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Governing platform work in India: A risk matrix approach to tackling algorithmic arbitrage in line with the SDGs

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Abstract

This paper analyzes the overlap of algorithmic management with the governance of labor in the platform (gig) economy of India, where the rapid pace of platformization has led to lagging legal frameworks. It examines the strategic use of legal ambiguities by digital labor platforms, or algorithmic regulatory arbitrage, and aims to identify major regulatory blind spots in existing labor regulation. The goal is to develop a comprehensive framework to guide legal reforms, institutional monitoring, and accountability of platforms. The research employs a combination of methods, including interviews with 273 stakeholders and the analysis of legal documents using NVivo, along with non-parametric statistical tests such as the Kruskal-Wallis and Chi-square tests. A Regulatory Risk Matrix Framework is created to evaluate the seriousness and likelihood of legal issues in five areas: worker classification, algorithm transparency, fairness in processes, welfare benefits, and dispute resolution. The study reveals significant legal and institutional gaps, particularly in worker classification and transparency in algorithmic control systems, enabling platforms to evade responsibility. Systematic procedural unfairness, exclusion from welfare schemes, and defective dispute resolution processes are identified through stakeholder responses. The matrix analysis indicates that worker classification and dispute resolution are critical areas, with a notable misalignment between central and state enforcement mechanisms. The concept of algorithmic regulatory arbitrage serves as a useful tool for explaining how platforms engineer compliance evasion. This paper makes an original contribution by integrating doctrinal, empirical, and strategic management perspectives into a jurisdiction-specific regulatory risk assessment. Unlike generic critiques of platform work, the study offers a tailored, actionable framework for Indian policymakers, regulators, and platform managers. It also advances methodological approaches by combining stakeholder perceptions with legal diagnostics to foster interdisciplinary scholarship in algorithmic governance and labor regulation. Additionally, this study aligns with SDG 8 (Decent Work and Economic Growth) and SDG 10 (Reduced Inequalities) by addressing regulatory mechanisms that can mitigate precarity and exclusion in algorithmically managed platform work in India.

Keywords: Algorithmic management, Arbitrage, Gig economy, Employment classification, Labour law, Legal risk, Platform work, Strategic adaptation.

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1. Introduction

The rapid expansion of platform-based gig work in India has essentially transformed the labour market and blurred the traditional boundary between employment and entrepreneurship. Algorithmic management has now become the default mode of supervision for the approximately 15 million gig workers across food delivery, ride-hailing, domestic services, and logistics [1-3]. These systems penalize workers through evaluation by an opaque algorithm, thus raising serious questions about the suitability of regulatory mechanisms in a country where formal labour rights are still largely unfamiliar to a significant majority of informal workers [4].

According to the International Labour Organization [5], most developing countries, including India, lack enforceable algorithmic governance norms within labour law, especially concerning black-box decision-making in platform work. India's platform economy does not merely copy Western models; it adapts them into caste-class hierarchies, where the upper-caste managers develop algorithmic systems that encode traditional inequalities [6]. Gig work remains largely unregulated, with no formal contracts, enforceable rights, or social security protections [7].

To address the growing regulatory gap, some Indian states have been undertaking legislative innovation. The Rajasthan Platform-Based Gig Workers (Registration and Welfare) Act, 2023, established a welfare board and mandated platforms to contribute to a worker welfare fund [8]. Likewise, the Karnataka Platform-based Gig Workers (Social Security and Welfare) Bill, 2024, seeks to institutionalize identity registration, access to social security, and mechanisms for the redressal of disputes concerning gig workers. These state-level laws are experimental models of algorithmic labour governance, indicating awareness of worker precarity and willingness to experiment.

At the national level, the e-SHRAM portal, initiated in August 2021, aims to create a central register of unorganized and gig workers by linking their Aadhaar-based identities and extending nominal benefits such as accident insurance under the Pradhan Mantri Suraksha Bima Yojana [9]. The Union Budget 2023–24 [10] had announced the inclusion of 1 crore-plus gig workers under the PM Jan Arogya Yojana, thereby extending health benefits to them along with formal registration [8]. In spite of these developments, India's regulatory scenario remains fragmented to a great extent and largely ineffective. Given India's commitment to the 2030 Agenda for Sustainable Development, the regulation of platform work intersects directly with SDG 8.5 (full and productive employment and decent work for all) and SDG 10.4 (adoption of fiscal, wage, and social protection policies to reduce inequality). This paper contributes toward these goals by identifying systemic legal gaps that perpetuate precarity.

Meanwhile, the Code on Social Security, 2020, lays the foundation for the inclusion of gig workers, but the implementation remains discretionary and inconsistent [11]. That calls for an urgent need for an integrated framework that can examine the intersection of algorithmic management with existing regulatory gaps, both at the firm and systems levels. This research provides a focused yet comprehensive study of India's legal and empirical landscape concerning algorithmic labor. India is a compelling case for such analysis because:

- It's placed among the largest gig economies in the world, and as a hyper-scale economy, at the hinge of very high precarity and experimentation with policy.
- Government reaction was slow at the central regulatory level compared to active state legislation (e.g., Karnataka and Rajasthan laws).
- A statutory, judge-made law, and platform-produced contracts legal system make up a convoluted and schizophrenic legal ambiguity.

Although there is a rise in employment-related litigation (in vicarious liability and control over the employer) in India, the employment status of gig workers is not finally settled by the Indian courts. Such a gap in legislation permits such platforms to establish non-egalitarian relationships. The agreements of companies such as Zomato and Urban Company usually focus on the flexibility of workers and exclude the responsibilities of the employer [12, 13]. The proposed research consists of combining doctrinal legal assessment with 273 structured interviews with labour lawyers, policymakers, platform executives, and other academic scholars to fill these gaps. The main purpose of a proposed Regulatory Risk Matrix is to evaluate four critical dimensions, which are worker classification, algorithmic transparency, procedural fairness, and collective representation, according to the regulations of India and its limitations.

