS, 2024).

Digital constitutionalism does not treat the internet as a lawless frontier. Instead, it recognises that digital spaces are structured environments where power is exercised by both the State and powerful private technology corporations. As governance becomes data-driven and predictive systems influence public administration, we confront what may be described as a new constitutional moment, one that demands rethinking established doctrines to ensure that constitutional guarantees remain meaningful in the algorithmic age.

Traditional constitutional frameworks were largely designed to restrain the coercive power of the State. However, in the digital ecosystem, private entities often exercise quasi-sovereign

authority. Social media platforms regulate speech; fintech systems determine creditworthiness; algorithmic tools shape access to welfare. The binary distinction between "state action" and "private action" becomes increasingly blurred.

Scholarly discussions on digital constitutionalism argue that doctrinal innovation is necessary because analogue legal norms are insufficient to address the complexity of algorithmic governance (Digi-Con, n.d.). First, constitutional theory must evolve from a purely negative conception of rights limiting state interference to a positive obligation model that compels the State to protect individuals from rights violations by non-state actors. This aligns with the expanding doctrine of horizontal application of fundamental rights, which recognises that private concentrations of power can equally threaten constitutional values.

Second, the concept of "state action" must be reinterpreted. When private platforms perform functions that significantly affect public discourse or civic participation, a rigid refusal to subject them to constitutional scrutiny risks hollowing out fundamental rights protections. A juridical reconstruction would therefore explore calibrated forms of direct or indirect constitutional obligations on dominant digital intermediaries.

Third, procedural due process must acquire substantive depth. A mere "notice-and-takedown" mechanism cannot satisfy constitutional standards if automated moderation systems operate without transparency or fairness. Procedural safeguards in the digital age must ensure that algorithmic decisions are reasoned, reviewable and contestable. Rights cannot be reduced to automated compliance checklists; they require meaningful human oversight.

Constitutional morality understood as fidelity to the spirit of the Constitution rather than mere textual formalism that provides the normative anchor for digital governance (Indian Journal of Law and Legal Research [IJLLR], 2023). In the Indian context, constitutional morality emphasises dignity, autonomy and equality over administrative convenience.

Applied to digital governance, this principle demands that citizens are not reduced to passive data subjects. Surveillance architectures and profiling systems must not erode individual agency. The Supreme Court's articulation of privacy in *Justice K.S. Puttaswamy (Retd.) v. Union of India* (2017) underscores that informational self-determination is integral to dignity. Any digital intrusion must therefore satisfy legality, necessity and proportionality.

Constitutional morality also calls for inclusive digital design. Algorithmic systems trained on biased or incomplete datasets risk replicating structural inequalities. As legal scholarship observes, fairness models imported from Western jurisdictions may not adequately reflect India's socio-economic diversity (NLIU Law Review, 2024). A transformative constitutional approach requires that AI governance frameworks consciously address caste, gender, regional and linguistic disparities.

Ultimately, constitutional morality insists that technological efficiency cannot trump human dignity. Administrative expediency must yield where it conflicts with fundamental rights.

A central challenge in the digital age is the opacity of algorithmic systems. "Black-box" decision-making processes can produce discriminatory or arbitrary outcomes without offering affected individuals any meaningful explanation. This is particularly concerning when algorithms are used in public functions such as welfare allocation, predictive policing or content moderation.

Digital constitutionalism therefore foregrounds algorithmic accountability (Ensure IAS, 2024). Transparency obligations should require disclosure of the logic, parameters and datasets underlying automated decisions, particularly where fundamental rights are implicated. While full source-code disclosure may not always be feasible, meaningful transparency standards can ensure that systems are subject to scrutiny.

Explainability is equally crucial. Individuals must be able to understand how and why a particular algorithmic decision was made. Without this, the right to challenge administrative action becomes illusory. Substantive due process in the digital era demands that automated decisions are not only efficient but also intelligible and reviewable.

Independent oversight mechanisms further strengthen accountability. Rather than relying solely on voluntary ethical codes, enforceable regulatory structures are necessary. Specialised digital regulatory authorities with technical expertise could audit algorithms and surveillance practices. Such bodies must operate independently of executive control to preserve public trust.

The reconstruction of digital constitutionalism should not stifle technological innovation. Instead, it should aim to harmonise innovation with rights protection through structured safeguards.

A "safety-by-design" approach ensures that privacy, fairness and accountability are embedded at the development stage of digital systems rather than retrofitted after harm occurs (Ensure IAS, 2024). Regulatory sandboxes can provide controlled environments where emerging technologies are tested under supervision, allowing innovation while monitoring rights implications.

Mandatory algorithmic impact assessments (AIAs) for high-risk AI systems used in public administration can further institutionalise rights-based governance. These assessments would evaluate potential discriminatory impacts, privacy risks and proportionality concerns before deployment.

Contextualised regulation is also essential. A graded model based on risk profile rather than a uniform regulatory burden can balance flexibility with accountability. Platforms with systemic societal impact may justifiably attract stricter obligations compared to smaller entities.

Recommendations

First, India should consider codifying digital rights explicitly within a comprehensive statutory framework, reinforcing privacy, data protection and digital access as integral components of constitutional governance.

Second, independent digital regulatory authorities should be established with statutory autonomy to audit algorithms and enforce compliance.

Third, digital due process must be strengthened. Clear, time-bound and appealable grievance redressal mechanisms should be mandatory for online platforms.

Fourth, a carefully structured model of traceable anonymity could balance free expression with legitimate security concerns, ensuring that identification occurs only through judicially sanctioned procedures.

Finally, sustained investment in digital literacy is indispensable. Constitutional rights are meaningful only when citizens understand and can assert them.

Digital constitutionalism is not merely an academic aspiration; it is an institutional necessity. As digital infrastructures increasingly shape democratic life, constitutional law must evolve to ensure that technological power remains accountable to human dignity, equality and the rule of law.

Conclusion

The preceding chapters have demonstrated that digital rights are not a novel or isolated category of entitlements existing outside constitutional discourse. Rather, they represent the contemporary manifestation of enduring constitutional guarantees privacy, dignity, equality, liberty and procedural fairness within technologically mediated environments. The conceptual framework of digital rights reveals that what appears "new" in form is deeply rooted in established human rights traditions. Informational self-determination, constitutional morality, transformative constitutionalism and digital constitutionalism collectively provide the theoretical scaffolding necessary to interpret rights meaningfully in the digital age.

The constitutional foundations of digital rights in India further confirm this continuity. Judicial developments have clarified that informational privacy, online speech and algorithmic decision-making fall squarely within the protective ambit of Articles 14, 19 and 21 of the Constitution. The recognition of privacy as intrinsic to life and personal liberty marked a transformative shift, reinforcing that data autonomy is central to individual dignity. Similarly, the protection of online speech and the insistence on proportionality in restrictions underscore that constitutional freedoms do not evaporate in cyberspace. The jurisprudence on equality and non-arbitrariness also signals growing judicial awareness that algorithmic governance must comply with fairness and reasoned decision-making standards.

The examination of digital governance and surveillance practices highlights the tension between technological efficiency and constitutional safeguards. The expansion of state surveillance capabilities and data-driven governance structures raises profound questions about proportionality, transparency and oversight. National security remains a legitimate state objective; however, constitutional scrutiny ensures that security measures do not become vehicles for unchecked intrusion. The principle of proportionality, repeatedly affirmed by constitutional courts, serves as a doctrinal compass to balance competing interests in the digital sphere.

Emerging regulatory frameworks, including India's data protection regime and intermediary guidelines, reflect a growing recognition of the need for structured digital governance. Yet, statutory enactments alone cannot guarantee rights protection. Institutional independence, accountability mechanisms and effective enforcement remain critical. Comparative perspectives demonstrate that robust oversight and rights-based regulatory design are indispensable to sustaining public trust in digital ecosystems.

The call for digital constitutionalism represents a broader juridical reconstruction. As digital infrastructures reshape democratic participation and administrative decision-making, constitutional law must evolve beyond its traditional state-centric focus. Private platforms exercising quasi-public power cannot remain insulated from constitutional values. Doctrinal innovation particularly in areas such as horizontal application of rights, substantive due process and algorithmic accountability ie., is necessary to ensure that constitutional guarantees retain their vitality. Constitutional morality, with its emphasis on dignity and transformative justice, offers a normative guide for navigating these transitions.

Looking forward, the trajectory of digital jurisprudence in India is likely to deepen along three interconnected paths. First, courts may increasingly confront cases involving artificial intelligence, data profiling and platform regulation, requiring refined proportionality analysis and technical literacy. Second, legislative reforms will need to address algorithmic transparency, cross-border data flows and independent regulatory oversight with greater precision. Third, constitutional discourse may gradually recognise digital access and digital literacy as integral components of substantive equality in an information-driven society.

The Constitution is not a static document; it is a living instrument that adapts to social and technological change. Digital transformation presents not a rupture but an opportunity—an opportunity to reaffirm constitutional commitments in new contexts. The essential insight emerging from this study is that digital rights are constitutional rights in a new form. They do not create a parallel legal order but extend the Constitution's protective reach into spaces shaped by data and algorithms.

Continuous constitutional evolution is therefore not optional; it is imperative. As technological systems grow more complex, the responsibility of constitutional institutions courts, legislatures and regulatory bodies intensifies. The future of digital governance in India will depend on whether innovation remains anchored in dignity, whether surveillance remains subject to law, and whether algorithmic power remains accountable to constitutional morality. Only through sustained doctrinal engagement and institutional vigilance can the Constitution continue to serve as a safeguard for human freedom in the digital age.

