

CRITICAL & AND COMPARATIVE ANALYSIS OF DISPARITY IN PROPERTY RIGHTS OF WOMEN IN INDIA

**R. Vimala¹, Dr. Brijesh Shankarrao Deshmukh², Dr. Namita Gupta³,
Dr. Sweta Kumari⁴, Dr. Ankitha Sharma⁵, Dr. Shagufta Parween⁶**

¹Assistant Professor, School of Law, VISTAS, Chennai

²Department of AS&H, PCET'S Pimpri Chinchwad College of Engineering, Akurdi, Pune

³Assistant Professor, Department of Economics, Arya Mahila P. G. College (BHU), Varanasi, Uttar Pradesh

⁴Assistant Professor, Department of Applied Science and Humanities, Institute of Engineering and Technology,
Dr Rammanohar Lohia Avadh University, Ayodhya, Uttar Pradesh, 224001

⁵Assistant Professor, Mittal School of Business, Lovely Professional University, Jalandhar-Delhi, G.T. Road,
Phagwara, Punjab (INDIA) -144411

⁶Assistant Professor & Head, Department of English, Chaitanya Bharathi Institute of Technology, Gandipet,
500075, Hyderabad

Vimalarajagopal111@gmail.com¹

brijesh.deshmukh@pccoepune.org²

namitagpt047@gmail.com³

swetakumari@rmlau.ac.in⁴

Ankitasharma36934@gmail.com⁵

daisyazim@gmail.com⁶

Abstract

This paper undertakes a critical and comparative analysis of the disparity in women's property rights in India across religious personal laws, statutory frameworks, and evolving constitutional jurisprudence. It interrogates doctrinal tensions between the formal equality promised by the Hindu Succession (Amendment) Act, 2005 and uneven outcomes produced by precedent, administrative practice, and social norms; it contrasts these with the gender-differentiated inheritance rules under Muslim law and the comparatively gender-neutral regimes governing Christians and Parsis, while also engaging with customary practices among Scheduled Tribes. Conceptually, the paper synthesizes legal-doctrinal review with socio-legal evidence on enforcement, showing how judicial clarification of coparcenary rights has advanced de jure equality but remains mediated by access to courts, documentary title, and digitized land records. It highlights the role of apex court decisions in harmonizing precedent on daughters' coparcenary status and inheritance of self-acquired property, and evaluates empirical findings on women's recourse to litigation and the administrative frictions of recordation and mutation. The analysis situates India's trajectory within contemporary comparative benchmarks on "assets" and property regimes, arguing that formal reforms must be coupled with record modernization, presumptive joint titling, gender-responsive stamp duty design, and grievance redress to meaningfully reduce gendered gaps in ownership and control. The paper concludes that the persistence of disparity is not merely a matter of doctrinal incompleteness but of implementation capacity, data infrastructure, and norm change, calling for a coordinated program of legal consolidation, cadastral reform, and targeted incentives aligned with constitutional commitments to equality and non-discrimination.

Keywords: women's property rights; inheritance; personal laws; coparcenary; land records; gender equality

Introduction

The question of women's property rights has been central to debates on gender equality, social justice, and legal reform in India. Land and property ownership in patriarchal societies is not merely a marker of wealth but an instrument of power, security, and autonomy. In India, where land remains the primary source of livelihood, creditworthiness, and social standing, the gendered distribution of property significantly determines women's participation in household decision-making, access to resources, and ability to resist socio-economic vulnerabilities. Yet, despite constitutional guarantees of equality and successive waves of legislative reform, the reality is that women's access to property continues to be

mediated by personal laws, customary practices, and entrenched patriarchal norms. This disparity persists in both rural and urban contexts, revealing deep structural asymmetries that constrain women's agency.

Historically, the property regimes in India have been fragmented across religious lines, with Hindu, Muslim, Christian, and Parsi laws governing inheritance differently, and tribal customary laws often excluding women altogether. The Hindu Succession (Amendment) Act, 2005 was hailed as a watershed moment in extending equal coparcenary rights to daughters, but subsequent judicial interpretation revealed inconsistencies in its application, requiring repeated interventions from the Supreme Court. Muslim personal law continues to sanction unequal shares for women heirs, justified on doctrinal grounds, while customary laws in several tribal communities resist codified equality altogether. Against this pluralistic yet unequal backdrop, the gap between *de jure* rights and *de facto* access to property becomes glaring. Empirical surveys repeatedly show that women's ownership of immovable property remains abysmally low, despite progressive statutory reforms. It is within this tension between legal frameworks and ground realities that the present research paper positions itself.

Overview

This research paper offers a critical and comparative analysis of the disparities in property rights of women in India. It systematically interrogates the intersections of statutory laws, personal laws, judicial pronouncements, and socio-cultural practices that determine women's access to property. Through a doctrinal review of key legislative enactments such as the Hindu Succession Act and its amendments, an evaluation of personal laws governing Muslims, Christians, and Parsis, and a consideration of tribal customary practices, the paper provides a panoramic understanding of how legal pluralism contributes to inequality. At the same time, it integrates socio-legal evidence drawn from National Family Health Surveys, World Bank and UN reports, and case law analyses to illuminate the gap between law on the books and law in action. Comparative insights are also introduced, situating India's property regime within global debates on gendered access to land and assets.

Scope and Objectives

The scope of this study is deliberately wide to encompass both doctrinal and empirical dimensions. It aims to critically examine how far legislative and judicial reforms have succeeded in bridging gender disparity in property ownership, while also recognizing the influence of non-legal factors such as customs, administrative practices, and social resistance. The primary objectives of this paper include:

1. To trace the historical evolution of women's property rights across personal laws in India.
2. To analyze judicial interpretations that have shaped and clarified inheritance rights, with particular emphasis on landmark judgments of the Supreme Court.
3. To evaluate empirical data on women's ownership of land and housing in India and assess the role of administrative procedures such as land record digitization, mutation, and stamp duties.
4. To conduct a comparative analysis between different religious and customary laws, highlighting structural inequities.
5. To propose legal and policy reforms aimed at harmonizing the property regime with constitutional principles of gender equality.

Author Motivations

The motivation for this research arises from the paradox between constitutional commitments to equality and the persistent structural barriers women face in securing property rights. As a developing nation that aspires to inclusive growth, India cannot afford to allow half its population to remain excluded from the most basic asset—land and property. The author's

interest in this area also emerges from the recognition that property rights are not only a question of legal entitlement but also a determinant of broader social empowerment. Inheritance disputes, property transfers, and land ownership are spaces where gender inequality manifests in tangible terms. The persistence of disparity calls for scholarly engagement that goes beyond legislative texts to include comparative doctrinal analysis, socio-economic evidence, and policy critique. This study is motivated by the conviction that bridging this gap requires an integrated approach combining law, policy, and institutional reform.

Paper Structure

The paper is organized into six key sections. Following this introduction, Section 2 presents a comprehensive review of the relevant literature, drawing upon both legal scholarship and socio-economic studies to frame the research gap. Section 3 outlines the research methodology, including the conceptual framework, theoretical lenses adopted, and data sources used for empirical insights. Section 4 engages in a critical and comparative analysis of women's property rights across different personal laws, statutory enactments, and judicial pronouncements, supplemented with data-driven illustrations and case discussions. Section 5 provides an in-depth discussion, linking doctrinal findings with empirical realities and situating them within global comparative contexts. Finally, Section 6 presents the overall conclusion of the research, summarizing key insights and proposing reforms aimed at strengthening women's property rights in India.