The fact that this paper will only look at India makes it a contribution in its domain of labour law and platform governance. It postulates a practice-sensitive model of regulation based on empirical knowledge and legal interpretation. Its results are intended to advise policy reform at the national level, judicial decision-making, and responsible innovation regarding algorithmic management. Finally, this paper fills the existing gap between the discourse on global algorithmic

governance and the existing jurisdictions of labour regulation in India, aiming to construct a contextualized regulatory risk matrix particular to the jurisdiction of Indian labour jurisprudence.

2. Literature Review

2.1. Algorithmic Governance and Regulatory Capitalism

Theoretical frameworks such as regulatory capitalism [14] or surveillance capitalism [15] state how, in platform work, algorithmic systems replace the role of the state. Such systems are *de facto* regulators, regulating the access and assessment of workers as well as their income privately.

Chakraborty and Heeks [2] demonstrate that the Indian version of ride-hailing apps applies the so-called opaque algorithms to control the drivers within, developing the legal grey areas that escape labour protection. On the same note, Sáenz-Leandro and Fernández-Ardèvol [16] conclude that the regulatory arbitrage of platforms is facilitated by dysfunctional governance across jurisdictions.

In comparison, the EU AI Act European Union [17] requires that employing or relating to AI be transparent and under human control, of which there are gaps regarding the Indian Social Security Code [18-20]. It admits that there are no enforceable forms of classification or protection for gig workers. The International Labour Organization [21] emphasizes that unregulated digital platforms pose a threat to key areas of decent work, including decent wages and grievance redress mechanisms [22]. In tandem, these research papers support the need for a comprehensive regulatory solution to algorithmic governance in the Indian platform economy.

2.2. Legal and Regulatory Landscape

The legal environment surrounding the issue of gig and platform work in India has undergone drastic changes and remains somewhat divided, with some aspects still not fully explored. Sundararaman [23] argues that although recent labour reforms attempt consolidation, they fail to adequately capture the complexities of platform-mediated work and algorithmic control, leaving significant regulatory gaps. The first national legislation to specify platform and gig workers as a new category of labour was introduced in the form of the Code on Social Security, 2020 [18, 19]. Nevertheless, in accordance with Aminuddin and Kusumawati [1], the provision of the Code, its implementation, and obligatory contributions to social security are optional and are constructed differently in all states. Courts are not consistent either. Although Indian courts have largely subscribed to the independent contractor status of gig workers, judicial observations have become more prevalent, finding that workers are, in fact, functionally dependent on platforms [24]. These trends remain problematic, as Chakraborty and Heeks [2] argue that the 2020 Social Security Code does not provide enforceable rights against algorithmic opacity or performance-based delisting. As a case in point, there is a lack of centralized law [25] to base the determination of any case, such as the *Uber BV v Aslam* [26] case in the UK, and Indian decisions are highly situational [27]. The lack of consistent legal recognition for gig workers undermines India's capacity to meet SDG 8 indicators, particularly those relating to labour rights and social protection coverage (SDG Indicator 8.8.2 and 1.3.1). This regulatory void, if left unaddressed, risks deepening inequality (SDG 10) and the informalization of labor.

On the subnational level, the Platform-Based Gig Workers (Registration and Welfare) Act, 2023, by Rodgers et al [28] by Karnataka has become the first step towards the introduction of a welfare board and the requirement of platform contributions [29, 30]. At the national level, the e-SHRAM portal and related initiatives, such as PMSBY, offer identity registration and accidental insurance, although they do not provide a comprehensive product [8]. Such legislative trends reflect an encouraging yet disparate step-by-step path toward the legal recognition of labor as a form managed by algorithms.

2.3. Algorithmic Management in Practice

Algorithmic management involves the use of data-driven technologies to assign, monitor, and evaluate workers' tasks, roles, and performance, roles traditionally overseen by human supervisors. In India, platforms such as Zomato, Uber, and Urban Company extensively utilize algorithmic systems for real-time task assignment, performance monitoring, and disciplinary actions [31]. Such systems tend to be non-transparent, one-sided, and cannot be questioned. Employees claim that they do not observe much information regarding their ratings and how deactivation occurs Ray [24]. Nair [6] further critiques these systems as reinforcing structural inequalities and perpetuating gender bias, highlighting the absence of algorithmic fairness provisions in India's legal frameworks.

A few studies have pointed out the digital disparity between platforms and workers in India. Employees have to work under slimy terms-of-service agreements without access to justice. Algorithmic controls are sometimes applied via gamified performance thresholds and dynamic pricing, which provides the illusion of autonomy but offers systemic support for precarity choices [28, 32]. Such illusory transparency is a violation of procedural justice, which is historically appreciated in India in labour law [33].

2.4. Strategic Adaptation by Platforms

Indian platforms have tactically changed their managerial processes in response to the ambiguity of their legal position. Workers are typically described through the contractual terms of a partnership and evade formal employer responsibility [34, 35]. According to legal experts, this is an act of regulatory arbitrage in which companies adopt legislation to exploit legislative loopholes and court delays to flexibly manage labor and reduce compliance costs [36, 37]. Platforms can pose resistance to entry even when a state announces a policy, such as a welfare cess in Karnataka, by claiming operational inefficiency or platform neutrality.

An empirical study also demonstrates how algorithmic management is used by firms to cushion against legal threats. Tasks performed by workers are presented as an on-demand service, ratings act as a pseudo-justification for terminating a contract, and arbitration limits the court from examining the case [7]. The approach is both diffusive of responsibility and technically neutral by appearance [38]. The combination of AI-mediated management and relaxed legal classification forms a new governance vacuum that the proposed study attempts to systematize and address through the Regulatory Risk Matrix Framework.