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THE EDUCATION CRISIS IN MANIPUR: LEARNING UNDER THE TOILS OF CONFLICT

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Abstract

Decades of ethnic conflict, insurgency and frequent shutdowns have pushed Manipur's education system into a severe crisis, peaked by the 2023 violence that displaced nearly 15,000 students and converted 26 schools into relief camps. Although the state maintains a literacy rate of roughly 77%, the quality of learning is crippled by deep-seated issues like lack of infrastructure, massive faculty shortages, high teacher absenteeism in hill regions, frequent bandhs/ general strikes and a digital divide that leaves students without internet access due to internet. The prolonged disruption of education, displacement of students and psychological trauma have placed a generation at risk. Sustainable solutions which not only address physical access to schools but also the emotional, social and academic needs of children in conflict zones.

Introduction

For decades, the state of Manipur has existed in a paradox. It boasts one of the highest literacy rates in India yet its educational calendar is perhaps the most volatile in the country. To understand the current crisis, one must look into the prominent history of insurgency, ethnic aspirations and heavy militarization that has dictated the rhythm of student life for over half a century. In Manipur, the 'toils of conflict' are not a sudden intrusion but a generational inheritance.

Education serves as a catalyst for economic growth and the empowerment of individuals, fostering a healthy life and societal engagement. The crisis in Manipur is not just a humanitarian or political issue it is an educational emergency that demands immediate attention. Whether armed conflict, ethnic conflict, bandhs, internet banned or forceful closures of the state, each form of unrest harms the lives of students either directly or indirectly. This chapter explores the multifaceted collapse of the educational ecosystem in Manipur. It moves beyond the statistics of burnt buildings but also the fear of not completing the syllabus, the trauma experienced by the students due to unrest in the state, lack of infrastructure, the trauma of becoming displaced persons and the long-term socio-economic erosion of a generation's potential.

Conflict and Manipur

Manipur is a resource-rich northeastern state that transitioned from an independent kingdom to a member of the Indian Union in 1949. Geographically, it is split between a central valley making up 10% of the land (primarily inhabited by the Meitei) and surrounding hills comprising 90% of the area (inhabited by 33 recognized tribes). Currently, the state faces significant social unrest, ethnic violence, and insurgency fueled by demands for autonomy and resource disputes. The conflict situation of Manipur is associated with many issues like the merger of Manipur into Indian Dominion, perceived sense of neglect towards the people by the Indian government, claiming over the territory of Manipur by the different ethnic groups, presence of multiple ethnic groups, imposition of AFSPA etc. And it makes Manipur one of the most violence-ridden states in the country. This persistent conflict between ethnic groups seeking to assert their identities has created a turbulent environment that frequently disrupts the state's educational system. Moreover, Manipur University is the only university in India that has army camp inside the campus.

Education System in Manipur

The education system in Manipur has evolved significantly since the establishment of a dedicated Department of Education in 1950. This department initially oversaw supervision, inspection, curriculum development, and textbook selection. Before 1980, colleges in Manipur were affiliated with universities in Assam and Kolkata, but the state later established its own university, which was upgraded to Manipur Central University in 2005. Currently, the state has four main Departments of Education: a) University and Higher Education b) School Education c) the State Council of Educational Research and Training and d) Adult Education (Kengoo, 2012)

The literacy rate of the state is very impressive when we compared with other states of the country. But when it looks closer to the quality of education, it is not impressive due to the low status of educational institutes run either by the state government or private. The status of education in the state is very far behind from the rest of the states in the country where educational technology played a significant role in global competitive education which leads forth to socio-economic development in the society (Kengoo, 2012). Government schools and colleges in Manipur have not succeeded in providing education for the masses due to strong interference from various outfits; the dominant issue of absentee teachers in hill areas; the civil administration's inability to reach these areas; lack of oversight on fund allocation, with local newspapers replete with cases of collusion between village chiefs, teachers, and officials to siphon off funds; and schemes like Sarva Shiksha Abhiyan and Rashtriya Madhyamik Shiksha Abhiyan existing only on paper (Tamphasana, 2017). Infrastructural and digital deficits significantly constrain effective reform efforts in Manipur's education system. Nearly 80% of hill colleges lack adequate digital infrastructure, compounded by connectivity disruptions in 60% of

remote areas and a persistent 40% faculty vacancy rate, suggested that NEP implementation without region-specific investments risks deepening spatial and social inequalities (Singh, 2020). Additionally, unhealthy recruitment practices for teachers are prevalent in Manipur. Despite UGC guidelines mandating a minimum of 180 teaching days, a 40-hour work week, and five hours of daily presence for college teachers, absenteeism remains widespread in government colleges. In contrast, private aided colleges frequently launch numerous new courses and hire many teachers, occasionally accepting "donations" from appointees with assurances of future government jobs. (Singh, 2023).

Conflict and Education

The impact of armed conflict on education is a frequently overlooked crisis that exacerbates poverty and stalls national progress. In many conflict-affected regions, education systems fail to provide youth with the necessary skills for employment; worse, if misused, these systems can actually reinforce social divisions and intolerance. In Manipur, the relationship between conflict and educational development can appear statistically weak because many students flee the state to study elsewhere (Singha, 2013). However, the frequent bandhs and strikes that jeopardize academic excellence have triggered a massive student exodus, resulting in a significant drain of monetary resources. This raises a critical question for those left behind: since not everyone can afford to send their children away, how are the families who cannot pay for an outside education supposed to cope?

The education system faced further severe disruption during the ethnic conflict that began on May 3, 2023. This violence displaced approximately 67,000 people, including 14,763 school-enrolled children. Out of the state's 4,617 schools, 26 have been utilized as relief camps or accommodation for central forces, forcing long-term closures. While 93.5% of displaced students have been re-admitted to the nearest feasible schools, and the government launched the ‘Chief Minister’s College Students Rehabilitation Scheme’ (CMCSRS) in July 2023, the scale of the emergency remains vast. With roughly 20,000 students displaced and nearly 75% of learners excluded from online platforms due to internet shutdowns, Manipur serves as a critical case for the "education in emergencies" framework (Smith and Vaux, 2003). Furthermore, the conversion of 23 higher education institutions into makeshift relief camps has hollowed out the infrastructure needed to implement reforms like NEP 2020. While the national policy proposes Special Education Zones, the reality in Manipur suggests that priorities must shift toward psychosocial support and trauma-informed pedagogy (UNICEF, 2022).

The crisis in Manipur is not just a humanitarian or political issue—it is an educational emergency that demands immediate attention. The prolonged disruption of education, displacement of students, and psychological trauma have placed a generation at risk. While initial steps like re-enrollment and special schemes are helpful, sustainable solutions which not

only address physical access to schools but also the emotional, social and academic needs of children must be initiated. In a diverse region like Manipur, ensuring inclusive and uninterrupted education is essential for healing communities and laying the foundation for a resilient and peaceful future.

Discussion

The education crisis in Manipur reveals a profound intersection of protracted conflicts, infrastructural deficits and systemic disruptions that have systematically undermined learning outcomes for generations. The findings of this study highlight a disturbing paradox: Manipur's high literacy rate (77%) mask a hollowed-out educational infrastructure that is failing its youth. The solution to the volatility of bandhs, strikes and insurgent interference is a 'student exodus'. This migration, while preserving individual academic progress, triggers a massive drain of intellectual and monetary resources that could otherwise develop the state's own institutions.

However, for the majority of the population who cannot afford to send children outside the state, education has become a game of chance. The data regarding the May 2023 conflict—specifically the displacement of nearly 15,000 schoolchildren and the conversion of 26 schools into relief camps—demonstrates that the education system is not merely a bystander to conflict but its primary victim.

Furthermore, the "digital divide" mentioned (affecting 75% of rural learners) proves that technological solutions like online classes are ineffective in a state prone to frequent internet shutdowns. This suggests that the "Education in Emergencies" framework (Smith & Vaux, 2003) must be the primary lens through which Manipur's education is viewed. We cannot discuss "quality" or "global competition" when the basic safety and presence of teachers particularly in the hill regions are compromised by absenteeism and systemic corruption. The crisis is not just about missing days of school but it is also about the trauma-induced erosion of a generation's potential to compete on a national stage.

Conclusion

The educational crisis in Manipur is a profound emergency that transcends political and humanitarian labels. Decades of systemic instability, culminating in the acute violence of 2023, have placed an entire generation at risk of long-term socio-economic erosion. While literacy rates remain high, the reality on the ground is one of hollowed-out infrastructure, teacher absenteeism, and a widening digital divide that excludes the most vulnerable learners. For a sustainable recovery, the state must transition from a model of temporary relief to one of educational resilience which requires prioritization in bridging the resource gap between valley and hill regions to ensure quality education; integrating psychological support to students to navigate the psychological toll of conflict and displacement; ending the use of schools and colleges as relief camps or security outposts.

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CHALLENGES AND BARRIERS TO MOBILE LEARNING

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Abstract
Though mobile learning mitigates the gaps of accessibility to resources, however there are various issues that can arise because of mobile learning. From a general point of view, mobile learning decreases the physical interactions so lacking the emotional parameters and person becomes more materialistic that will be a great barrier for moral & ethical values and humankind as well. As human and social well being, cutting from society itself brings mental and physical adaptations and results in loss of enthusiasm and morality. There will be no use of travelling the historical places as well, as now the augmented reality through the 3D representations can simulate those. However, mere visiting or traveling to see the historical buildings or transcripts is not the sole purpose of those educational visits, it's about belief and feeling that we learned and explored through the physical interaction to the environment. Apart from the general issues, the digital divide, screen addiction, simulated world are the great barriers for the sustainable developments of a society and country as well. This current chapter tries to explore these challenges & issues along with solutions.

Keywords: Mobile Learning, Challenges, Digital Divide, Data Loss, Destructive Machine, Education.

1. Introduction

Mobile learning is transforming the education system into a more flexible, learner centric, adaptable, interactive, efficient system (1). The availability of the vast amount of the study material as well as dynamic curricula according to market demand and technology orientation make it more popular (2). Technology, especially in the area of cloud computing, IoT, having faster Internet, increased storage capacities, availability of online platforms, mobile devices, global reach and wider study contents making the modern education system more popular specially among the people living in untouched areas. This way, the literacy ratio as well as the inclusiveness can be enhanced and benefit the employability and the social living as well. However, reachability to mobile devices, Internet accessibility is not possible for everyone, especially the rural population of the developing India (2,3,4,5). The infrastructure management, scarcity of the resources makes it challenging (10). Apart from the finance or the physical barriers, it also sometimes threatens personal security. Leakage of the personal data, hackers' attacks, misleading information, false positive, fake websites and ultimately make the users get trapped in the cybercrime (6,4). The various barriers are as follows.