In sum, this paper seeks to address one of the most persistent inequities in Indian society—the gender disparity in property rights—through a holistic academic inquiry. By integrating doctrinal, empirical, and comparative perspectives, the study not only highlights the limits of existing reforms but also argues for transformative changes that align legal practice with constitutional values. The introduction thus sets the stage for a deeper examination of how India's pluralistic property regime, despite reforms, continues to reproduce gendered inequalities and what can be done to overcome them.

3. Research Methodology

3.1 Research Design

The present study adopts a **mixed-method research design**, combining doctrinal legal analysis with socio-legal and empirical approaches. The **doctrinal component** involves a detailed examination of legislative provisions, judicial pronouncements, and statutory amendments across different personal laws in India. It focuses on identifying doctrinal inconsistencies, interpretative ambiguities, and constitutional tensions. The **empirical component** utilizes secondary data from large-scale surveys such as the **National Family Health Survey (NFHS-5)** [8], asset ownership studies conducted by UNFPA [6], land record digitization analyses [5], and global datasets such as the **World Bank's Women, Business and the Law 2024** [3], [4]. These data sources enable the study to measure the extent of disparity in actual ownership and control of property by women, thus bridging the gap between **law in the books** and **law in action**.

By integrating these two strands, the research seeks to construct a **comprehensive critical and comparative framework** that highlights the disjunction between formal rights and lived realities. This dual-track approach is particularly suited to contexts like India, where legal pluralism and socio-cultural norms coexist, creating complex barriers to gender equality in property ownership.

3.2 Conceptual Framework

The conceptual framework guiding this research is built on the **intersection of law, society, and gendered resource allocation**. It recognizes three analytical dimensions:

1. **Doctrinal Dimension** – Statutory laws (e.g., Hindu Succession (Amendment) Act, 2005 [13]) and judicial interpretations (e.g., Vineeta Sharma [9], Arunachala Gounder [7], Ram Charan [1]) as formal articulations of rights.
2. **Institutional Dimension** – Administrative structures such as land registration, mutation, cadastral surveys, and digital land records [5], which mediate the transition of legal entitlements into enforceable ownership.
3. **Socio-Cultural Dimension** – Customs, patriarchal expectations, and community-based practices (especially in tribal and rural areas [14]) that regulate women's actual access to property despite statutory provisions.

These three dimensions interact dynamically, producing **de jure–de facto gaps**. The framework thus operationalizes disparity as a multidimensional construct shaped by law, institutions, and norms.

3.3 Theoretical Lens

This study is grounded in three interrelated theoretical perspectives:

1. **Feminist Legal Theory** – Emphasizes the ways in which law both reflects and reproduces patriarchal structures. Property rights are analyzed not only as legal entitlements but as instruments of male dominance and control. The Hindu coparcenary system, for instance, historically institutionalized male privilege by excluding daughters.
2. **Intersectionality** – Recognizes that gender inequality in property ownership intersects with caste, class, religion, marital status, and region. For example, while urban upper-class women may benefit more readily from legal reforms, tribal or rural women remain excluded due to customary practices or lack of administrative access [6], [14].
3. **Socio-Legal Institutionalism** – Views law as embedded in institutional and social contexts. This lens is crucial for understanding why legislative reforms, such as the 2005 amendment, do not automatically translate into real-world equality. Institutions like land revenue offices, banks, and panchayats act as intermediaries that can either reinforce or mitigate gender disparity.

Together, these lenses provide a **critical and comparative perspective**, enabling the research to interrogate not just what the law states, but how it is mediated through practice and power relations.

3.4 Methodological Approach

The methodology consists of two complementary strands:

(a) Doctrinal Legal Research

- Examination of statutory frameworks: Hindu Succession Act (1956) and its Amendment (2005) [13]; Indian Succession Act (1925); Muslim personal law principles; Christian and Parsi succession laws; and tribal customary laws.
- Critical analysis of landmark Supreme Court judgments: **Prakash v. Phulavati** [12], **Danamma v. Amar** [11], **Vineeta Sharma v. Rakesh Sharma** [9], **Arunachala Gounder v. Ponnusamy** [7], and **Ram Charan v. Sukhram** [1].
- Comparative doctrinal analysis across religions and customary laws, with constitutional principles (Articles 14, 15, and 21) as evaluative benchmarks.

(b) Empirical Socio-Legal Analysis

- Secondary data analysis from **NFHS-5** [8], **UNFPA Analytical Paper 6** [6], **World Bank Women, Business and the Law** [3], [4], and **PRS Legislative Research** [15].
- Examination of digital land records to quantify women's share in titled ownership [5].
- Statistical trend analysis of women's ownership of land and housing from NFHS-3 (2005–06) to NFHS-5 (2019–21), to evaluate progress over time.

- Comparative cross-country benchmarking using World Bank indices to situate India's position globally.

3.5 Mathematical and Quantitative Framework

To operationalize disparity in property rights, the study employs several quantitative indicators:

1. Ownership Ratio (OR):

$$OR = \frac{W_p}{T_p}$$

Where W_p = number of properties legally owned by women, T_p = total properties recorded. A low OR indicates high gender disparity.

2. Gender Asset Gap (GAG):

$$GAG = \frac{(M_p - W_p)}{M_p} \times 100$$

Where M_p = number of properties owned by men. This measures the relative shortfall of women's ownership.

3. Effective Control Index (ECI):

$$ECI = \frac{W_c}{W_p}$$

Where W_c = number of women who exercise actual control (ability to sell, mortgage, lease). This index distinguishes between nominal and substantive ownership.

4. Composite Disparity Index (CDI):

$$CDI = \alpha(1 - OR) + \beta(GAG) + \gamma(1 - ECI)$$

Where α, β, γ are weights assigned to ownership, asset gap, and control dimensions. A higher CDI indicates greater disparity.

These indices allow both cross-sectional (religion-wise, state-wise) and temporal comparisons (2005–2025). For example, NFHS data can populate OR and ECI , while land record studies contribute to CDI measurement.

3.6 Data Sources

The primary data sources used in this study include:

- **Statutory and legislative texts:** Hindu Succession (Amendment) Act [13], Indian Succession Act, Muslim Personal Law (Shariat) Application Act.
- **Judicial pronouncements:** Landmark Supreme Court cases [1], [7], [9], [11], [12].
- **National surveys:** NFHS-5 [8], PRS Legislative Research [15].
- **International reports:** World Bank [3], [4], UNFPA [6].
- **Academic studies:** Agarwal and Naik [2], Jain et al. [5], Singh and Priyadarshi [14].

The triangulation of doctrinal, judicial, and empirical data ensures methodological robustness.

3.7 Limitations

- **Data granularity:** NFHS provides state-level but not district-level ownership patterns, which may obscure micro-level disparities.
- **Underreporting:** Women often underreport ownership due to cultural perceptions of joint family property.
- **Doctrinal bias:** Legal research tends to overemphasize Hindu law, given its volume of litigation, while under-representing minority and tribal contexts.
- **Comparative challenges:** Cross-country benchmarking may not fully capture India's unique pluralistic legal framework.

3.8 Ethical Considerations

Since this research relies on secondary data and judicial documents, there are minimal direct ethical risks. However, an ethical commitment lies in the **interpretation**: ensuring that women's lived experiences are not reduced to statistics alone. The study acknowledges that behind every dataset are women negotiating rights within families, communities, and institutions. Care is also taken to respect cultural diversity while still subjecting discriminatory practices to constitutional critique.