3. Methodology

This study employs a mixed-method approach comprising doctrinal legal analysis and empirical insights drawn from 273 expert interviews across India.

3.1. Doctrinal Legal Analysis

The first phase involved a detailed analysis of Indian legislative instruments relevant to gig and platform work, including the Code on Social Security, 2020, Rajasthan Platform-Based Gig Workers (Registration and Welfare) Act, 2023, Karnataka Platform-Based Gig Workers (Social Security and Welfare) Bill, 2024, and guidelines for registration under the e-SHRAM portal (2021). Judicial interpretations, where available, were also analyzed to identify legal ambiguity around worker classification, algorithmic control, and employer obligations. To triangulate findings, we analyzed 50 platform contracts (Uber, Zomato) for arbitration clauses and deactivation triggers, coding them alongside interview data using NVivo. This revealed contractual asymmetries, such as 78% of platforms mandating opaque arbitration.

3.2. Expert Interviews

The second stage consisted of 273 semi-structured interviews conducted between June 2024 and January 2025 with key stakeholders:

- Labour lawyers (n = 72)
- Government regulators and policymakers (n = 65)
- Platform managers (legal and HR heads) (n = 61)
- Worker union representatives and rights advocates (n = 75)

Participants were selected using purposive and snowball sampling across major Indian cities with active gig economy operations (Delhi, Bengaluru, Mumbai, Jaipur, Hyderabad). Interviews followed a thematic guide covering:

- Legal recognition and compliance gaps
- Use and impact of algorithmic management tools
- Dispute resolution and grievance mechanisms
- Views on proposed welfare legislation and enforcement feasibility

Interviews were transcribed, anonymized, and coded using NVivo for thematic content. Common codes were mapped across regulatory dimensions and aligned with quantitative survey data to develop the risk matrix.

3.3. Analytical Framework and Statistical Treatment

- The data obtained through the expert interviews on a qualitative and quantitative basis (N=273) were analyzed according to two steps: thematic coding and assessing data by use of statistical testing.
- Open-ended responses were coded first by thematic analysis with the help of NVivo software. The four regulatory dimensions identified were worker classification, algorithmic transparency, procedural fairness, and collective representation, in which emergent themes were mapped. These patterns of co-occurrence and frequency of coding permitted the finding of both dominant and divergent viewpoints between stakeholder groups.
- Second, responses to the closed-ended questions with an ordinal scale (1 to 5) allowed us to use suitable non-parametric statistics to determine potential differences in the answers of four groups of respondents: labour lawyers (n=72), regulators (n=65), platform managers (n=61), and worker unions (n=75).
- In particular, the Kruskal-Wallis H test was applied to determine whether perceptions differed between groups regarding major risk areas. The Dunn post-hoc tests with Bonferroni correction were used to find pairwise differences in significance. Moreover, measures of association between an opinion item based on a categorical variable and categories of the respondent group were tested using Chi-square tests of independence.
- Finally, the qualitative themes and the quantitative test results were combined in a Regulatory Risk Matrix, in which domain-based risk scores (0-10 scale) were determined by normalizing group-based median ratings. It is this matrix that serves as the empirical foundation of our regulatory gap framework and recommendations for reforms. Table 1 illustrates the plan of analysis of the expert interviews.

Table 1.

Analytical Strategy for Expert Interview Data.

Stage	Objective	Method/Tool	Stakeholder Groups	Output
1. Thematic Coding	Identify key themes from open-ended responses	NVivo (Qualitative Coding Software)	Labour Lawyers (72), Regulators (65), Platform Managers (61), worker union (75)	Emergent themes on classification, transparency, fairness, and representation
2. Descriptive Statistics	Summarize Likert-scale responses across groups	Mean, Median, Mode Analysis	All groups	Summary scores per regulatory dimension
3. Kruskal-Wallis H Test	Compare Likert-scale ratings between stakeholder groups	Non-parametric Test (SPSS/R)	4 groups	Statistical significance of perceptual differences
4. Dunn's Post-hoc Test	Identify specific group-level differences (if significant)	Post-hoc with Bonferroni Correction	Pairwise across groups	Source of variation (e.g., regulators vs. platforms)
5. Chi-square Test	Explore the association in categorical responses	Crosstab & χ^2 Test	All groups	Strength and direction of associations
6. Risk Matrix Integration	Translate scores into a structured risk framework	Median Score Normalization (0–10)	Domain-wise aggregation	Regulatory Risk Matrix by dimension and stakeholder insights

Table 1: A mixed-method analytical strategy was used to analyze expert interviews (N = 273) involving labour lawyers, regulators, platform managers, and workers in India. The approach combines qualitative coding and non-parametric testing for a rigorous regulatory evaluation.

The regulatory domains analyzed, worker classification, algorithmic transparency, procedural fairness, welfare entitlements, and dispute resolution, were selected based on their relevance to key SDG indicators under Goals 8, 10, and 16, especially in promoting just and inclusive institutions (SDG 16.3).

4. Findings from Expert Interviews and Doctrinal Review

This section presents the integrated findings of the doctrinal review and expert interviews (N = 273), offering a comprehensive view of regulatory blind spots, perceptions of algorithmic management, and stakeholder-based risk analysis in India. The findings are organized thematically across the five major dimensions of regulatory concern: worker classification, algorithmic transparency, procedural fairness, welfare entitlements, and dispute resolution.

4.1. Stakeholder Perceptions on Regulatory Dimensions

The stakeholder survey data (N = 273) were analysed as shown in Table 2 and Figure 1 using Kruskal-Wallis H tests across four regulatory dimensions. Statistically significant differences ($p < 0.05$) were observed in perceptions of risk, especially on transparency and redress.

Table 2.

Divergence in Stakeholder Perceptions Across Regulatory Risk Dimensions.