2. Challenges and Issues of Mobile Learning

- **Digital divide:** Not every person has a smartphone, tablets for the laptop or the speed of the Internet. The high quality, fast and unlimited data plans are very expensive services, and the maintenance is not user friendly. Most middle families do not have individual devices, they have to share the single smart device for their homework, office work as well as going through the online tutorials. 5G connection is not available at every place and in every area and the low devices are not compatible with this 5G Internet. With the 4G, the wider streaming of data, the live classroom, the streaming of the videos like YouTube videos, and meetings face huge connection problems. And even the expensive devices, for example the 5G phones, are sometimes automatically shifted to the 4G due to the lack of the network availability and the poor speed of the Internet (3,4,7,8,10).
- **Destructive machine:** For the younger generation, smartphones proved a more destructive source. Quick notifications of online shopping, instagram messages, facebook and other update notifications received on the smart phones added by the promotional list of emails derail the students from study. The social networking messages are time consuming, short messages and their own grammar messages for privacy drag the students away from the main study materials. The switch between the apps, messages cause less learning, increased mistakes and lack of concentration on a single topic as the brain is now working as a multiple thinker. The continuous system monitoring increases the eye strains, headache, fatigue, and is less memorable than the physical readings (8,9,12).
- **Technical glitches in the remote areas:** Wi-Fi facility or fast Internet is not accessible everywhere. The problem of password disclosures and forgetting are another issue. Not every person is a fan of advanced technology and does not interact with online platforms, so even the best teachers who are expert in their field but not accessible on this global platform and not in connection with vast audiences (10).
- **Privacy and safety:** This becomes more dangerous in the village areas or where the literacy rate is very low. The people, especially the children and the female, are less aware of the black consequences of the smart phones, smart apps or the Internet live connections, applications running in the background. Later they can face cyber bullying and other issues. Apart from this, the loss of the bank account information may totally empty their money they have earned very hard, their personal IDs or emails even can be used in terrorist or unfair activities. Further adding, the drama of advertisements may totally wash their minds and they get easily trapped (8, 9).
- **Bounded access:** Parent control or the teacher control must be there on the apps and the device that is allowed to watch; so that the student will not distract themselves. But, what about the adults? So even the government should look after barring the illegal content and the destructive content from access in a country.

- **Loss of the displayed data due to platform dependent design:** Sometimes the designer created a web page suitable only for the desktop and ignored the laptops as well as smart phones, the small screen not capable of showing the full web page data and not well drafted (9). So, to make the best use of mobile learning, various learning platforms should design the curriculum and web page draft in a way that can open on a mobile screen.
- **Accidental:** Watching online tutorials, videos, sometimes on the road, while driving or indulging in other household or official tasks may result in a great disaster.

3. Solutions to the Issues

- **Personalization and authentication is mandatory:** The speed, captions of the data can be easily adjusted as per the listener requirements on a secure and authentic platform. Organizations like Microsoft, IBM, EDAX, NEPTAL of the Indian government are offering a secured platform for learning.
- **Book for specific research alliances:** The collaborative work on a particular research or a project in a team enhances the linkage & sympathy between the different cultures, the different learning levels and the expertise shared. The microlearning for discussing only the key points in a short video can reduce overloaded data (4).
- **AI support:** The advanced AI tools are now able to chat like human, personalized chat can be started, explanations of different concepts, deep thinkers, the image generation, the code writer can aid the student to further ask to extend the explanations or reformat the data and reproducing text so that it can match the learner's ability of the learning, The suggestive AI slowly gets into the touch of the learner and provides the deeper insights about a problem or a phenomena. Further, augmented reality can be implemented in the learning syllabus by which the objects can be placed in the real world and give a personalized feeling. The student can experiment without physical damage in the real world. The game applications are utilizing augmented reality (AR) to provide experimental learning in the real world to understand the concept better in a practical way. Where is the historical monument and the model building using the 3D effects with the AR/VR aid student walk through and feel the real sensation about a particular topic and understand the concept clearly with a better interaction (4, 7, 10).
- **Wearable devices:** Aid the adaptable learning as per the student needs with the powerful AR/VR gadgets and make the learning more comprehensive, flexible and efficient (4, 7, 10).
- **Data records:** Many schools implemented the tutorial lecture by providing the laptops or the desktop that can be adopted as per the availability of the resources and the learning requirements of the students. The various experimental data can be examined and reused for the further progression and automatically generating the reports on the student performance as well as for the feedback system.

- **Special cases:** The smart device is a great sport to the person facing the physical challenges. The devices with the touch screen and other gadgets make them speak their voice through these wearable devices and make them fully inclusive (10).
- **Benefits for the government for their social welfare schemes:** For the successful implementation of various social welfare schemes and enhance inclusiveness, equal treatment, many applications like the sign language courses by the government and other skill enhancement courses, the free certification through online courses, accessibility to the various government welfare schemes, notifications are possible with the smart mobile phones. This can be proved as the 'best practices' for the developed nations like India and bridging the gap between the technology driven urban students and the rural students (1, 10).
- **Certification:** The quality of the content, the way of testing, and the verification of a student's performance must be clearly defined as standardized at the global level. The process of testing and feedback must be transparent and equal to all.
- **Practical approach:** The students should be asked to create the digital content rather than just merely watching and wasting the time. So even when they create the content, they learn the technology and the methodology.
- **Nudges notifications:** It's about the timeline of submitting a project just like a reminder. The time allotted to finish a project should be little or day to day so that the students stay on the topic to finish the work assignment on time.
- **Motivation to "no phone period or no time zone"**: Smartphones making the school students spend more time on devices and less time engaging with the world that hinder learning (12). No phone zone or time setting and become an active learner to avoid the time-wasting apps and take care of the personal health and eyes that happened because of indulges in timewasting activities and misusing the mobiles in passive activities like watching movies, serials, playing fighting or car racing or illogical games as a passive learner.
- **Emotional AI in the mobile learning:** Emotional AI is able to detect the student behaviour automatically by using the different sensors, the cameras and data collected i.e. whether the mood or the attitude is angry, happy, confusing, frustrated or required suggestive treatment accordingly. As the rise of the extended reality, a logical classroom can be set up for the student physically sitting so far through the “metaverse” technology by wearing the lightweight glasses and feel like walking in a class (6).

4. Advantage in Higher Education

NEP 2020 focuses on fair, transparent, multidisciplinary and an inclusive approach (4). that is accessible to everyone, flexible enough to meet the requirements, including the ethical values, knowledge system and other worthy literature showing the legacy of historical incredibility (10).

The government has also initiated several online courses, blending learning, RPL to enhance the literacy ratio and the number of students in various institutions. Portable & focused adaptive learning that aids in better implementation of NEP 2020. However, ethics knowledge is not just the outcome of the readings. It is continuous practice, learning from the generation to generation that requires physical presence. Mobile learning can be alternate for the courses where the tutors are not sufficient, areas where the physical class is not possible and the work as a complementary (1, 2, 10, 11). However, 100% replacement is not good and even feasible at all. Benefits are as:

- **Language learning:** A particular learner wants to learn a language for which tutors are not available nearby and can easily benefit from the mobile learning. For example, sign language, other international languages, French, Spanish, English or the Indian local languages, Tamil, Telugu, Punjabi etc. can be learned and practiced easily to write and speak as a hobby, or as a professional advantage, or as a mandate.
- **Live training with augmented reality:** In the science project or the practical training, the student can view the 3D view of the system and the 365 view of the product or even can use the mobile to record the astronomic activities by the telescope too where the various space apps are available and easily downloadable. It helps in further study, exploration, personal experience and learning beyond the books (4, 5).
- It's just like a gateway for the disabled and a rural student with the "school in the pocket" and aid in deeper insight about the topic and a supplement to boost the scorecards and the performance outcomes.
- **Degree of freedom:** Students can become explorers to find new learning and technical opportunities that even the family and the local fraternity and the neighborhoods don't know. The various social channels, reals, videos, documentaries also depicted the various ideas and methods that are boundless.

Future of Mobile Learning

Smartphones become necessary to become smart, learn smartly, act smartly and build a cost-efficient platform in the infrastructure for the future generations. Mobile learning translates the learning to a flexible, decentralized system. More focused, student centric, more interactive, just in time approach, collaborative work. Mitigating the challenges of a green environment, digital device gender biases and inclusivity if handled cautiously. The screen time, social dysconnectivity, defects, data leakage, uncontrolled object description, digital destruction challenges should be taken care of.

Conclusion

The digital divide is a big challenge to handle. The focus on the data security parameters and the system management is mandatory to control the screen time, unauthorized access and notifications management etc. Mobile learning is not a future paradigm; it is a demand of the current learning environment and the market fluctuations. The rise of the digital divide and the

mental health issues should be taken care of while focusing on the inclusivity, fair & transparent and personalized learning platforms.