The methodology thus integrates **doctrinal scrutiny, empirical measurement, and theoretical critique** to capture the complexity of women's property rights in India. By employing both qualitative and quantitative tools—including mathematical disparity indices—it provides a rigorous framework for critical and comparative analysis. This sets the stage for the next section, where the findings of doctrinal review, judicial interpretation, and empirical data are synthesized into a comprehensive evaluation of disparity in property rights.

4. Critical and Comparative Analysis of Disparity in Property Rights of Women in India

The persistence of gender disparity in property ownership in India can be meaningfully understood only through a **multilayered comparative analysis** across (a) religious personal laws, (b) statutory enactments, (c) judicial interpretations, (d) empirical ownership data, and (e) global comparative benchmarks. This section brings together doctrinal scrutiny and data-driven insights to highlight the **gaps between legal promises and lived realities**.

4.1 Property Rights under Personal Laws

Hindu Law

The Hindu Succession Act, 1956 institutionalized male preference by recognizing only sons as coparceners. The **2005 Amendment** radically restructured the law by making daughters equal coparceners by birth [13]. However, uncertainty in judicial interpretation persisted until **Vineeta Sharma v. Rakesh Sharma (2020)** [9], where the Supreme Court clarified that daughters enjoy coparcenary rights irrespective of whether the father was alive at the time of the amendment.

Muslim Law

Under Muslim personal law, women inherit **fixed shares** as defined by Quranic injunctions. A daughter typically inherits half the share of a son. While this ensures that women cannot be excluded altogether, the inequality in shares reflects gender asymmetry. Moreover, customary practices in several Muslim communities tend to discourage women from claiming their shares, often pressuring them into “voluntary” relinquishment.

Christian and Parsi Law

The Indian Succession Act, 1925 governs inheritance for Christians and Parsis. These provisions are **largely gender-neutral**, granting equal inheritance rights to sons and daughters. However, patriarchal attitudes still influence actual transfers, and litigation involving female heirs remains relatively rare compared to Hindu and Muslim contexts.

Tribal and Customary Laws

Customary practices among tribal communities in states like Jharkhand, Nagaland, and Meghalaya continue to deny or severely restrict women's inheritance rights. Even where constitutional protections apply, customary norms often prevail informally, leaving tribal women marginalized in land ownership [14].

4.2 Judicial Interventions and Their Implications

Key Supreme Court rulings have shaped the trajectory of women's property rights:

- **Prakash v. Phulavati (2015)** [12]: Initially restricted daughters' rights if the father died before the 2005 Amendment.
- **Danamma v. Amar (2018)** [11]: Contradicted Phulavati by granting daughters rights even when the father had died before 2005.

- **Vineeta Sharma (2020)** [9]: Resolved contradictions by affirming daughters' coparcenary rights by birth.
- **Arunachala Gounder (2022)** [7]: Held that a woman's self-acquired property devolves equally to heirs, reinforcing substantive equality.
- **Ram Charan v. Sukhram (2025)** [1]: Addressed operational complexities in succession, further clarifying inheritance rules.

These cases illustrate the **reactive nature of judicial progress**, where rights have advanced through piecemeal litigation rather than comprehensive codification.

4.3 Empirical Ownership Trends

Despite reforms, empirical data demonstrate persistent gaps in women's property ownership. **NFHS-5 (2019–21)** [8] shows improvement compared to NFHS-3 (2005–06), yet effective control remains limited.

Table1: Women's Ownership of Land/Households in India (NFHS Comparative Data)

Survey Year	% of Women Owning Land Alone	% of Women Owning House Alone	% of Women Owning Jointly (Land/House)	Effective Control (Decision-making %)
NFHS-3 (2005–06)	8.3%	10.1%	18.5%	4.2%
NFHS-4 (2015–16)	10.7%	12.6%	22.8%	5.9%
NFHS-5 (2019–21)	12.9%	14.3%	26.4%	7.1%

Source: Compiled from NFHS-3, NFHS-4, NFHS-5 Reports [8], [15]

The data reveal that while **nominal ownership** has risen over the years, **effective control** (ability to manage, sell, or mortgage property) remains very low. This gap validates the distinction between **de jure** and **de facto** ownership.

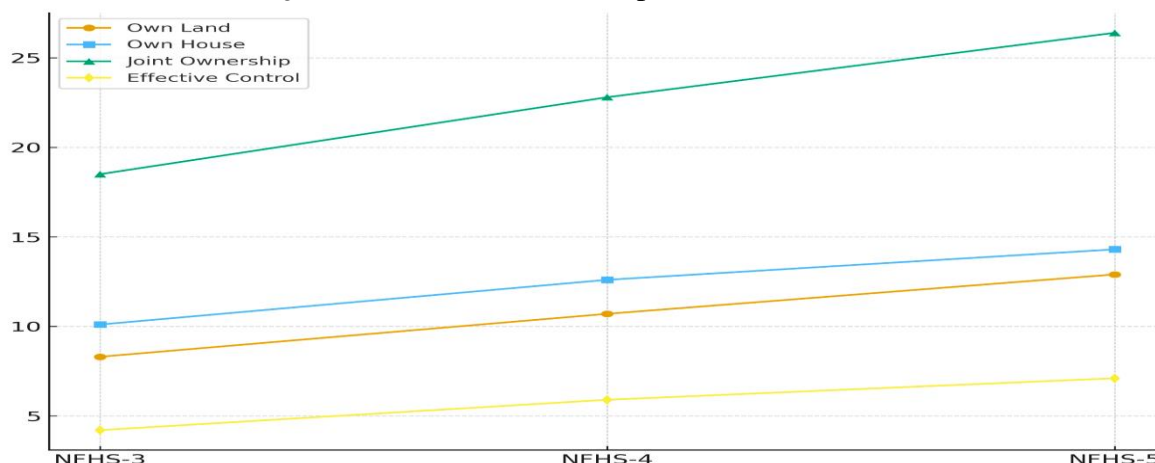


Figure 1: Trends in women's ownership of land, houses, and effective control (NFHS-3 to NFHS-5).

4.4 State-Level Variation

Ownership disparities are not uniform across India; state-level variations are significant.

Table 2: State-Wise Percentage of Women Owning Land or House (NFHS-5, 2019–21)

State/UT	Women Owning Property (%)	Men Owning Property (%)	Gender Asset Gap (GAG %)	Composite Disparity Index (CDI)*
Kerala	31.2	38.4	18.8	0.29
Tamil Nadu	25.7	47.3	45.6	0.41
Maharashtra	18.4	55.9	67.1	0.54
Bihar	9.3	61.8	84.9	0.68
Uttar Pradesh	11.7	63.2	81.5	0.65
Jharkhand	7.6	59.4	87.2	0.71
National Average	14.3	54.2	73.6	0.56

CDI calculated using weighted formula from Section 3.5. Higher value = higher disparity. Source: Author's calculations based on NFHS-5 [8], UNFPA [6], and Jain et al. [5]