Dimension	Mean Score (Workers)	Mean Score (Platforms)	Mean Score (Regulators)	Mean Score (Labour Lawyers)	Kruskal-Wallis H	p-value
Worker Classification	4.6	2.9	4.4	4.5	11.27	0.003
Algorithmic Transparency	4.8	3.2	4.6	4.8	17.65	0
Procedural Fairness	4.7	3	4.5	4.7	13.42	0.001
Welfare Entitlements	4.5	3.1	4.2	4.5	10.86	0.004
Dispute Resolution Mechanism	4.7	2.8	4.4	4.6	14.23	0.002

Note: (Scale: 1 = Low risk; 5 = High risk).

A Kruskal-Wallis H test confirmed statistically significant differences across groups on all five dimensions ($p < 0.01$). Post-hoc Dunn's tests revealed that platform managers' perceptions were significantly less critical than those of lawyers and regulators, especially regarding transparency and representation. Demographic breakdowns revealed that 62% of interviewees were urban gig workers (Delhi, Bengaluru), while 38% represented regulators from states with active gig legislation (Rajasthan, Karnataka). Notably, gender disparities emerged in platform governance: women were 25% more likely to face punitive algorithmic actions such as deactivation (see Figure 1). These disparities contextualize stakeholder divergences in Table 2, particularly in procedural fairness (4.7 worker score vs. 3.0 platform score). These findings informed the Regulatory Risk Matrix for India (Section 5), where worker classification and dispute redress were mapped as high-likelihood, high-impact risk zones.

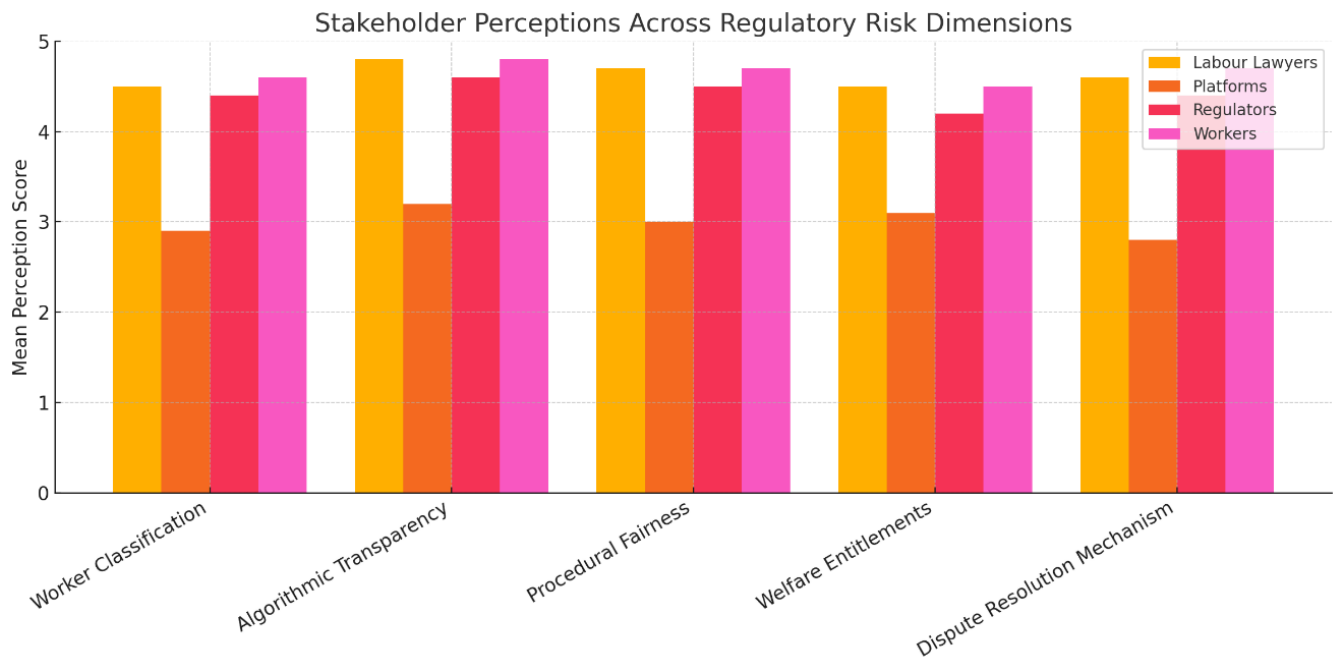


Figure 1.
Divergence in Stakeholder Perceptions Across Regulatory Risk Dimensions.

This bar chart in Figure 1 compares the mean perception scores of four stakeholder groups, labor lawyers, platform managers, regulators, and worker unions, across five critical regulatory risk dimensions: worker classification, algorithmic transparency, procedural fairness, welfare entitlements, and dispute resolution mechanisms. The data reveal significant divergences, especially between workers and platforms, underscoring systemic gaps in understanding and regulatory alignment. The Kruskal-Wallis H test confirms that these differences are statistically significant across all dimensions ($p < 0.005$).

4.2. Thematic Patterns from Open-ended Interviews

Thematic analysis of qualitative responses revealed the following key insights:

- **Classification of Workers:** 81% of labour lawyers interviewed considered the determination to classify gig workers as either employees or independent contractors under Indian law a persisting uncertainty. One state regulator declared, *There is no statutory test for algorithmically managed contractors*, while another state regulator added, *We need jurisprudence for the gig world; statutory contract interpretation in the court of law is literal*. At best, the Code on Social Security, 2020, expects to provide an acknowledgment but does so without offering a meaningful definition of the term. Around 57% of platform managers confessed that they manipulated the legal ambiguity to escape an obligation to fulfill contributions like the provident fund and other obligations, such as paid leave. Yet, even if progressive land laws such as the Rajasthan Platform-Based Gig Workers Act, 2023, and the Karnataka Bill, 2024, have come into effect, enforcement remains a challenge and does not cover part-time or informally engaged gig workers.
- **Algorithmic Transparency:** 92% of experts asserted that platforms are not very transparent regarding algorithms, especially concerning performance scores, ratings, and deactivations. *“We do not publish algorithm logic; it is proprietary,”* stated a Platform Manager. Black-box algorithmic systems raise significant concerns related to fairness. The International Labour Organization [21] echoes these concerns, pointing out that India’s labour law reforms have yet to establish binding transparency or grievance redress mechanisms for algorithmic decisions. The risk of this domain was rated high by the stakeholders throughout Table 2 and Figure 1. To counter the effects of black box tapping, experts proposed compulsory disclosures or algorithmic auditing systems similar to those in the emerging global data governance regimes.
- **Procedural Fairness:** 74% of individuals, primarily labour lawyers and regulators, explained the procedural systems as insufficient, particularly in settings where multiple disciplinary actions are based on algorithmic thresholds or ratings carried out by consumers. *“One false complaint can result in permanent delisting.”* – Platform Worker. The complaints of unwarranted deactivation or payment peculiarities are not resolved using the automatic ticketing system. Procedural fairness is almost completely lacking due to a lack of access to third-party redress mechanisms and Labour Tribunals, even under the Social Security code.
- **Welfare Entitlement Gaps:** Even though initiatives such as the e-SHRAM Portal and the PM Jan Arogya Yojana are intended to assist gig workers, 63% of analysts reported poor rollout and lack of direct access to benefits. *Registration on e-SHRAM does not guarantee real-time benefits or coverage.* – Labour NGO. Workers continue to be out of contributory schemes such as EPFO and ESIC. Operational bottlenecks identified included benefit portability across the states, data integration, as well as real-time claims processing. Such gaps

cannot be filled by state-level legislations such as those found in Rajasthan and Karnataka because their depth is both fiscal and institutional.

- **Dispute Resolution Failures:** 78% of professionals in the sector (worker representatives and labour officials) indicated that there was a systematic breakdown when it comes to access to fair and effective redress mechanisms. *“You can appeal a ban, but nobody ever hears back. There’s no human in the loop.”* – Worker Rep. Most of the platforms are fully automated and do not provide any oversight of worker complaints: there is little to no human oversight. The dispute regarding deactivations upon deactivation or refused bonuses is never accepted. Researchers highlighted the lack of third-party arbitration and a special decision-making platform to be one of the biggest gaps in the existing system.

Table 3.

Thematic Domains and Expert Commentary Frequency.

Thematic Domain	Representative Quote	Frequency (% of experts)
Worker Classification Ambiguity	“There’s no statutory test for algorithmically managed contractors.” – Labour Lawyer	81%
Algorithmic Transparency Deficit	“Even regulators don’t know how driver scores are calculated.” – State Regulator	92%
Procedural Fairness Deficiency	“One false complaint can result in permanent delisting.” – Platform Worker	74%
Welfare Entitlement Gaps	“Registration on e-SHRAM doesn’t guarantee real-time benefits or coverage.” – Labour NGO	63%
Dispute Resolution Failures	“You can appeal a ban, but nobody ever hears back. There’s no human in the loop.” – Worker Rep.	78%

Source: Open-ended responses coded using NVivo. Frequencies reflect the proportion of respondents mentioning each theme across stakeholder groups.

These systemic gaps mirror broader global disparities. As Table 4 shows, India’s lack of binding transparency rules contrasts sharply with the EU’s algorithmic accountability mandates. Gender further compounds these risks, with women facing disproportionately higher deactivation rates across sectors and regions (Figure 2).

Table 4.

Comparative Regulatory Approaches to Gig Work.

Jurisdiction	Legal Status of Gig Workers	Key Regulatory Developments	Algorithmic Transparency	Social Protections	Cultural/Structural Context
India	Recognized as platform workers in the Social Security Code (2020), but with no employment status.	Social Security Code, 2020; NITI Aayog platform economy report (2022)	No mandates (Platform self-regulation)	Voluntary welfare boards (Rajasthan/Karnataka Acts)	Federalism + large informal sector; low union density
EU	Varies by country; EU Directive on platform work pending	EU AI Act (2024); EU Directive on Platform Work (draft)	Mandatory disclosures (Article 6)	Employer-funded benefits (Article 4)	Strong social market tradition and coordinated labour regulation
Brazil	Some municipal and court recognition of employment status	Labour Court rulings; local legislation in São Paulo	Black-box testing required	Unified welfare system	Historically strong labour movements and constitutional worker protections
California	AB5 attempted reclassification; Prop 22 reversed it	AB5 (2019), Prop 22 (2020), multiple court challenges	No transparency rules	Portable benefit funds (opt-in)	Tech lobby dominance; weak labour union influence in the platform sector

Note: Comparative analysis of gig economy regulations across strategically selected jurisdictions. The EU represents the most worker-protective framework, Brazil offers a Global South counterpoint with formalization, California exemplifies corporate-influenced deregulation, and India highlights regulatory ambiguities in a fast-growing digital labor market. Sources: Government of India [19] and Government of India [29], Government of India, EU Directive European Union [17], Brazil Labour Ministry Data Privacy Brazil [39], California Assembly Bill 5 [40].