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संवैधानिक परिपेक्ष्य में राजभाषा हिंदी: प्रावधान एवं विश्लेषण

शमशाद अली

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सार

प्रस्तुत शोधपत्र भारतीय संविधान के परिप्रेक्ष्य में राजभाषा हिंदी से संबंधित प्रावधानों का विस्तृत अध्ययन और विश्लेषण प्रस्तुत करता है। स्वतंत्रता प्राप्ति के बाद भारत के समक्ष शासन-प्रशासन की भाषा निर्धारण का महत्वपूर्ण प्रश्न था। संविधान निर्माताओं ने व्यापक विचार-विमर्श के पश्चात १४ सितंबर १९४९ को हिंदी को संघ की राजभाषा के रूप में स्वीकार किया तथा इसे भारतीय संविधान के भाग १७ में विधिवत स्थान प्रदान किया। अनुच्छेद ३४३ से ३५१ तक राजभाषा हिंदी, अंग्रेज़ी के प्रयोग, राज्यों की राजभाषा, न्यायालयों की भाषा और भाषाई अल्पसंख्यकों के अधिकारों से संबंधित स्पष्ट प्रावधान किए गए हैं। साथ ही संविधान की आठवीं अनुसूची में २२ भाषाओं को मान्यता दे कर भारत की भाषाई विविधता एवं सांस्कृतिक एकता को सुदृढ़ किया गया है। प्रस्तुत शोध में संसद तथा राज्य विधानमंडलों में भाषा-प्रयोग, न्यायालयों की भाषा व्यवस्था, राजभाषा आयोग की भूमिका एवं हिंदी के विकास के लिए दिए गए संवैधानिक निर्देशों का विश्लेषण किया गया है। प्रस्तुत अध्ययन से स्पष्ट होता है कि संविधान ने हिंदी को सम्मानजनक स्थान प्रदान करते हुए अन्य भारतीय भाषाओं के संरक्षण तथा संतुलन का भी ध्यान रखा है।

कुंजी शब्द: राजभाषा हिंदी, भारतीय संविधान, अनुच्छेद ३४३-३५१, आठवीं अनुसूची, भाषाई अल्पसंख्यक.

परिचय

भारत एक बहुभाषी देश है जिसके विभिन्न राज्यों में कई भाषाएँ बोली जाती हैं। स्वतंत्रता प्राप्ति के पश्चात भारत के सामने यह प्रश्न था कि शासन-प्रशासन की भाषा क्या हो। संविधान निर्माताओं ने विचार-विमर्श के बाद १४ सितंबर १९४९ को हिंदी को संघ की राजभाषा के रूप में स्वीकार किया।संविधान के विभिन्न अनुच्छेदों में हिंदी के प्रयोग, अंग्रेज़ी के सीमित उपयोग, राज्यों की राजभाषा, न्यायालयों की भाषा और भाषाई अल्पसंख्यकों के अधिकारों से संबंधित प्रावधान किए गए हैं। साथ ही हिंदी के विकास एवं प्रसार हेतु विशेष निर्देश भी दिए गए हैं। प्रस्तुत शोधपत्र इन्हीं संवैधानिक व्यवस्थाओं का सरल विश्लेषण प्रस्तुत करता है।

शोध के उद्देश्य

- भारतीय संविधान में राजभाषा हिंदी से संबंधित प्रमुख अनुच्छेदों का अध्ययन करना।
- संसद, राज्य विधानमंडल तथा न्यायालयों में भाषा प्रयोग से संबंधित प्रावधानों का विश्लेषण करना।
- आठवीं अनुसूची में सम्मिलित भाषाओं एवं भाषाई विविधता के महत्व को समझना।
- हिंदी के विकास और भाषाई अल्पसंख्यकों के संरक्षण से संबंधित संवैधानिक निर्देशों का मूल्यांकन करना।

शोध का योगदान

- प्रस्तुत शोध में राजभाषा हिंदी से संबंधित संवैधानिक अनुच्छेदों (३४३-३५१) का क्रमबद्ध और सरल विश्लेषण प्रस्तुत किया गया है।
- संसद, राज्य विधानमंडल एवं न्यायालयों में भाषा-प्रयोग की संवैधानिक व्यवस्था को स्पष्ट रूप से व्याख्यायित किया गया है।
- आठवीं अनुसूची में सम्मिलित भाषाओं एवं भाषाई विविधता के संवैधानिक महत्व को रेखांकित किया गया है।
- हिंदी के विकास, प्रसार एवं भाषाई अल्पसंख्यकों के अधिकारों से संबंधित संवैधानिक निर्देशों की समग्र समीक्षा प्रस्तुत की गई है।

शोध पद्धति

प्रस्तुत शोध मुख्यतः दस्तावेज़ीय तथा विश्लेषणात्मक पद्धति पर आधारित है। इसके अंतर्गत भारतीय संविधान के संबंधित अनुच्छेदों का अध्ययन, संवैधानिक संशोधनों का अवलोकन तथा विभिन्न प्रावधानों का तुलनात्मक और व्याख्यात्मक विश्लेषण किया गया है। प्रस्तुत अध्ययन गुणात्मक प्रकृति का है।

विषय विवेचन

भारत एक बहुभाषी देश है जहाँ विभिन्न भाषाएँ एवं बोलियाँ प्रचलित हैं। स्वतंत्रता प्राप्ति के पश्चात यह ज़रूरी था कि शासन-प्रशासन की एक भाषा निर्धारित की जाए। भारतीय संविधान २ वर्ष, ११ माह और १८ दिनों में तैयार हुआ और २६ जनवरी १९५० को लागू हुआ। स्वतंत्रता आंदोलन के समय हिंदी को राष्ट्रभाषा बनाने की मांग प्रमुख रूप से उठी थी। इसी पृष्ठभूमि में संविधान सभा ने १४ सितंबर १९४९ को हिंदी को संघ की राजभाषा के रूप में स्वीकार किया। संविधान के भाग ५, ६ और १७ में राजभाषा से संबंधित महत्वपूर्ण प्रावधान किए गए हैं, जिनका उद्देश्य प्रशासनिक कार्यों में भाषा का स्पष्ट निर्धारण तथा भाषाई संतुलन बनाए रखना है।

१. आठवीं अनुसूची और भाषाओं की मान्यता: संविधान की आठवीं अनुसूची में वर्तमान में २२ भाषाओं को मान्यता दी गई है। इनमें हिंदी सहित अन्य भारतीय भाषाएँ शामिल हैं। समय-समय पर संविधान संशोधनों (१९६७, १९९२, २००३) द्वारा नई भाषाओं को जोड़ा गया। यह व्यवस्था भारत की भाषाई विविधता एवं सांस्कृतिक एकता को दर्शाती है।

२. संसद में भाषा का प्रयोग (अनुच्छेद १२०): अनुच्छेद १२० के अनुसार संसद में कार्य हिंदी अथवा अंग्रेज़ी में किया जा सकता है। अगर कोई सदस्य इन दोनों भाषाओं में अपनी बात स्पष्ट रूप से नहीं रख सकता, तो उसे अपनी मातृभाषा में बोलने की अनुमति दी जा सकती है। संविधान लागू होने के बाद १५ वर्षों तक अंग्रेज़ी के प्रयोग की व्यवस्था की गई थी। संसद को यह अधिकार दिया गया कि वह आगे चल कर भाषा संबंधी व्यवस्था निश्चित करे।

३. राज्य विधानमंडल में भाषा (अनुच्छेद २१०): अनुच्छेद २१० के अनुसार राज्य विधानमंडल में कार्य राज्य की राजभाषा, हिंदी अथवा अंग्रेज़ी में किया जा सकता है। अगर कोई सदस्य इन भाषाओं में अपनी बात नहीं रख सकता, तो उसे मातृभाषा में बोलने की अनुमति मिल सकती है। प्रारंभिक १५ वर्षों तक अंग्रेज़ी के प्रयोग की अनुमति दी गई थी।

४. संघ की राजभाषा (अनुच्छेद ३४३): अनुच्छेद ३४३ के अनुसार संघ की राजभाषा हिंदी तथा उसकी लिपि देवनागरी होगी। सरकारी कार्यों में अंकों का अंतर्राष्ट्रीय रूप प्रयोग किया जाएगा। संविधान लागू होने के पश्चात १५ वर्षों (१९६५ तक)

अंग्रेज़ी का प्रयोग जारी रखने की अनुमति दी गई, ताकि प्रशासनिक कार्यों में बाधा उत्पन्न न हो। राष्ट्रपति को यह अधिकार है कि वे आवश्यकता अनुसार हिंदी तथा अंग्रेज़ी दोनों के प्रयोग की अनुमति दे सकें।

५. राजभाषा आयोग और संसदीय समिति (अनुच्छेद ३४४): अनुच्छेद ३४४ के अनुसार राष्ट्रपति एक राजभाषा आयोग का गठन करेंगे, जो हिंदी के अधिक प्रयोग तथा अंग्रेज़ी के सीमित उपयोग के संबंध में सुझाव देगा। संसद की एक समिति इन सुझावों की समीक्षा करेगी और अपनी रिपोर्ट राष्ट्रपति को देगी। राष्ट्रपति आवश्यक निर्देश जारी कर सकते हैं।

६. राज्यों की राजभाषा (अनुच्छेद ३४५-३४७):

- अनुच्छेद ३४५ के अनुसार राज्य अपनी राजभाषा अथवा एक से अधिक भाषाओं को स्वीकार कर सकता है।
- अनुच्छेद ३४६ के अनुसार राज्यों के बीच तथा राज्य एवं संघ के बीच पत्राचार अधिकृत भाषा में होगा।
- अनुच्छेद ३४७ के अनुसार अगर किसी राज्य की जनसंख्या का एक बड़ा भाग किसी भाषा को मान्यता देने की मांग करता है, तो राष्ट्रपति उस भाषा को मान्यता देने का निर्देश दे सकते हैं।

७. न्यायालयों की भाषा (अनुच्छेद ३४८): अनुच्छेद ३४८ के अनुसार उच्चतम न्यायालय एवं उच्च न्यायालयों की कार्यवाही सामान्यतः अंग्रेज़ी में होगी। संसद एवं राज्य विधानमंडलों के अधिनियमों का अधिकृत पाठ भी अंग्रेज़ी में होगा। राज्यपाल, राष्ट्रपति की अनुमति से, उच्च न्यायालय में हिंदी अथवा अन्य राज्य भाषा के प्रयोग की अनुमति दे सकते हैं, परंतु निर्णय का अधिकृत पाठ अंग्रेज़ी में ही माना जाएगा।