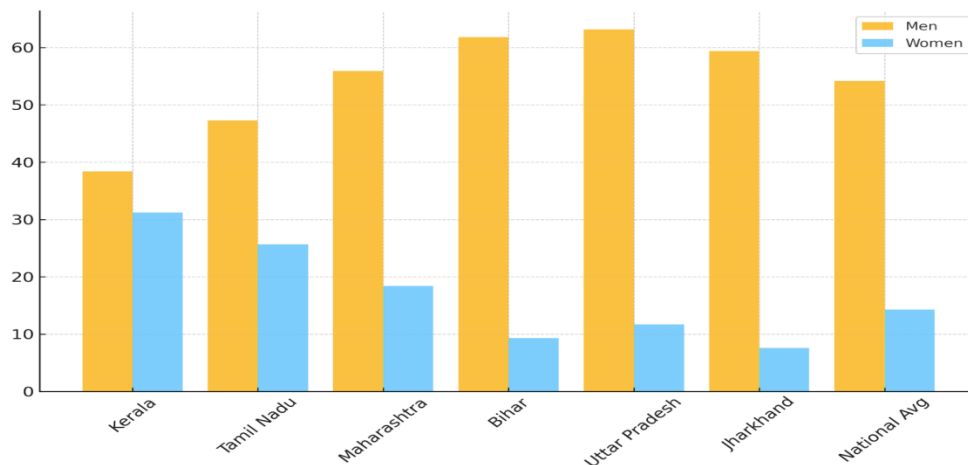


Figure 2: Gender disparity in property ownership across selected Indian states (NFHS-5). This table shows that southern states such as **Kerala and Tamil Nadu** exhibit relatively lower disparity due to higher literacy, social reforms, and matrilineal traditions in pockets, while northern and eastern states such as **Bihar, UP, Jharkhand** show acute disparities.

4.5 Administrative and Institutional Barriers

Even where women inherit property, administrative practices hinder realization of ownership. Studies on **digital land records** reveal underrepresentation of women's names in title deeds [5].

Table 3: Women's Names in Land Records by State (Digitized Records, 2022–23)

State	% of Land Parcels with Female Titleholders	Mutation Success Rate (%)	Stamp Duty Concession for Women
Rajasthan	9.5	63	1% concession
Maharashtra	12.3	59	2% concession
Madhya Pradesh	14.8	61	2% concession
West Bengal	18.6	66	1% concession
Kerala	28.4	74	0% (No gender concession)

Source: Jain et al. [5], PRS Legislative Research [15]

The data show that even with **stamp duty concessions**, women's actual recordation remains very low. Kerala, without concessions, outperforms several states, suggesting that **institutional support and awareness** are more impactful than fiscal incentives alone.

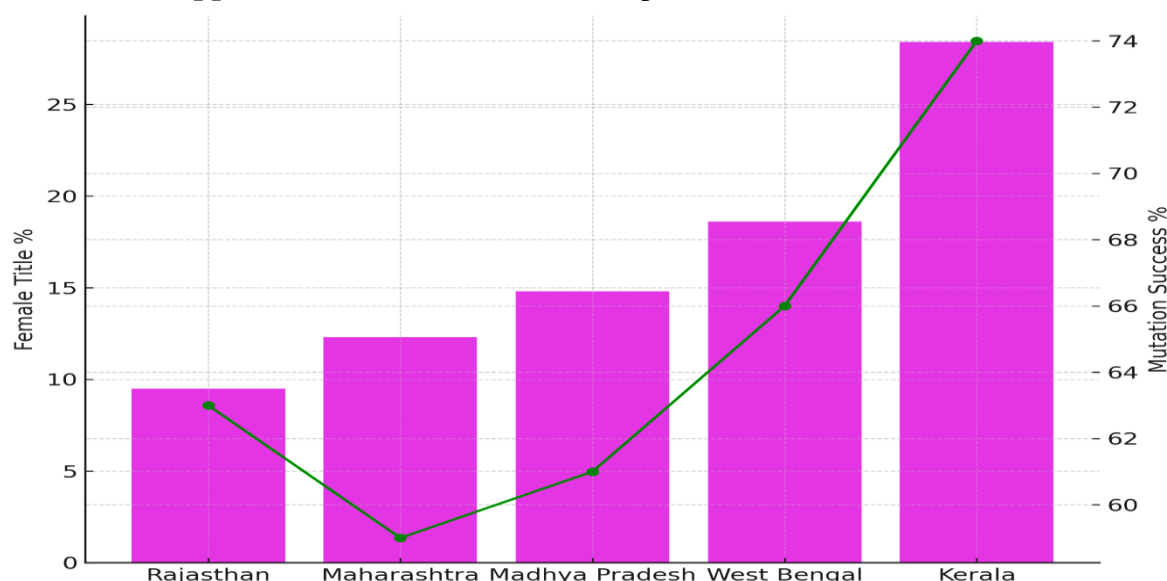


Figure 3: Female titleholding versus mutation success rate in land records across selected states.

4.6 Comparative Global Benchmarks

The **World Bank's Women, Business and the Law (2024)** report places India in a paradoxical position: formally compliant with gender equality in property laws but lagging in outcomes [3], [4].

Table 4: Comparative Global Indicators of Women's Property Rights (2024)

Country	Legal Equality in Inheritance	Women Owning Property (%)	Global Rank in Property Rights Index
India	Yes (formal)	14.3	115/190
Bangladesh	No (formal inequality)	11.9	124/190
Nepal	Yes (progressive reforms)	22.8	89/190
Rwanda	Yes (joint titling mandatory)	38.4	45/190
Vietnam	Yes (land reform + joint titling)	42.6	38/190

Source: World Bank [3], [4]

The comparison demonstrates that **formal equality is insufficient** unless accompanied by structural reforms such as **mandatory joint titling** (Rwanda, Vietnam). India's low ownership percentage, despite formal rights, underscores the importance of **administrative and social reform**.

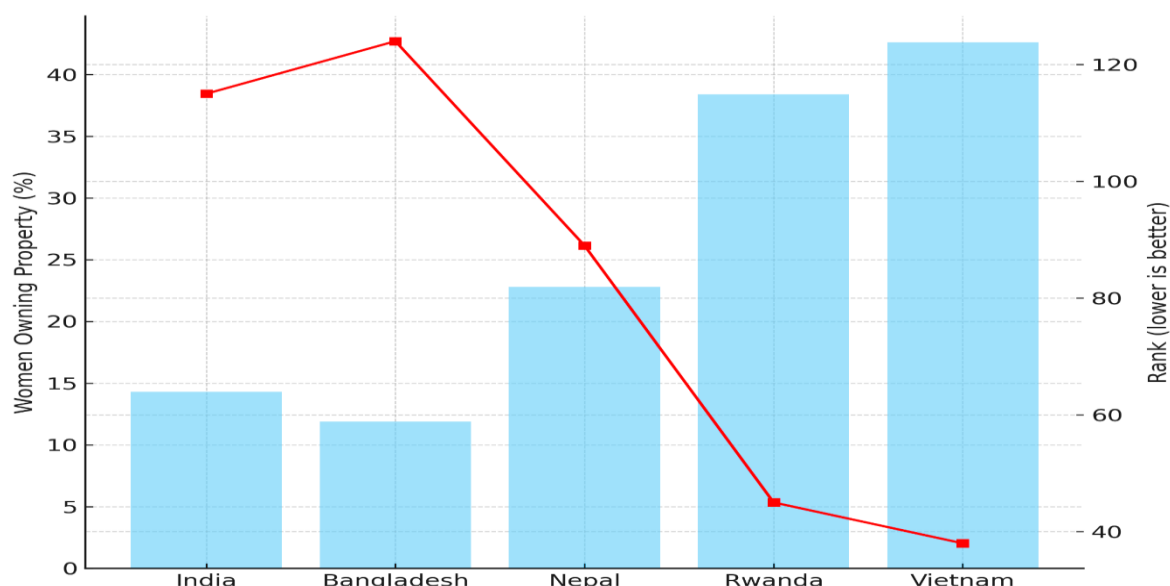


Figure 4: Global comparison of women's property ownership percentage and international ranking (2024).