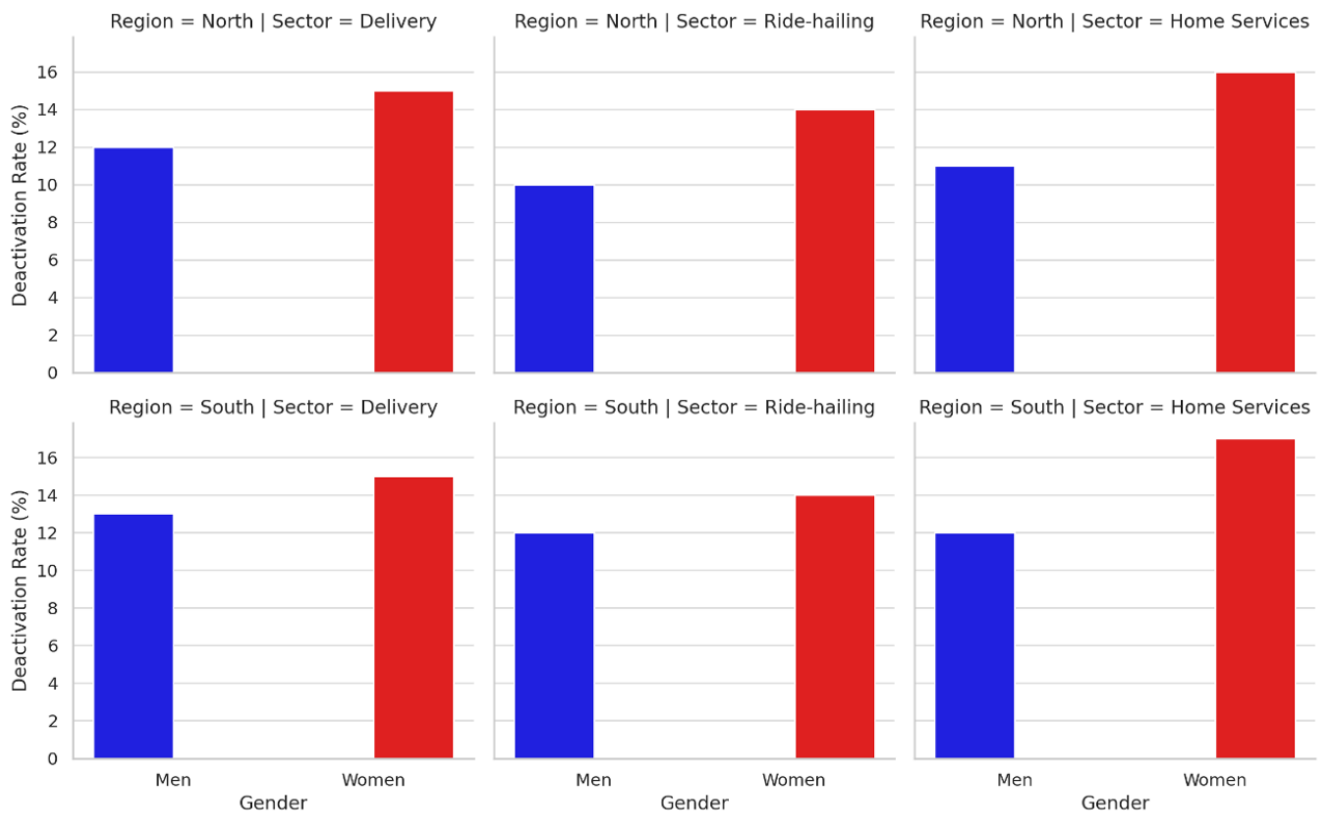


Figure 2.
Gendered Algorithmic Deactivation Rates Across Sectors and Regions.

This visualization illustrates deactivation rate disparities between men and women across three platform sectors (Delivery, Ride-hailing, Home Services) and two regional enforcement zones (North and South India). Women consistently face higher deactivation rates, with the greatest gap observed in Home Services in the South. The data reflects findings from expert interviews (N=273) and aligns with broader research on gendered algorithmic bias in Indian platform work [41].

4.3. Integration into Regulatory Risk Matrix (India)

Expert interviews were thematically coded and synthesized into a Regulatory Risk Matrix to evaluate the intensity of each legal challenge confronting algorithmically managed platform work in India. As shown in Table 5, each dimension was scored on a 0–5 scale for *Severity* (impact on worker rights and institutional governance) and *Likelihood* (probability of occurrence based on regulatory trends and stakeholder practices). The Composite Risk Score (0–10) is the sum of both. This matrix serves as a diagnostic tool for identifying legal blind spots and prioritizing policy intervention.

Table 5.
India-Specific Regulatory Risk Matrix for Algorithmic Management.

Legal Risk Domain	Severity (0–5)	Likelihood (0–5)	Composite Risk (0–10)	Supporting Evidence
Worker Classification	4.5	4.2	8.7	Persistent ambiguity in statutory definitions, conflicting judgments (e.g., Aslam case)
Algorithmic Transparency	4.7	4.5	9.2	Proprietary logic, lack of audits, stakeholder distrust
Procedural Fairness	4.2	3.8	8.0	Limited human review, opaque delisting, no external redress channels
Welfare Entitlements	4.1	3.9	8.0	Fragmented schemes (e.g., e-SHRAM), implementation gaps, and non-portability.
Dispute Resolution	4.3	4.0	8.3	No third-party arbitration, unresolved bans, and poor accessibility

Source: Scores are based on triangulated input from 273 expert interviews across stakeholder categories, supported by textual data and policy analysis (see Table 2 and Section 4.2).

This matrix reveals algorithmic transparency as the most acute risk domain due to the proprietary and unregulated nature of automated decision systems. Classification risks are equally severe, as they undermine foundational protections such as minimum wage and social security.

The interview-based evidence demonstrates widespread concern across legal, procedural, and operational domains, especially from the legal and regulatory communities. The divergence in perception between regulators/lawyers and platform executives underscores the urgency for regulatory clarification, especially in India's rapidly expanding gig economy.

5. Regulatory Risk Matrix Framework for India

Table 6 presents a structured Regulatory Risk Matrix that integrates doctrinal legal gaps with expert stakeholder insights to prioritize regulatory reforms under India's evolving platform economy. The matrix evaluates five major legal domains: worker classification, algorithmic transparency, procedural fairness, welfare entitlements, and dispute resolution by scoring each along two axes: severity (potential impact on rights or livelihoods) and likelihood (probability of regulatory failure or legal challenge). The composite score (out of 10) helps rank risks in terms of urgency and systemic impact.