८. भाषा संबंधी विशेष प्रक्रिया (अनुच्छेद ३४९): अनुच्छेद ३४९ के अनुसार भाषा से संबंधित कुछ विधेयकों को संसद में प्रस्तुत करने से पहले राष्ट्रपति की अनुमति आवश्यक है। यह प्रावधान भाषा नीति में संतुलन बनाए रखने हेतु किया गया है।

९. अभ्यावेदन की भाषा (अनुच्छेद ३५०)

अनुच्छेद ३५० के अनुसार प्रत्येक नागरिक को यह अधिकार है कि वह अपनी शिकायत किसी भी ऐसी भाषा में दे सकता हैं जो संघ अथवा राज्य में प्रचलित हो।

- **मातृभाषा में शिक्षा (अनुच्छेद ३५०क):** राज्य सरकारों का प्रयास होना चाहिए कि भाषाई अल्पसंख्यकों के बच्चों को प्राथमिक स्तर पर मातृभाषा में शिक्षा की सुविधा मिले। राष्ट्रपति इस संबंध में निर्देश भी दे सकते हैं।
- **भाषाई अल्पसंख्यकों के लिए विशेष अधिकारी (अनुच्छेद ३५०ख):** राष्ट्रपति एक विशेष अधिकारी नियुक्त करते हैं, जो भाषाई अल्पसंख्यकों के अधिकारों की रक्षा से संबंधित मामलों की जांच करता है तथा अपनी रिपोर्ट राष्ट्रपति को देता है।

१०. हिंदी के विकास का निर्देश (अनुच्छेद ३५१): अनुच्छेद ३५१ के अनुसार संघ का कर्तव्य है कि वह हिंदी का प्रसार एवं विकास करे। हिंदी को भारत की मिश्रित संस्कृति की अभिव्यक्ति का माध्यम बनाया जाए। इसके लिए अन्य भारतीय भाषाओं एवं विशेष रूप से संस्कृत से शब्द ग्रहण कर हिंदी को समृद्ध बनाने की बात कही गई है।

इस प्रकार भारतीय संविधान ने हिंदी को संघ की राजभाषा के रूप में स्वीकार करते हुए उसके विकास एवं प्रसार हेतु स्पष्ट प्रावधान किए हैं। साथ ही अन्य भारतीय भाषाओं को भी सम्मान एवं संरक्षण प्रदान किया गया है। संसद, राज्य विधानमंडल, न्यायालय और प्रशासनिक कार्यों में भाषा के प्रयोग को संतुलित रूप से निर्धारित किया गया है। भाषाई अल्पसंख्यकों के अधिकारों की रक्षा और मातृभाषा में शिक्षा की व्यवस्था भी सुनिश्चित की गई है। अतः कहा जा सकता है कि संविधान ने हिंदी को सशक्त स्थान देते हुए भारत की भाषाई विविधता एवं राष्ट्रीय एकता दोनों को सुरक्षित रखने का प्रयास किया है।

सुझाव

- सरकारी कार्यालयों में हिंदी के प्रयोग को बढ़ाने हेतु नियमित प्रशिक्षण की व्यवस्था की जाए।
- हिंदी के साथ-साथ अन्य भारतीय भाषाओं के संतुलित विकास पर भी ध्यान केंद्रित किया जाए।
- न्यायालयों में हिंदी और भारतीय भाषाओं के प्रयोग को तकनीकी साधनों की सहायता से बढ़ाया जाए।
- प्राथमिक स्तर पर मातृभाषा में शिक्षा की प्रभावी व्यवस्था सुनिश्चित की जाए।
- हिंदी के प्रचार-प्रसार हेतु डिजिटल माध्यमों एवं नई तकनीकों का अधिक उपयोग किया जाए।

निष्कर्ष

- भारतीय संविधान ने हिंदी को संघ की राजभाषा के रूप में स्वीकार कर उसे संवैधानिक मान्यता प्रदान की है।
- अंग्रेज़ी को एक संक्रमणकालीन तथा सहायक भाषा के रूप में स्थान दिया गया, जिससे प्रशासनिक निरंतरता बनी रहे।
- संविधान ने राज्यों को अपनी राजभाषा चुनने की स्वतंत्रता देकर भाषाई विविधता का सम्मान किया है।
- आठवीं अनुसूची के माध्यम से विभिन्न भारतीय भाषाओं को मान्यता देकर सांस्कृतिक एकता तथा बहुलता को संरक्षित किया गया है।
- भाषाई अल्पसंख्यकों के अधिकारों की रक्षा के लिए विशेष प्रावधान किए गए हैं।
- अनुच्छेद ३५१ के माध्यम से हिंदी के विकास तथा समृद्धि हेतु स्पष्ट संवैधानिक दिशा-निर्देश प्रदान किए गए हैं।
- समग्र रूप से संविधान ने हिंदी को सशक्त स्थान देते हुए राष्ट्रीय एकता तथा भाषाई संतुलन के बीच सामंजस्य स्थापित करने का प्रयास किया है।

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ROLE OF KISAN CALL CENTRE'S (KCC) ADVISORIES ON FARMERS

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Abstract

The Kisan Call Centre (KCC) is an important initiative of the Government of India aimed at providing timely and reliable agricultural information to farmers through telephone-based advisory services. This study focuses on understanding the impact of KCC advisories on farmers' knowledge, decision-making and overall farm performance. The KCC offers expert guidance on crop production, pest and disease management, animal husbandry, weather conditions, market prices and government schemes, enabling farmers to receive scientific advice in their local language. The advisories provided by KCC have significantly improved farmers' awareness and adoption of improved agricultural practices. By receiving timely recommendations, farmers are able to manage crops more efficiently, reduce unnecessary input costs, and minimize losses caused by pests, diseases and adverse weather conditions. The availability of quick expert support during emergencies has strengthened farmers' confidence and reduced their dependence on informal and unreliable sources of information. KCC advisories have also played a key role in improving farmers' decision-making ability. Information related to weather forecasts and market prices helps farmers plan sowing, harvesting and marketing activities more effectively. As a result, productivity and income levels of farmers have shown positive improvement. The service has particularly benefited small and marginal farmers who have limited access to extension personnel and modern communication technologies. Overall, the Kisan Call Centre has strengthened the agricultural extension system by bridging the gap between research institutions and farmers. It promotes the use of scientific knowledge at the grassroots level and supports sustainable agricultural development. The study concludes that KCC advisories have a positive impact on farmers by enhancing knowledge, reducing risks and improving farm management practices, thereby contributing to improved livelihoods and agricultural growth.

Keywords: Agricultural Advisories, Farmer Decision-Making, Crop Productivity, Extension Services, Information Access.

Introduction

Kisan Call Centre (KCC)

Agriculture is the backbone of the Indian economy, providing livelihood to more than 50 percent of the population. Despite its importance, farmers often face numerous challenges such as

unpredictable weather, pest infestations, poor soil health, lack of modern knowledge, unavailability of real-time expert advice, and limited access to scientific farming technologies. These challenges affect crop productivity, farm income, and overall rural development. To address these limitations and strengthen the agricultural extension system, the Government of India launched an innovative program called the Kisan Call Centre (KCC) on 21 January 2004. The initiative aimed to use Information and Communication Technology (ICT) to bridge the gap between farmers and agricultural experts. Through a simple toll-free number (1800-180-1551), farmers can talk directly to trained professionals and Subject Matter Specialists (SMSs) to get instant solutions to their problems. KCC represents a major shift in the way agricultural knowledge is delivered to farmers. Unlike traditional extension methods where farmers had to physically visit agricultural offices or wait for field staff, KCC enables quick, region-specific, and scientific advisory over the phone. This system ensures that no farmer is left without guidance, even in remote areas where extension workers rarely visit. KCC has transformed agricultural communication by making expert advice accessible, affordable, and timely. Over the years, it has become one of the most successful initiatives in the Digital Agriculture Mission of India, empowering millions of farmers with accurate knowledge. Today, KCC stands as a reliable source of agricultural wisdom and a major support system during crop emergencies, extreme weather events, and pest outbreaks. Kisan Call Centre has transformed the landscape of agricultural communication in India, making expert guidance universally accessible, affordable, and timely. It stands today not only as a technological achievement but also as a symbol of empowerment for Indian farmers, supporting them in overcoming challenges, increasing their productivity, and securing their livelihoods in an increasingly uncertain agricultural environment. Thus, the impact of Kisan Call Centre advisories on farmers is substantial, influencing farming decisions, input management, risk reduction, and adoption of modern technologies. This project explores the complete structure, functioning, advantages, challenges, and overall impact of KCC on farmers in a detailed manner.

KCC has grown into a national network that is integrated with State Kisan Call Centres (SKCCs). It operates in multiple regional languages, ensuring inclusivity and addressing the diversity of India's agricultural landscape. The initiative also serves as a crisis management tool, providing real-time advisories during pest outbreaks, floods, droughts, and extreme weather events. By reducing crop losses and improving agricultural decision-making, KCC contributes directly to increasing farmers' income and enhancing food security.

The program has also played a significant role in empowering farmers with knowledge, fostering confidence in scientific farming practices, and encouraging the adoption of modern agricultural technologies. Its impact extends beyond agriculture, promoting rural development, sustainable farming, and climate-resilient practices. KCC represents a shift towards digital agricultural

extension, laying the groundwork for further innovations under India's Digital Agriculture Mission. Today, it stands as a trusted platform, connecting farmers, researchers, government agencies, and agribusiness stakeholders, and ensuring that expert advice reaches those who need it most.

In summary, the Kisan Call Centre is more than just a helpline; it is a comprehensive support system for Indian farmers, combining technology, expertise, and accessibility to strengthen the backbone of the nation's agriculture. By addressing the challenges of traditional extension methods and leveraging ICT, KCC has become a model initiative that demonstrates how digital solutions can transform agriculture, improve livelihoods, and contribute to national development.