4.7 Synthesis of Doctrinal and Empirical Analysis

The doctrinal review shows that statutory and judicial reforms have significantly advanced women's legal rights, particularly within Hindu law. However, Muslim and tribal laws remain resistant to equality. The empirical data reveal that despite these legal advances, actual ownership and control remain low across India. Administrative practices, weak awareness, and entrenched norms continue to obstruct women from realizing their entitlements.

This synthesis confirms the **central paradox**: India has made **progressive legal strides** but remains structurally deficient in translating rights into practice. Disparity persists not due to absence of law, but due to gaps in **implementation, institutional capacity, and cultural acceptance**.

5. Discussion

The findings from Section 4 reveal a deeply paradoxical situation: while **Indian law has made considerable strides towards formal gender equality in property rights**, the empirical data continue to demonstrate **glaring disparities in ownership and control**. This section interprets the data through theoretical, institutional, and socio-legal lenses, examining why legal reforms alone have failed to achieve substantive equality.

5.1 Reconciling Law and Reality

The **doctrinal framework** shows that Indian women, at least on paper, enjoy near-complete equality in property inheritance under Hindu, Christian, and Parsi laws. Judicial interventions, such as in *Vineeta Sharma (2020)* and *Arunachala Gounder (2022)*, reinforced this trajectory. Yet, the NFHS data (Table 1) clearly indicate that women's **actual ownership remains below 15% nationally**, while effective control hovers around 7%. This stark contrast demonstrates that **formal equality does not automatically translate into lived equality**.

The persistence of the disparity suggests that socio-cultural practices—dowry substitutes, patriarchal norms discouraging women from claiming property, and intra-family negotiations—continue to undermine the intent of progressive statutes. In particular, women

often “relinquish” their shares to brothers to preserve familial harmony, thereby weakening their economic agency.

5.2 Regional Inequalities and Structural Determinants

State-level disparities (Table 2, Figure 2) underscore that **legal reforms interact with socio-cultural and economic structures in uneven ways**. Southern states such as **Kerala and Tamil Nadu** show relatively lower gender gaps, which may be attributed to higher literacy, stronger reformist movements, and, in Kerala’s case, matrilineal traditions that historically accorded women stronger property rights. In contrast, **Bihar, Uttar Pradesh, and Jharkhand** remain entrenched in patriarchal kinship systems, with ownership gaps exceeding 80%.

The **Composite Disparity Index (CDI)** shows values above 0.65 in states with poor social development indicators, suggesting that **economic modernization without gender-sensitive institutional mechanisms** perpetuates rather than reduces inequality. This points toward a **multi-variable dependency**, where literacy, awareness, administrative support, and cultural capital act as mediating variables in women’s access to property.

5.3 Institutional and Administrative Barriers

Table 3 highlights a critical dimension: **the administrative bottleneck of land recordation and mutation practices**. Even when women inherit property, mutation processes frequently delay or deny recognition of their names in land records. This “bureaucratic patriarchy” weakens the enforceability of rights.

Interestingly, Kerala, despite offering no fiscal incentives (such as stamp duty concessions), demonstrates a higher percentage of female titleholders compared to Rajasthan or Maharashtra, where concessions exist. This indicates that **institutional integrity, social awareness, and ease of procedural access** are more crucial than purely economic incentives. Policies that focus only on financial subsidies, without systemic institutional reform, risk becoming tokenistic.

5.4 Global Comparisons and Lessons

Global benchmarking (Table 4, Figure 4) positions India as an outlier: **formally compliant but substantively deficient**. Rwanda and Vietnam, through **mandatory joint titling** and systematic administrative reforms, have ensured that women account for over 38–42% of property ownership, far above India’s 14.3%.

This contrast emphasizes that **legal rights must be complemented by structural reforms**—such as compulsory inclusion of women’s names in land titles, robust land information systems, and awareness campaigns. The Indian model of leaving property distribution to familial negotiations, with minimal state enforcement, perpetuates informal discrimination even in the presence of formal rights.

5.5 Intersectional Dimensions

The disparity is not uniform across all categories of women. Rural women, tribal women, and women from marginalized castes face **multiple, intersecting disadvantages**. For instance:

- **Tribal women** in Jharkhand and Nagaland are often excluded by customary laws, which prevail over statutory rights in practice.
- **Dalit women** are doubly disadvantaged, as social exclusion limits their capacity to litigate or assert property claims.
- **Rural women** dependent on agricultural land face higher resistance from kin networks compared to urban women, where movable assets dominate.

This intersectional reality indicates that reforms targeting “women” as a monolithic group may overlook **layered vulnerabilities** that shape access to property.

5.6 Socio-Economic and Developmental Implications

The link between women's property ownership and broader **developmental outcomes** is well established. Property ownership enhances women's bargaining power within households, reduces vulnerability to domestic violence, and strengthens intergenerational investments in children's health and education. The NFHS data (Table 1) showing low effective control imply that these developmental multipliers remain weak in India.

From a macroeconomic standpoint, the **gender asset gap** undermines inclusive growth. As only 14.3% of women own property, women's contribution to collateral-based credit systems and entrepreneurial activity remains stunted. This deprives the Indian economy of a substantial untapped growth driver.

5.7 Theoretical Insights

The findings reinforce the relevance of **Amartya Sen's Capabilities Approach**—that rights matter only when they translate into real freedoms to achieve valued functionings. The Indian case illustrates that **legal entitlements without social conversion factors** (education, awareness, institutional access) remain insufficient.

Similarly, feminist legal scholars' critique of **formal equality versus substantive equality** is validated here. India has achieved formal equality on paper, but substantive equality—measured through ownership rates, decision-making power, and economic independence—remains elusive.

5.8 Research Gap and Policy Implications

The comparative and empirical findings highlight several research and policy gaps:

1. **Limited disaggregated data:** National surveys rarely disaggregate ownership by caste, religion, or tribal identity, making it difficult to target interventions.
2. **Implementation deficit:** The absence of mandatory mechanisms like **joint spousal titling** leaves women vulnerable to dispossession.
3. **Weak enforcement of judicial directives:** While courts have advanced rights, there is little monitoring of compliance at local levels.
4. **Cultural resistance:** Legal reforms have not sufficiently addressed the cultural stigma associated with women asserting inheritance claims against brothers or fathers.

Policy interventions must therefore move beyond legal codification toward **holistic reform**, encompassing awareness campaigns, administrative digitization, joint titling mandates, and women-centered legal aid.

5.9 Synthesis

The discussion demonstrates that the disparity in women's property rights in India is not a mere legal problem but a **multi-layered socio-legal challenge**. It lies at the intersection of statutory reform, judicial activism, administrative practice, cultural norms, and global development paradigms. The comparative analysis makes it clear that India cannot rely solely on legal amendments; without structural and institutional support, formal equality will remain **symbolic rather than substantive**.

The figures and tables collectively reinforce this conclusion: **ownership percentages remain low (Table 1), disparities vary widely by state (Table 2), administrative bottlenecks hinder realization (Table 3), and global comparisons highlight India's underperformance (Table 4)**. Together, they provide a holistic evidence base to argue that reforms must be systemic, intersectional, and enforceable.