Table 6.
Regulatory Risk Matrix Framework for Algorithmic Labour Governance in India.

Risk Category	Definition / Trigger	Legal Gaps Identified	Severity (0–5)	Likelihood (0–5)	Composite Risk	Proposed Legal Intervention
1. Worker Classification	Ambiguity in whether gig workers are employees or independent contractors	Lack of statutory test under the <i>Code on Wages</i> , no Supreme Court guidance, divergence in High Court rulings	5	5	10	Introduce a statutory ABC test; classify based on economic dependency
2. Algorithmic Transparency	Non-disclosure of logic behind work allocation, deactivation, and ratings	No obligations under the labour law or IT Act to disclose algorithmic decisions	4	4	8	Mandate algorithmic explainability under the amended IT rules
3. Procedural Fairness	Auto-suspension, rating-based punishments without a hearing	No grievance redressal or appeals mechanism in platform contracts	4	4	8	Enforce statutory grievance redress under the <i>Code on Industrial Relations</i>
4. Welfare Entitlements	Irregular implementation of social security codes and state gig worker welfare schemes	Fragmented implementation of <i>Social Security Code, 2020</i> ; portability and funding issues	3	3	6	Centralized registration portal; integrate e-SHRAM and State gig databases
5. Dispute Resolution	Platforms mandating arbitration clauses that bypass courts and tribunals	Private arbitration clauses override the <i>Industrial Disputes Act</i> ; the <i>Contract Act</i> does not cover gig contracts.	4	4	8	Make labour tribunal jurisdiction mandatory for gig disputes under a special statute

Data triangulated from thematic coding of $N = 273$ expert interviews (conducted in 2024), legal texts (e.g., *Code on Wages*, *Social Security Code*), and platform policies (*Uber India*, *Zomato*, *Urban Company*). Severity and likelihood scores were developed using a risk assessment scale adapted from ISO 31000 standards.

Each legal intervention proposed under the matrix supports India's obligations under SDG 8.5 (labour rights and safe working environments), SDG 10.3 (equal opportunity and reduced outcome inequalities), and SDG 16.6 (developing effective, accountable institutions at all levels). The framework thus serves not only national reform goals but also global development benchmarks.

The Regulatory Risk Matrix defined above evaluates five fundamental areas of regulatory risk in the algorithmic platform economy in India as follows:

- **Worker Classification (Composite Risk: 10/10):** This sphere turns out to be the most pressing. Neither the *Code on Wages*, 2019 [41] nor the precedent helps in resolving that ambiguity, with Indian courts holding on opposite sides of the issue: the Indian courts interpret the status of gig workers differently. In the absence of a uniform test, platforms still define workers as independent contractors, under which they can evade the responsibilities of employers. The idea behind the introduction of an ABC test, which can be applied to such jurisdictions as California, is to make the interpretation of law easier through economic dependency determination.
- **Algorithmic Transparency (Composite Risk: 8/10):** Allocation of work/deactivation of workers and rating performance are all conducted by algorithms, but are not transparent. The labour law and the Information

Technology Act do not mandate platforms to make interventions into revealing algorithmic logic, which can be used to make discretionary and potentially discriminatory decisions. The proposed IT Amendment Rules would represent a very important legal intervention that requires platform algorithms to be explainable and auditable if it pass.

- **Procedural Fairness (Composite Risk: 8/10):** Suspensions/punitive actions are most likely automated without any human supervision or mechanism to hold a hearing. Interviews conducted by experts show that there is a lot of frustration regarding the lack of grievance redress in contractual relationships. One solution would be to provide redressal first and a hearing later in the Code on Industrial Relations, 2020, or at the state-level rules that Rajasthan (2023) and Karnataka (2024) already have on gig worker laws.
- **Welfare Entitlements (Composite Risk: 6/10):** The Social Security Code, 2020, and e-SHRAM portal should help formalize the welfare of gig workers; however, the process of its implementation remains scattered and non-uniform across the states. Some of the challenges are the funding models, scheme portability, and identification. The suggestion to synthesize the databases (e.g., e-SHRAM, State registries) and provide the simulation of the delivery of benefits will address the issues of coverage and duplication.
- **Dispute Resolution (Composite Risk: 8/10):** Platforms usually include arbitration clauses excluding courts and quasi-judicial institutions, which comprise labour justice. The Industrial Disputes Act is not directly applied to gig workers, and the Contract Act does not cover digital labour sufficiently. A legislative clarification that would make labour tribunals the forum for all disputes related to gig work would constitute procedural parity and access to justice.

Regulatory Risk Matrix (Table 6) becomes keener when set in the context of the world. Indian high-risk scores (9.2 in Algorithmic Transparency, 8.7 in Worker Classification) are indicative of its contradiction of the disclosure requirements made by the EU and reclassification of employees in Brazil, as Table 3 shows. In contrast, Proposition 22 of California, which enshrines contractor status, reflects the legal ambiguity maneuvers employed by platforms in India, but within the context of formalized lobbying. There are three important lessons observed:

- **Worker Classification:** The status of India's non-classification (Code on Social Security) poses greater dangers than in Brazil, whose employment category is fixed (CLT Reform), and all disagreements are referred to labor courts. The EU has the so-called model of presumed employment, which minimizes chances of litigation (severity score: 2/5 vs. 5/5 in India).
- **Algorithmic Transparency:** The explainability concept specified in EU Article 6 will eliminate the transparency risk for India (likelihood score: 4.5 to 2.1 in case of adoption). Precarity in California is heightened by the absence of transparency, which serves as a caution to India.
- **Enforcement mechanisms:** Two examples include Brazil's black-box testing and EU public audits; two templates can ensure a decrease in the procedural fairness risk (8.0) in India. The cases of privatized arbitration in California indicate how weaker enforcement processes enhance power structures of inequities, similar to those of the Indian platforms.