Objectives of KCC

The main objectives of the Kisan Call Centre system are:

- **Provide instant agricultural advisory:** Farmers receive quick, scientifically accurate, and region-specific solutions to their problems.
- **To strengthen agricultural extension:** KCC acts as a digital extension service, supporting farmers who cannot access traditional extension workers.
- **To reduce crop losses:** Through timely pest, disease, and weather advisories, farmers can take preventive actions.
- **To promote modern farming practices:** KCC encourages farmers to adopt improved seeds, fertilizers, irrigation systems and cultivation technologies.
- **To increase awareness about government schemes:** Farmers are informed about subsidies, PM-Kisan, crop insurance, soil health card, etc.
- **To improve farmer decision-making:** Expert guidance improves the accuracy, reliability, and confidence in farmers' decisions.
- **To support remote and rural farmers:** KCC ensures that even farmers living in remote villages have access to expert agricultural knowledge.
- **To build a nationwide agricultural knowledge network:** By connecting experts, universities, and farmers, KCC creates a unified agricultural advisory system.

Location of Kisan Call Centre:

Kisan Call Centres are strategically located across India to ensure language compatibility, quick response, and efficient call routing. Instead of setting up one centralised center, the government established multiple KCC units across various states to handle region-specific queries.

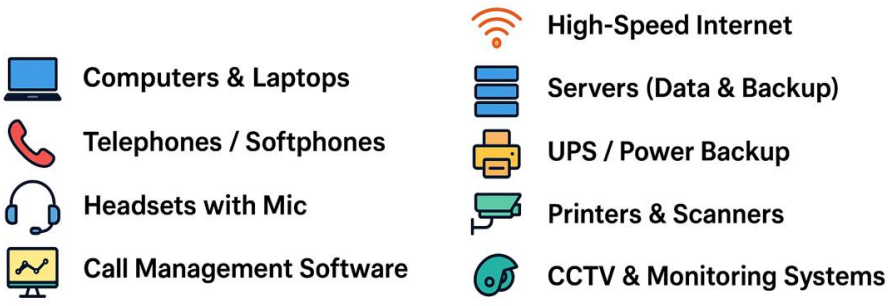
KCCs are typically located in:

- Major cities
- State agricultural hubs
- Places with strong internet and telecom infrastructure

- Regions with access to agricultural universities and KVKs

Examples include centres in Jaipur, Hyderabad, Pune, Bengaluru, Patna, Chandigarh, Kanpur, Kolkata, Coimbatore, Bhubaneswar, Jabalpur, Guwahati, Ahmedabad, Jammu & Kashmir, Ranchi, Solan, Trivandrum, Guntur, Raipur, Pant Nagar, Agartala.

Equipments used in Kisan Call Centre



Kisan Knowledge Management System (KKMS)

The Kisan Knowledge Management System (KKMS) is an advanced digital platform developed by the Department of Agriculture & Farmers Welfare (DA&FW), Government of India, to

support and strengthen the functioning of the Kisan Call Centre (KCC). It acts as the central knowledge backbone that ensures farmers receive accurate, updated.

Objectives of KKMS:

- To provide accurate, consistent, and validated information to farmers through KCC.
- To maintain a central database of agricultural knowledge, advisories, FAQs, and field-level problems.
- To support decision-making by KCC experts based on real-time and region-specific data.
- To ensure quick resolution of farmers' queries using scientifically verified information.
- To improve agricultural extension by integrating ICT tools with expert services.
- To serve as a continuous learning system for KCC agents and experts.

How KKMS Works:

- Farmer calls KCC on 1800-180-1551.
- Level-1 operator records details: crop, region, problem.
- Operator searches KKMS for the best advisory.
- If query is complex, it is escalated to Level-2 SMS, who uses KKMS for deeper diagnosis.
- For highly specialized cases, it is escalated to Level-3 experts (research institutes).
- Final solution is communicated back to the farmer and recorded in KKMS for future reference.

Benefits of KKMS:

For Farmers

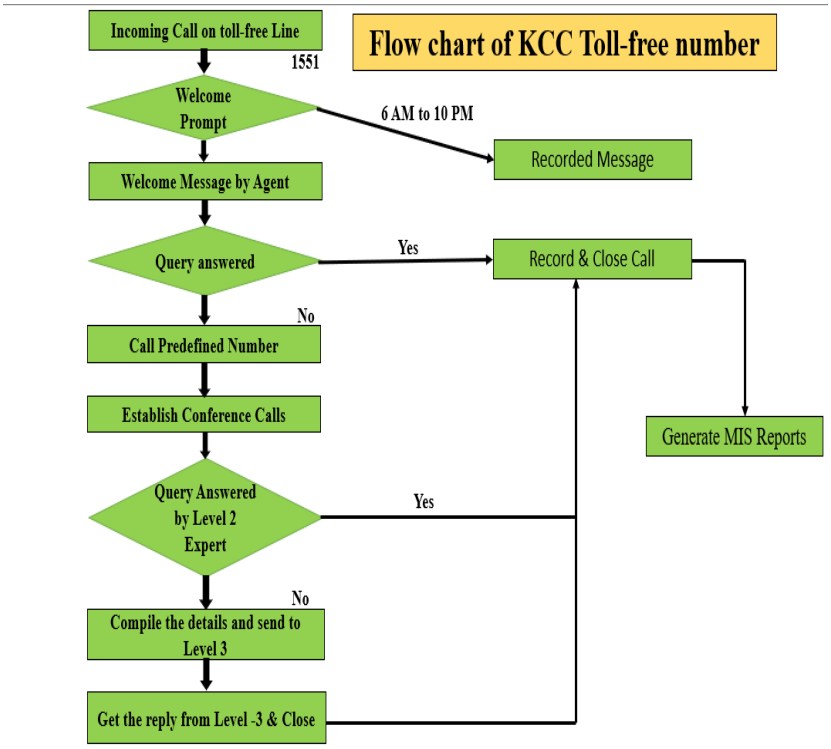
- Get accurate, scientific, and quick solutions for farming problems.
- Receive region-specific and crop-stage-specific guidance.
- Access to modern farming techniques without visiting any office.
- Improved productivity, reduced losses, and better decision-making.

For KCC Experts

- Easy access to a structured knowledge base.
- Reduces the time needed to search for information.
- Ensures uniformity and accuracy in advisories.
- Helps handle large volumes of calls efficiently.

For Government & Extension System

- Supports data-driven policy decisions.
- Identifies emerging issues like pest outbreaks or weather risks.
- Enhances coordination between universities, research institutes.
- Improves the overall effectiveness of agricultural extension services across India.



Infrastructure of KCC

The Kisan Call Centre (KCC) is an ICT-based agricultural advisory system launched by the Government of India to provide timely and expert guidance to farmers across the country. To ensure smooth functioning, quick response time, and reliable service delivery, KCC operates through a strong, multi-layered infrastructure. This infrastructure integrates human expertise, communication technology, digital data systems, and organizational support. Together, they create an efficient platform that connects farmers with agricultural specialists in real time.

The Kisan Call Center, consists of three levels namely

- Level-I: A Professionally managed call center.
- Level-II: Subject Matter Specialists.
- Level-III: The nodal officer

Level 1:

- Level 1 personnel are made available to reply instantly.
- Available in all seven days.
- From 06-00 a.m. to 10-00 p.m.
- The call coming to the call centre is picked up by an operator (level –I expert) who after a short welcome message takes down the basic information and the query of the caller.
- The first level operators preferably would be an agricultural graduate.
- The operators should know local language.

Level 2:

- The level-II consists of Subject Matter Specialists (SMS).

- Available regularly in all working days during working hours.
- In case the first level-I Personnel is not able to answer the question, he forwards (in call sharing mode) the call to the concerned Subject Matter Specialist.
- The question asked is transferred to the Level-II functionary to reply the query.
- In case, it is not possible to answer, there is a system to revert to the caller by post / fax / e-mail or by telephone.

1. **Physical Infrastructure**

Call Centre Facilities

KCC centres operate in state-level or regional offices equipped with modern communication systems. These facilities are designed to support high call-volume operations.

Key Components

- **Dedicated Call Rooms:** Separate cabins or open call floors, ensuring minimal disturbance and smooth communication.
- **Workstations:** Each workstation includes a computer system, telephone set, headsets, and internet connectivity.
- **Supervisor Rooms:** Spaces where supervisors monitor call quality, performance metrics, and support agents.

2. Hardware Infrastructure

- To manage large-scale advisory operations, KCC is equipped with essential hardware tools that support reliable and uninterrupted service.

Major Hardware Components

- Computers / Desktops: For accessing the Kisan Knowledge Management System (KKMS), farmer data, and advisory records.
- VoIP Phones & Headsets: Used for high-quality voice communication without disturbance.
- UPS / Power Backup Systems: Ensures uninterrupted functioning even during power cuts.
- Servers: Store call logs, advisory records, and maintain the KKMS database.
- Routers, Switches & LAN Setup: Provide stable internet connectivity for smooth operations.
- Recording Devices: Automatic call recording systems for monitoring and training.

3. Communication Infrastructure

a. Toll-Free Number System

- The national toll-free number 1800-180-1551 is used across India.
- Calls are automatically routed to the nearest State KCC centre using IVRS (Interactive

Voice Response System).

b. IVRS (Interactive Voice Response System)

IVRS acts as the first contact point for farmers.

Functions

- Language selection
- Crop/subject category selection
- Routing calls to appropriate KCC operators
- Providing automated messages during high call loads

c. Call Routing and Distribution Technology

KCC uses centralized call-routing systems to distribute calls evenly across centres.

Features

- Automatic Call Distribution (ACD): Distributes calls to free agents.
- Skill-based Routing: Sends call to the operator with relevant subject expertise.
- Overflow Routing: Redirects calls to another centre if one centre is busy

4. Digital & Software Infrastructure

a. Kisan Knowledge Management System (KKMS)

- KKMS is the heart of KCC's advisory process.