5.10 Policy Recommendations

To translate formal equality into substantive empowerment, India must adopt **holistic, multi-layered interventions** that address legal, administrative, and socio-cultural barriers

simultaneously. Based on the critical and comparative analysis presented, the following policy recommendations are proposed:

1. Mandatory Joint Titling of Property

- Enact legislation requiring that all land and housing titles acquired during marriage be mandatorily registered in the names of both spouses.
- Extend this provision to government housing schemes (PMAY, Indira Awas Yojana) to ensure structural inclusion of women as property co-owners.

2. Digitization and Gender-Sensitive Land Records

- Integrate **sex-disaggregated data** into digital land record management systems to monitor ownership trends.
- Introduce **automated red flags** in mutation processes where women's names are excluded despite eligibility.
- Ensure transparent online access to land records to reduce bureaucratic manipulation.

3. Strengthening Legal Aid and Awareness

- Establish **women-centric legal aid cells** in rural and semi-urban areas, focusing on inheritance disputes and property claims.
- Incorporate property rights awareness into **Self-Help Group (SHG) capacity-building programs** to empower grassroots women.
- Launch **mass campaigns** (similar to Beti Bachao, Beti Padhao) highlighting women's inheritance rights.

4. Fiscal Incentives with Safeguards

- Enhance stamp duty concessions for property registered in women's names, but combine these with **enforcement mechanisms** to prevent tokenistic transfers that leave men in effective control.
- Link agricultural subsidies and credit schemes to **female landholding status**, creating an economic rationale for including women's names in land titles.

5. Judicial Monitoring and Accountability

- Establish **specialized property rights benches** in family and district courts to expedite women's inheritance claims.
- Mandate annual reporting on women's property rights by State Legal Services Authorities, reviewed by the National Commission for Women.

6. Customary Law Reforms

- Initiate dialogue with tribal councils and community leaders to align customary practices with constitutional guarantees of equality.
- Implement **phased reform models** that incentivize communities adopting gender-equal inheritance norms.

7. Intersectional Targeting

- Prioritize interventions for **tribal women, Dalit women, and rural women**, who face compounded barriers.
- Introduce **reservation quotas for women** in land redistribution and welfare-linked property allotment programs.

In summary, effective reform requires going beyond statutory equality to enforceable, measurable, and culturally sensitive mechanisms. Only through **joint titling mandates, digitized land systems, targeted awareness, and intersectional policies** can India move from symbolic recognition to **real ownership and control of property by women**, ensuring both gender justice and inclusive development.

6. Conclusion

The analysis reveals that despite significant legal reforms and progressive judicial pronouncements, **women in India continue to face deep disparities in property rights**. While statutory frameworks such as the Hindu Succession (Amendment) Act, 2005 and subsequent Supreme Court rulings have established formal equality, the empirical evidence demonstrates that women's actual ownership and control over property remain marginal. Regional variations, entrenched patriarchal norms, and institutional barriers in land recordation perpetuate this gap. Comparative insights show that countries like Rwanda and Vietnam, which enforce **joint titling and administrative reforms**, achieve higher levels of substantive equality, underscoring the limits of India's law-centric approach. The Indian context illustrates the classic gap between **de jure entitlements and de facto realization**, where legal equality does not automatically ensure material empowerment. The way forward requires a **multi-pronged approach**—institutional reforms to mandate joint titling, awareness programs to counter socio-cultural resistance, digitization of land records with gender-sensitive protocols, and strong legal aid for women asserting claims. Only by bridging the gap between law and practice can India ensure that women's property rights become a lived reality and a foundation for genuine socioeconomic empowerment.

References

1. Vinod H. Patil, Sheela Hundekari, Anurag Shrivastava, Design and Implementation of an IoT-Based Smart Grid Monitoring System for Real-Time Energy Management, Vol. 11 No. 1 (2025): IJCESEN.
<https://doi.org/10.22399/ijcesen.854>
2. Dr. Sheela Hundekari, Dr. Jyoti Upadhyay, Dr. Anurag Shrivastava, Guntaj J, Saloni Bansal⁵, Alok Jain, Cybersecurity Threats in Digital Payment Systems (DPS): A Data Science Perspective, Journal of Information Systems Engineering and Management, 2025,10(13s)e-ISSN:2468-4376.
<https://doi.org/10.52783/jisem.v10i13s.2104>
3. Sheela HhundeKari, Advances in Crowd Counting and Density Estimation Using Convolutional Neural Networks, International Journal of Intelligent Systems and Applications in Engineering, Volume 12, Issue no. 6s (2024) Pages 707–719
4. K. Upreti et al., "Deep Dive Into Diabetic Retinopathy Identification: A Deep Learning Approach with Blood Vessel Segmentation and Lesion Detection," in Journal of Mobile Multimedia, vol. 20, no. 2, pp. 495-523, March 2024, doi: 10.13052/jmm1550-4646.20210.
5. S. T. Siddiqui, H. Khan, M. I. Alam, K. Upreti, S. Panwar and S. Hundekari, "A Systematic Review of the Future of Education in Perspective of Block Chain," in Journal of Mobile Multimedia, vol. 19, no. 5, pp. 1221-1254, September 2023, doi: 10.13052/jmm1550-4646.1955.
6. R. Praveen, S. Hundekari, P. Parida, T. Mittal, A. Sehgal and M. Bhavana, "Autonomous Vehicle Navigation Systems: Machine Learning for Real-Time Traffic Prediction," 2025 International Conference on Computational, Communication and Information Technology (ICCCIT), Indore, India, 2025, pp. 809-813, doi: 10.1109/ICCCIT62592.2025.10927797

7. S. Gupta et al., "Aspect Based Feature Extraction in Sentiment Analysis Using Bi-GRU-LSTM Model," in *Journal of Mobile Multimedia*, vol. 20, no. 4, pp. 935-960, July 2024, doi: 10.13052/jmm1550-4646.2048
8. P. William, G. Sharma, K. Kapil, P. Srivastava, A. Shrivastava and R. Kumar, "Automation Techniques Using AI Based Cloud Computing and Blockchain for Business Management," *2023 4th International Conference on Computation, Automation and Knowledge Management (ICCAKM)*, Dubai, United Arab Emirates, 2023, pp. 1-6, doi:10.1109/ICCAKM58659.2023.10449534.
9. A. Rana, A. Reddy, A. Shrivastava, D. Verma, M. S. Ansari and D. Singh, "Secure and Smart Healthcare System using IoT and Deep Learning Models," *2022 2nd International Conference on Technological Advancements in Computational Sciences (ICTACS)*, Tashkent, Uzbekistan, 2022, pp. 915-922, doi: 10.1109/ICTACS56270.2022.9988676.
10. Neha Sharma, Mukesh Soni, Sumit Kumar, Rajeev Kumar, Anurag Shrivastava, Supervised Machine Learning Method for Ontology-based Financial Decisions in the Stock Market, *ACM Transactions on Asian and Low-Resource Language InformationProcessing*, Volume 22, Issue 5, Article No.: 139, Pages 1 – 24, <https://doi.org/10.1145/3554733>
11. Sandeep Gupta, S.V.N. Sreenivasu, Kuldeep Chouhan, Anurag Shrivastava, Bharti Sahu, Ravindra Manohar Potdar, Novel Face Mask Detection Technique using Machine Learning to control COVID'19 pandemic, *Materials Today: Proceedings*, Volume 80, Part 3, 2023, Pages 3714-3718, ISSN 2214-7853, <https://doi.org/10.1016/j.matpr.2021.07.368>.
12. Shrivastava, A., Haripriya, D., Borole, Y.D. *et al.* High-performance FPGA based secured hardware model for IoT devices. *Int J Syst Assur Eng Manag* 13 (Suppl 1), 736–741 (2022). <https://doi.org/10.1007/s13198-021-01605-x>
13. A. Banik, J. Ranga, A. Shrivastava, S. R. Kabat, A. V. G. A. Marthanda and S. Hemavathi, "Novel Energy-Efficient Hybrid Green Energy Scheme for Future Sustainability," *2021 International Conference on Technological Advancements and Innovations (ICTAI)*, Tashkent, Uzbekistan, 2021, pp. 428-433, doi: 10.1109/ICTAI53825.2021.9673391.
14. K. Chouhan, A. Singh, A. Shrivastava, S. Agrawal, B. D. Shukla and P. S. Tomar, "Structural Support Vector Machine for Speech Recognition Classification with CNN Approach," *2021 9th International Conference on Cyber and IT Service Management (CITSM)*, Bengkulu, Indonesia, 2021, pp. 1-7, doi: 10.1109/CITSM52892.2021.9588918.
15. Pratik Gite, Anurag Shrivastava, K. Murali Krishna, G.H. Kusumadevi, R. Dilip, Ravindra Manohar Potdar, Under water motion tracking and monitoring using wireless sensor network and Machine learning, *Materials Today: Proceedings*, Volume 80, Part 3, 2023, Pages 3511-3516, ISSN 2214-7853, <https://doi.org/10.1016/j.matpr.2021.07.283>.
16. A. Suresh Kumar, S. Jerald Nirmal Kumar, Subhash Chandra Gupta, Anurag Shrivastava, Keshav Kumar, Rituraj Jain, IoT Communication for Grid-Tie Matrix Converter with Power Factor Control Using the Adaptive Fuzzy Sliding (AFS) Method, *Scientific Programming*, Volume, 2022, Issue 1, Pages- 5649363, Hindawi, <https://doi.org/10.1155/2022/5649363>
17. A. K. Singh, A. Shrivastava and G. S. Tomar, "Design and Implementation of High Performance AHB Reconfigurable Arbiter for Onchip Bus Architecture," *2011*

- International Conference on Communication Systems and Network Technologies*, Katra, India, 2011, pp. 455-459, doi: 10.1109/CSNT.2011.99.
18. Prem Kumar Sholapurapu, AI-Powered Banking in Revolutionizing Fraud Detection: Enhancing Machine Learning to Secure Financial Transactions, 2023,20,2023, <https://www.seejph.com/index.php/seejph/article/view/6162>
 19. Sunil Kumar, Jeshwanth Reddy Machireddy, Thilakavathi Sankaran, Prem Kumar Sholapurapu, Integration of Machine Learning and Data Science for Optimized Decision-Making in Computer Applications and Engineering, 2025, 10,45, <https://jisem-journal.com/index.php/journal/article/view/8990>
 20. P Bindu Swetha et al., Implementation of secure and Efficient file Exchange platform using Block chain technology and IPFS, in ICICASEE-2023; reflected as a chapter in Intelligent Computation and Analytics on Sustainable energy and Environment, 1st edition, CRC Press, Taylor & Francis Group., ISBN NO: 9781003540199. <https://www.taylorfrancis.com/chapters/edit/10.1201/9781003540199-47/>
 21. Betshrine Rachel Jibinsingh, Khanna Nehemiah Harichandran, Kabilasri Jayakannan, Rebecca Mercy Victoria Manoharan, Anisha Isaac. Diagnosis of COVID-19 from computed tomography slices using flower pollination algorithm, k-nearest neighbor, and support vector machine classifiers. *Artificial Intelligence in Health* 2025, 2(1), 14–28. <https://doi.org/10.36922/aih.3349>
 22. Betshrine Rachel R, Nehemiah KH, Marishanjunath CS, Manoharan RMV. Diagnosis of Pulmonary Edema and Covid-19 from CT slices using Squirrel Search Algorithm, Support Vector Machine and Back Propagation Neural Network. *Journal of Intelligent & Fuzzy Systems*. 2022;44(4):5633-5646. doi:[10.3233/JIFS-222564](https://doi.org/10.3233/JIFS-222564)
 23. Betshrine Rachel R, Khanna Nehemiah H, Singh VK, Manoharan RMV. Diagnosis of Covid-19 from CT slices using Whale Optimization Algorithm, Support Vector Machine and Multi-Layer Perceptron. *Journal of X-Ray Science and Technology*. 2024;32(2):253-269. doi:[10.3233/XST-230196](https://doi.org/10.3233/XST-230196)
 24. K. Shekokar and S. Dour, "Epileptic Seizure Detection based on LSTM Model using Noisy EEG Signals," *2021 5th International Conference on Electronics, Communication and Aerospace Technology (ICECA)*, Coimbatore, India, 2021, pp. 292-296, doi: 10.1109/ICECA52323.2021.9675941.
 25. S. J. Patel, S. D. Degadwala and K. S. Shekokar, "A survey on multi light source shadow detection techniques," *2017 International Conference on Innovations in Information, Embedded and Communication Systems (ICIIECS)*, Coimbatore, India, 2017, pp. 1-4, doi: 10.1109/ICIIECS.2017.8275984.
 26. P. William, V. K. Jaiswal, A. Shrivastava, R. H. C. Alfilh, A. Badhoutiya and G. Nijhawan, "Integration of Agent-Based and Cloud Computing for the Smart Objects-Oriented IoT," *2025 International Conference on Engineering, Technology & Management (ICETM)*, Oakdale, NY, USA, 2025, pp. 1-6, doi: 10.1109/ICETM63734.2025.11051558.
 27. P. William, V. K. Jaiswal, A. Shrivastava, Y. Kumar, A. M. Shakir and M. Gupta, "IOT Based Smart Cities Evolution of Applications, Architectures & Technologies," *2025 International Conference on Engineering, Technology & Management (ICETM)*, Oakdale, NY, USA, 2025, pp. 1-6, doi: 10.1109/ICETM63734.2025.11051690.
 28. P. William, V. K. Jaiswal, A. Shrivastava, S. Bansal, L. Hussein and A. Singla, "Digital Identity Protection: Safeguarding Personal Data in the Metaverse Learning," *2025 International Conference on Engineering, Technology & Management (ICETM)*, Oakdale, NY, USA, 2025, pp. 1-6, doi: 10.1109/ICETM63734.2025.11051435.