KKMS Features

- Centralized database of agriculture-related queries and solutions
- State-, crop-, and climate-specific advisories
- Detailed information on pests, diseases, fertilizers, schemes, and technologies
- Regular updates from agricultural universities and ICAR institutes

b. Farmer Database System includes:

- Caller details
- Demographic information
- Crop details
- Past advisory history

c. Monitoring & Reporting Software

- Tracks call duration, waiting time, response rate, and solution quality
- Generates MIS reports for government monitoring
- Ensures transparency and accountability

5. Training and Capacity-Building Infrastructure

KCC regularly trains its staff to maintain advisory quality.

Infrastructure Includes

- Training rooms

- Audio-visual learning tools
- Digital modules on crops, climate, and disease management
- Evaluation and feedback systems

6. Network & Security Infrastructure Components

- Encrypted communication channels
- Firewalls and secure servers
- Protected farmer databases
- Regular data backup

7. Backup and Disaster Management Infrastructure

To maintain 24×7 service reliability:

Key Provisions

- Power backup systems (UPS + generators)
- Backup servers
- Alternate call routing centres
- Real-time data synchronization

8. Integration Infrastructure

- KCC connects with various institutions for updated information.

Integrated Partners

- ICAR institutes
- Krishi Vigyan Kendra's (KVKs)
- State Agriculture Departments
- IMD (for weather advisories)
- Agricultural universities

Features of Kisan Call Centre (KCC):

Main Features of Kisan Call Centre (KCC)

- Toll-free number 1800-180-1551 available for all farmers across India.
- 24×7 advisory service in many states (general timings 6 AM to 10 PM).
- Support in local languages so farmers can talk comfortably.
- Three-tier expert system—Call agents, agriculture graduates, and Subject Matter Specialists (SMS).
- Real-time solutions for crop, livestock, horticulture, fisheries, soil, irrigation, weather, etc.
- Location-specific advisories based on crop stage and local conditions.
- Integration with KKMS (Kisan Knowledge Management System) for expert-verified responses.

- ❖ Call recording and monitoring for quality improvement.
- ❖ Follow-up calls for unresolved queries.
- ❖ Mobile advisory services through SMS for important alerts.
- ❖ Instant pest/disease management advice to reduce crop losses.
- ❖ Free-of-cost service available to all farmers.
- ❖ Facility to send photos via WhatsApp in some states for better diagnosis.

Impact of Kisan Call Centre on Farmers

1. **Easy Access to Expert Advice:** Farmers get immediate, reliable solutions from agricultural experts without visiting any office.
2. **Reduction in Crop Losses:** Timely guidance on pests, diseases, and weather helps farmers protect their crops effectively.
3. **Increase in Productivity:** Scientific and location-specific recommendations improve crop yield and quality.
4. **Saves Time and Money:** Farmers avoid unnecessary travel to Krishi Vigyan Kendra's or extension offices, reducing expenses.
5. **Improves Decision-Making:** Expert advice helps farmers choose the right seeds, fertilizers, pesticides, irrigation methods, etc.
6. **Better Awareness of Government Schemes:** Farmers gain accurate information about subsidies, schemes, and support programs.
7. **Enhances Use of Modern Farming Practices:** KCC encourages adoption of improved technologies, machinery, and climate-smart agriculture.
8. **Strengthens Farmer Confidence:** Instant expert support increases confidence in scientific farming.
9. **Helps During Emergencies:** Quick advice during floods, droughts, pest outbreaks, and storms minimizes damage.
10. **Improves Livestock and Fisheries Management:** Farmers receive guidance for animal health, nutrition, vaccinations, pond management, etc.
11. **Increases Income:** Better productivity, reduced losses, and improved management lead to higher farm profits.
12. **Supports Marginal and Small Farmers:** Even farmers with low resources get free, high-quality advisory services.
13. **Promotes Sustainable Farming:** KCC helps farmers adopt eco-friendly practices like IPM, INM, water-saving methods, etc.
14. **Builds a Knowledge-Driven Farming Culture:** Continuous information flow modernizes rural agriculture and enhances awareness.

15. **Resolves Queries in Local Languages:** Farmers feel comfortable asking questions in their regional language.

Achievements of Kisan Call Centre (KCC):

1. **National-Level Coverage:** KCC has successfully provided advisory services to farmers across all states and UTs through a single toll-free number.
2. **Millions of Farmer Queries Resolved:** KCC handles lakhs of calls every month and has resolved crores of farmer queries since its launch, showing high trust and usage.
3. **Quick Access to Expert Advice:** Farmers receive real-time solutions from trained agricultural graduates and Subject Matter Specialists.
4. **Strengthened Agricultural Extension System:** KCC bridges the gap between farmers and experts where traditional extension services cannot reach.
5. **Support in Local Languages:** Advisories are delivered in 22+ regional languages, increasing comfort and participation of farmers.
6. **Improved Decision-Making by Farmers:** Accurate, scientific and timely information has improved farmers' ability to take correct decisions regarding inputs, irrigation, disease control, etc.
7. **Reduction in Crop Losses:** Timely pest, disease and weather-based advisories have helped farmers reduce losses effectively.
8. **Integration with KKMS (Kisan Knowledge Management System):** KCC now uses a digital knowledge base that provides consistent, expert-verified answers.
9. **Promotion of Modern Technologies:** KCC has helped farmers adopt improved seeds, machinery, IPM techniques, drip irrigation, and climate-smart practices.
10. **Better Awareness About Government Schemes:** Farmers get accurate information about subsidies, crop insurance, soil health cards, PM-KISAN, etc.
11. **Increase in Farmer Income:** Improved farm management, reduced losses, and adoption of scientific practices have contributed to higher productivity and income.
12. **Efficient Grievance Redressal:** Farmers can raise issues related to schemes, input quality, or field problems — many resolved through follow-up calls.
13. **Support During Disasters:** KCC played a crucial role during drought, floods, cyclones, and locust attacks by issuing emergency advisories.
14. **Inclusion of Small & Marginal Farmers:** Even low-income, remote-area farmers get expert advice free of cost, reducing the rural information gap.
15. **Enhanced Digitization in Agriculture:** KCC's integration with WhatsApp images, mobile alerts, and digital systems has modernized agricultural extension.

Advantages of Kisan Call Centre (KCC):

1. **Easy Access to Expert Advice:** Farmers can get guidance from agriculture experts through a simple toll-free call.
2. **Free-of-Cost Service:** All advisory services are completely free, reducing financial burden on farmers.
3. **Solves Problems Quickly:** Farmers receive instant solutions for pests, diseases, irrigation, livestock, etc.
4. **Available in Local Languages:** Farmers can speak comfortably in their regional language, improving clarity.
5. **Reduces Time and Travel Cost:** No need to visit agriculture offices; problems are solved from home.
6. **Timely and Scientific Recommendations:** Experts provide reliable, research-based advice for crops and livestock.
7. **Helps Improve Crop Productivity:** Better decisions lead to increased yield and quality.
8. **Supports All Agriculture Sectors:** Covers crops, horticulture, livestock, fisheries, soil, weather, machinery etc.
9. **Enhances Farmer Confidence:** Instant expert support boosts confidence in modern farming practices.
10. **Facilitates Government Scheme Awareness:** Farmers get correct information about subsidies, loans, insurance and schemes.
11. **Encourages Modern Technology Use:** KCC promotes tools like soil testing, drip irrigation, improved seeds, IPM, etc.
12. **Useful During Emergency Situations:** Provides quick guidance during floods, droughts, pest outbreaks and storms.
13. **Helps Small & Marginal Farmers:** Even farmers with limited resources receive expert support for free.
14. **Follow-Up Mechanism:** Unresolved problems are escalated to Subject Matter Specialists (SMS) for detailed solutions.
15. **Strengthens Agricultural Extension:** KCC fills the gap where traditional extension services are insufficient.

Disadvantages of Kisan Call Centre (KCC):

1. **Limited Awareness Among Farmers:** Many farmers still do not know about the KCC toll-free number or its benefits.
2. **Network and Connectivity Issues:** Rural areas often face mobile network problems, making it difficult to reach KCC.

3. **Language/Communication Barriers:** Some farmers struggle to clearly explain problems on the phone without showing photos or videos.
4. **No On-Field Diagnosis:** Experts cannot physically inspect the crop, which may reduce accuracy of pest/disease diagnosis.
5. **Overloaded During Peak Seasons:** During sowing or pest outbreaks, call volume increases and farmers may face waiting time.
6. **Limited Use of Technology in Some Regions:** Not all centres support WhatsApp image sharing or digital diagnosis due to infrastructure gaps.
7. **Dependence on Phone-Based Communication:** Farmers who lack mobile phones or charging facilities cannot use the service properly.
8. **Lack of Follow-Up in Some Cases:** Although follow-up exists, it may not always be timely due to high workload.
9. **Variation in Advisory Quality:** Quality of advice may differ depending on the experience and training of call agents.
10. **Farmers Prefer Face-to-Face Advice:** Many farmers still trust physical extension workers more than phone-based suggestions.
11. **Difficulty in Explaining Complex Issues:** Plant nutrient deficiency or soil problems may require lab tests, which cannot be done on call.
12. **Time-Limited Service in Some States:** Not all KCCs operate 24×7; some regions have fixed timings (e.g., 6 AM–10 PM).
13. **Low Adoption of Recommendations:** Some farmers do not follow the advice fully due to cost, beliefs, or lack of resources.
14. **Limited Personalization:** Due to high call volumes, lengthy, personalized discussions are sometimes difficult.
15. **Poor Feedback Mechanisms in Some Areas:** Not all farmers receive feedback calls, reducing improvement opportunities.

Conclusion

The Kisan Call Centre has greatly strengthened the agricultural support system by providing farmers with timely, accurate and scientific advice directly at their doorstep. Its expert-guided and location-specific recommendations have helped farmers make better decisions, reduce crop losses, manage pests and diseases effectively, and adopt modern farming practices. By saving farmers' time, effort and expenses, KCC advisories have improved productivity, enhanced farm income and increased confidence in scientific agriculture. Overall, the KCC has become a vital tool in empowering farmers and bridging the gap between field-level problems and expert solutions.