29. Vishal Kumar Jaiswal, "Designing a Predictive Analytics Data Warehouse for Modern Hospital Management", *Int. J. Sci. Res. Comput. Sci. Eng. Inf. Technol*, vol. 11, no. 1, pp. 3309–3318, Feb. 2025, doi: 10.32628/CSEIT251112337
30. Jaiswal, Vishal Kumar. "BUILDING A ROBUST PHARMACEUTICAL INVENTORY AND SUPPLY CHAIN MANAGEMENT SYSTEM" Article Id - IJARET_16_01_033, Pages : 445-461, Date of Publication : 2025/02/27 DOI: https://doi.org/10.34218/IJARET_16_01_033
31. Vishal Kumar Jaiswal, Chrisoline Sarah J, T. Harikala, K. Reddy Madhavi, & M. Sudhakara. (2025). A Deep Neural Framework for Emotion Detection in Hindi Textual Data. *International Journal of Interpreting Enigma Engineers (IJIEE)*, 2(2), 36–47. Retrieved from <https://ejournal.svgacademy.org/index.php/ijee/article/view/210>
32. P. Gin, A. Shrivastava, K. MustalBhihara, R. Dilip, and R. Manohar Paddar, "Underwater Motion Tracking and Monitoring Using Wireless Sensor Network and Machine Learning," *Materials Today: Proceedings*, vol. 8, no. 6, pp. 3121–3166, 2022
33. S. Gupta, S. V. M. Seeswami, K. Chauhan, B. Shin, and R. Manohar Pekkar, "Novel Face Mask Detection Technique using Machine Learning to Control COVID-19 Pandemic," *Materials Today: Proceedings*, vol. 86, pp. 3714–3718, 2023.
34. K. Kumar, A. Kaur, K. R. Ramkumar, V. Moyal, and Y. Kumar, "A Design of Power-Efficient AES Algorithm on Artix-7 FPGA for Green Communication," *Proc. International Conference on Technological Advancements and Innovations (ICTAI)*, 2021, pp. 561–564.
35. V. N. Patti, A. Shrivastava, D. Verma, R. Chaturvedi, and S. V. Akram, "Smart Agricultural System Based on Machine Learning and IoT Algorithm," *Proc. International Conference on Technological Advancements in Computational Sciences (ICTACS)*, 2023.
36. Kant, K. (2019). Role of e-wallets in constructing a Virtual (Digital) Economy. *Journal of Emerging Technologies and Innovative Research*, 6(3), 560–565. <https://www.jetir.org/papers/JETIR1903L75.pdf>
37. Kant, K., Nihalani, P., Sharma, D., & Babu, J. M. (2024b). Analyzing the effects of counselling on students performance: A Bibliometric analysis of past two decades (2004-2024). *Pacific Business Review (International)*, 17(6), 43–55. https://www.pbr.co.in/2024/2024_month/December/5.pdf
38. Kant, K., Hushain, J., Agarwal, P., Gupta, V. L., Parihar, S., & Madan, S. K. (2024c). Impact of sustainable Techno-Marketing Strategies on MSME's growth: A Bibliometric Analysis of past decade (2014-2024). In *Advances in economics, business and management research/Advances in Economics, Business and Management Research* (pp. 66–79). https://doi.org/10.2991/978-94-6463-544-7_6
39. R. S. Wardhani, K. Kant, A. Sreeram, M. Gupta, E. Erwandy and P. K. Bora, "Impact of Machine Learning on the Productivity of Employees in Workplace," 2022 4th International Conference on Inventive Research in Computing Applications (ICIRCA), Coimbatore, India, 2022, pp. 930-934, doi: 10.1109/ICIRCA54612.2022.9985471
40. Ksireddy, L. Chandrakanth, and M. Sreenivasu. "Overcoming Adoption Barriers: Strategies for Scalable AI Transformation in Enterprises." *Journal of Informatics Education and Research*, vol. 5, no. 2, 2025. <https://doi.org/10.52783/jier.v5i2.2459>

41. Sivasankari, M., et al. "Artificial Intelligence in Retail Marketing: Optimizing Product Recommendations and Customer Engagement." **Journal of Informatics Education and Research**, vol. 5, no. 1, 2025. <https://doi.org/10.52783/jier.v5i1.2105>
42. Bhimaavarapu, K. Rama, B. Bhushan, C. Chandrakanth, L. Vadivukarassi, M. Sivaraman, P. (2025). An Effective IoT based Vein Recognition Using Convolutional Neural Networks and Soft Computing Techniques for Dorsal Vein Pattern Analysis. *Journal of Intelligent Systems and Internet of Things*, (), 26-41. DOI: <https://doi.org/10.54216/JISIoT.160203>
43. Selvasundaram, K., et al. "Artificial Intelligence in E-Commerce and Banking: Enhancing Customer Experience and Fraud Prevention." *Journal of Informatics Education and Research*, vol. 5, no. 1, 2025. <https://doi.org/10.52783/jier.v5i1.2382>
44. Jaiswal, Vishal Kumar. "DESIGNING A CENTRALIZED PATIENT DATA REPOSITORY: ARCHITECTURE AND IMPLEMENTATION GUIDE."
45. Vishal Kumar Jaiswal, "Designing a Predictive Analytics Data Warehouse for Modern Hospital Management", *Int. J. Sci. Res. Comput. Sci. Eng. Inf. Technol*, vol. 11, no. 1, pp. 3309–3318, Feb. 2025, doi: 10.32628/CSEIT251112337
46. Jaiswal, Vishal Kumar. "BUILDING A ROBUST PHARMACEUTICAL INVENTORY AND SUPPLY CHAIN MANAGEMENT SYSTEM" Article Id - IJARET_16_01_033, Pages : 445-461, Date of Publication : 2025/02/27 DOI: https://doi.org/10.34218/IJARET_16_01_033
47. Vishal Kumar Jaiswal, Chrisoline Sarah J, T. Harikala, K. Reddy Madhavi, & M. Sudhakara. (2025). A Deep Neural Framework for Emotion Detection in Hindi Textual Data. *International Journal of Interpreting Enigma Engineers (IJIEE)*, 2(2), 36–47. <https://ejournal.svgacademy.org/index.php/ijiee/article/view/210>
48. S. Kumar, "Multi-Modal Healthcare Dataset for AI-Based Early Disease Risk Prediction," *IEEE DataPort*, 2025, <https://doi.org/10.21227/p1q8-sd47>
49. S. Kumar, "FedGenCDSS Dataset," *IEEE DataPort*, Jul. 2025, <https://doi.org/10.21227/dwh7-df06>
50. S. Kumar, "Edge-AI Sensor Dataset for Real-Time Fault Prediction in Smart Manufacturing," *IEEE DataPort*, Jun. 2025, <https://doi.org/10.21227/s9yg-fv18>
51. S. Kumar, "Generative AI in the Categorisation of Paediatric Pneumonia on Chest Radiographs," *Int. J. Curr. Sci. Res. Rev.*, vol. 8, no. 2, pp. 712–717, Feb. 2025, doi: 10.47191/ijcsrr/V8-i2-16.
52. S. Kumar, "Generative AI Model for Chemotherapy-Induced Myelosuppression in Children," *Int. Res. J. Modern. Eng. Technol. Sci.*, vol. 7, no. 2, pp. 969–975, Feb. 2025, doi: 10.56726/IRJMETS67323.
53. S. Kumar, "Behavioral Therapies Using Generative AI and NLP for Substance Abuse Treatment and Recovery," *Int. Res. J. Mod. Eng. Technol. Sci.*, vol. 7, no. 1, pp. 4153–4162, Jan. 2025, doi: 10.56726/IRJMETS66672.
54. S. Kumar, "Early detection of depression and anxiety in the USA using generative AI," *Int. J. Res. Eng.*, vol. 7, pp. 1–7, Jan. 2025, doi: 10.33545/26648776.2025.v7.i1a.65.
55. S. Kumar, M. Patel, B. B. Jayasingh, M. Kumar, Z. Balasm, and S. Bansal, Fuzzy logic-driven intelligent system for uncertainty-aware decision support using heterogeneous data," *J. Mach. Comput.*, vol. 5, no. 4, 2025, doi: 10.53759/7669/jmc202505205.