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REVERSE MORTGAGE LOANS: SHELTER TO SECURITY

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Abstract
India's aging population faces significant challenges in securing financial stability during retirement. Despite widespread home ownership among seniors, the liquidity of these assets remains untapped for most. Reverse Mortgage Loans (RMLs) offer a strategic financial solution that allows senior citizens to monetize the value of their homes while continuing to live in them. This chapter explores the structure, benefits, challenges, and future prospects of reverse mortgage loans in India. It analyzes the current adoption trends, regulatory frameworks, and cultural factors influencing the success of RMLs. Further, it suggests pathways for enhancing awareness, product innovation, and policy support to integrate reverse mortgages into mainstream financial planning for India's elderly population. A strong emphasis is placed on balancing financial pragmatism with emotional and cultural sensitivities surrounding home ownership in India.

Keywords: Reverse Mortgage Loan (RML), Senior Citizens, Home Equity, Retirement Planning.

1. Introduction

India's rapidly aging population presents both economic opportunities and social challenges. According to the Census projections, India's senior citizen population (aged 60 years and above) is expected to rise from 104 million in 2011 to more than 300 million by 2050 (Government of India, 2021). As life expectancy increases, so does the need for sustainable financial solutions that can provide elderly individuals with independence, dignity, and financial security during their retirement years.

However, for many Indian seniors, retirement often brings a reduction or complete cessation of income, with limited access to robust pension systems or social security mechanisms. At the same time, a large proportion of India's elderly own valuable residential property. This property, though valuable, often remains an illiquid asset.

In this context, the Reverse Mortgage Loan (RML) emerges as a powerful financial tool, enabling senior citizens to unlock the monetary value of their homes without selling them or losing occupancy rights. Introduced formally in India in 2007 under the guidance of the National Housing Bank (NHB), the RML product offers a promising solution to retirement income security.

This chapter delves into the concept, mechanics, benefits, challenges, and future potential of reverse mortgage loans in India, underscoring their importance in shaping the financial landscape for senior citizens.

2. Concept and Structure of Reverse Mortgage Loans

A Reverse Mortgage Loan (RML) is a financial instrument designed primarily for senior citizens, allowing them to leverage the value of their residential property to generate a steady stream of income or receive a lump sum amount. In this arrangement, the homeowner pledges their house as collateral to a financial institution, such as a bank or housing finance company, but continues to reside in the property without the obligation to repay the loan during their lifetime (National Housing Bank [NHB], 2013). The loan is typically settled through the sale of the property after the borrower's demise, with any surplus amount returned to the legal heirs.

2.1. Key features of Reverse Mortgage Loans in India

Reverse Mortgage Loans (RMLs) in India are specifically designed to support senior citizens by enabling them to access the equity in their self-owned residential property while continuing to reside in it. As per the guidelines issued by the National Housing Bank (NHB, 2010), the following are the key features of RMLs:

2.1.1. Eligibility Criteria

Individuals aged 60 years or above are eligible to apply. In the case of married couples, at least one of the spouses must meet the age requirement. The applicant must own a self-acquired and self-occupied residential property with a residual life of at least 20 years (NHB, 2010).

2.1.2. Loan Disbursement Options

Borrowers may choose the disbursement mode based on their financial needs and preferences. The loan can be paid out in the form of monthly, quarterly, half-yearly, or annual installments, or as a lump sum.

2.1.3. Repayment Terms

There is no obligation to repay the principal or interest during the lifetime of the borrower. The loan repayment is triggered only upon the death of the borrower, sale of the property, or permanent move-out from the residence.

2.1.4. Ownership and Right of Occupancy

The borrower retains full ownership of the property and has the right to reside in it throughout their lifetime, ensuring residential security and dignity.

2.1.5. Loan Amount Determination

The maximum loan amount is influenced by several factors including the borrower's age, the market value of the property, and prevailing interest rates. Typically, older borrowers (e.g., age 75) qualify for a higher loan-to-value (LTV) ratio compared to younger borrowers (e.g., age 60) (NHB, 2010).

2.1.6. Settlement and Legal Heirs' Rights

After the borrower's demise, if the property is sold and the sale proceeds exceed the outstanding loan amount, the surplus is returned to the borrower's legal heirs, safeguarding family inheritance.

3. Benefits of Reverse Mortgage Loans

Reverse Mortgage Loans (RMLs) offer several advantages to senior citizens seeking financial stability during retirement without selling their home. Key benefits include:

3.1. Supplementary Income

One of the primary benefits of an RML is the provision of a regular income stream. This helps senior citizens cover essential living expenses, medical costs, and discretionary spending, thereby supporting a comfortable and independent lifestyle during retirement (National Housing Bank [NHB], 2010).

3.2. Retention of Ownership and Dignity

Unlike the outright sale of property, an RML allows the senior citizen to retain legal ownership and continue residing in their familiar home environment. This preserves emotional well-being, dignity, and social identity (Mukherjee & Singh, 2018).

3.3. No Immediate Repayment Obligations

RMLs do not require any repayment of principal or interest during the borrower's lifetime. The loan becomes due only upon death, sale of the property, or permanent relocation. This feature significantly reduces financial stress and ensures peace of mind in later years (NHB, 2010).

3.4. Tax Benefits

The amount received through an RML is treated as a loan and not as income. Therefore, it is not taxable under the Indian Income Tax Act, which further enhances its financial attractiveness (Income Tax Department, 2021).

3.5. Flexible Payment Options

RMLs offer flexible disbursement options, such as periodic payouts, a lump sum (within regulatory limits), or a line of credit facility. This customization allows borrowers to tailor the loan structure to their specific financial requirements (NHB, 2010).

4. Challenges in the Adoption of Reverse Mortgage Loans

Despite its many advantages, the penetration of reverse mortgage loans in India remains low. Several challenges hinder widespread adoption:

4.1. Low Awareness Levels

Many senior citizens and even financial advisors are unaware or misinformed about RMLs. Surveys indicate that more than 75% of seniors have not heard of the product (Sharma & Rathi, 2020).

4.2. Emotional and Cultural Barriers

In Indian culture, home ownership is not only a financial investment but also a symbol of family legacy and emotional heritage. Seniors often hesitate to mortgage their homes, fearing stigma or disapproval from heirs.

4.3. Limited Financial Institution Participation

Only a handful of banks and housing finance companies actively promote RMLs. Products often come with low maximum disbursements and strict eligibility criteria, making them less attractive.

4.4. Complexity and Documentation

The process of availing an RML can be paperwork-intensive and complex, requiring property valuation, legal clearances, and understanding complicated terms such as compound interest accrual.

4.5. Concerns of Heirs

Children or legal heirs may view reverse mortgages negatively, fearing loss of ancestral property, leading to familial disputes or emotional dilemmas for the senior borrowers (Chatterjee, 2021).

5. Current Scenario of Reverse Mortgages in India

Since its introduction, reverse mortgages have seen modest uptake. As per the National Housing Bank (2021) report:

The total number of active RML accounts in India remains below 10,000, a tiny fraction compared to the estimated 30 million eligible senior homeowners.

Banks such as State Bank of India, Central Bank of India, and Punjab National Bank offer RML products, often collaborating with insurance companies for annuity-based disbursement models.

The Reverse Mortgage Loan Enabled Annuity (RMLEA) product was launched in collaboration with LIC, providing seniors lifetime income through annuity payouts.

However, urban areas such as Mumbai, Bengaluru, Pune, and Delhi have seen relatively better acceptance due to higher real estate valuations and greater financial literacy.

6. Regulatory Framework and Support

The Indian reverse mortgage landscape is governed primarily by:

- **National Housing Bank (NHB):** Issues operational guidelines and supervises RML offerings by banks and housing finance companies.
- **Reserve Bank of India (RBI):** Ensures that reverse mortgage loans are treated prudently by banks, with norms for loan-to-value ratios and property revaluation every five years (RBI, 2019).
- **Income Tax Department:** Clarifies the tax-exempt status of reverse mortgage disbursements.

- **Real Estate (Regulation and Development) Act (RERA) 2016:** Improves transparency in property transactions, enhancing confidence in property valuations and facilitating smoother RML disbursements.

The regulatory ecosystem encourages transparent practices, protecting the interests of senior citizens while promoting the safe growth of the reverse mortgage sector.

7. Future Prospects: Unlocking the Potential

The future of reverse mortgage loans in India holds considerable promise, contingent on addressing the present barriers:

7.1. Awareness and Education

Banks, insurance companies, and the government must initiate targeted awareness campaigns, highlighting the advantages of RMLs for senior citizens through television, social media, and community programs.

7.2. Product Innovation

New models, such as partial home leasing, shared home equity products, or multi-generational reverse mortgages, could enhance product attractiveness.

7.3. Digital Facilitation

With the rise of digital banking and fintech platforms, offering simple online applications, virtual property valuations, and AI-based loan calculators can make reverse mortgages more accessible.

7.4. Collaboration with Insurance Companies

Linking RML payouts with lifetime annuities ensures seniors are protected from longevity risks, aligning better with post-retirement financial planning.

7.5. Policy Support

Further incentives, such as lower interest rates, government guarantees, or subsidized insurance premiums, could enhance borrower confidence and increase adoption.

Conclusion

Reverse Mortgage Loans represent a critical tool for ensuring financial autonomy for India's growing elderly population. By converting the emotional and financial capital locked in their homes into a source of steady, tax-free income, seniors can age with dignity and confidence.

Nevertheless, widespread acceptance requires a concerted effort from financial institutions, policymakers, and society to dispel misconceptions, simplify access, and respect the emotional bonds seniors have with their homes. In a country where familial values are intertwined with property ownership, the future of reverse mortgages will depend as much on cultural sensitivity as on financial innovation.

As India moves toward a mature retirement economy, reverse mortgages can and must become a mainstream financial instrument for empowering its senior citizens.

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