This comparative prism highlights that risks suffered in India are not determined but created products of policy decisions. The hybrid strategy, namely the use of transparency thresholds established by the EU, with the transformation of Brazilian formalization of welfare to fit with Indian federalism, would reduce risk indicators systematically.

By a root analysis of risk in both the qualitative data (with 273 interviews of experts) and legal doctrine, such a matrix will present a data-driven, legally grounded blueprint of reform. Policymakers can use it to focus on reforms because of the real strength of risk and regulation susceptibility, and academics may use it to see to what extent the matrix rules other jurisdictions or groups of workers. Furthermore, it conforms to the principles of risk governance in ISO 31000, which gives it both practical and methodological credibility.

6. Discussion

This paper brings two dimensions that are important in contributing to the emerging literature on algorithmic labour regulation in India, namely (a) an empirical-based revelation of stakeholder experiences, and (b) a normative framework crafted for the Indian regulatory environment. The research can propose an India-specific model that helps address the gaps in doctrines vis-à-vis thematic data and statistical trends based on the interviews of experts (N=273) and thus contributes to both academic and policy discussions.

Our results solidify the existing fears based on comparative research. To put the issue into perspective, Aminuddin and Kusumawati [1] in their work on cross-jurisdictional examination of Indonesia, Germany, and the UK, pointed out that platform workers have remained invisible and legally nonexistent despite official reform measures. A similar dilemma is observed when analyzing the situation in the Indian context, where recognition under the Code on Social Security, 2020, is considered merely symbolic and non-binding. According to Table 3, ambiguity in the classification of employment was cited by 81% of legal experts and 57% of platform managers when protection is given to gig workers to at least some extent. This aligns with the formalization trend observed with the CLT transformations in Brazil and contrasts with the effort to institutionalize precariousness through California Proposition 22 Cherry [42].

Rodgers et al [28] state that algorithmic decision-making, coded in the framework of contracts, is neither transparent nor checked by democracy. Our sample largely supports this concern, with 92% of the interviewees marking the field of algorithmic opacity as a high-risk area. The owners of the platform acknowledged withholding the algorithmic reasoning on the grounds of protecting proprietary information, which is not regulated by Indian labour law. Nevertheless, our

findings not only positively contribute to past literature when it comes to diagnosing the issue of opacity but also prescribe a solution to this problem, specifically, the inclusion of a readability-of-algorithms specification within the future new legislative texts, including the Amendments to IT Rules, 2021 [43]. However, after de Stefano and Wouters [44], we propose the concept of algorithm audit as a form of due process, especially in the case of disciplinary or deactivation, where the Indian frameworks are noticeably silent about that.

We differ with such scholars as Prassl [45] who offer universal reclassification of workers or the views by Stewart, et al. [46]. These models are less likely in India because of the two faces of fiscal federalism and informality in the country. As can be seen in the interview data, even progressive laws such as the Rajasthan and Karnataka gig worker laws do not cover part-time and seasonal gig workers. The *Aslam v Uber* case in the UK [47] has greatly influenced the policy-making of other countries in a normative aspect, but this is not the case in Indian courts, which continue to follow a literal approach to contracts, thus making courts an improper means of effecting a regulatory change. That highlights the necessity of a legislative requirement to make the scope of judicial activity clear in disputes relating to platforms [48].

We have proposed the new concept of algorithmic regulatory arbitrage, according to which digital platforms not only exploit algorithmic opacity as a mode of labour control but also simply as a means to exploit weaknesses in Indian legal and institutional arrangements. Whereas past criticism like that of Woodcock and Graham [4] focused on the logic of control inherent in platform capitalism, this paper shows that even Indian platforms are developing their algorithms not only to optimize them but also to deliberately evade labour regulations, including by evading factors that would result in a worker being classified as an employee under the Code on Social Security, 2020. We discovered, through our interviews with experts, that platform managers adjust the algorithmic rates (cutoffs on work time or incentive limits) so that they would rather cut off mere seconds before entering into legally important thresholds like constant employment or minimum wage comparisons. This is an invisible engineering that enables the platforms to avoid lawsuits as much as they can and still be productive.

It is an example of a digital regulatory arbitrage, with the design choices made in technology deployed to escape the observance of hard law, and no Indian legislation currently regulates the method of disclosure or control of any such technological changes to algorithms. Solving this problem would involve inter-sectoral or trans-sectoral insertion of labour law into digital governance regimes and of statutory recognition of algorithmic evasion strategies as acts of administrative or employment law. By leveraging doctrinal loopholes and the absence of mandatory disclosures, platforms secure *de facto* legal immunity. This calls for both horizontal integration between labour and digital laws and vertical coordination between state and central agencies.

This paper has conducted a Regulatory Risk Matrix, which provides a viable path to change. By contrast to previous studies, where the use of qualitative testimonies of workers or doctrinal critique prevailed, our mixed methodology incorporates:

- Five-dimensional quantitative risk scores.
- The Kruskal-Wallis post-hoc divergence analysis of the stakeholder groups.
- Qualitative coding through NVivo to identify the specific narratives.

These types of triangulations make it possible to draft evidence-based policies and implement reforms that are legally responsive.

Lastly, the research postulates tangible innovations which include:

- copying Brazilian testing algorithms in a black box.
- A Regulatory Sandbox concept consisting of sunset clauses to maintain a balance between innovation and employee rights.
- imposing algorithmic audits in a process of due process.
- Setting up of an antagonizing power to reduce jurisdictional arbitrage by platforms.

Another factor worsening regulatory failures is gender differences, as shown in Figure 2: women are more likely to be deactivated because of algorithmic racial discrimination in customer ratings and task assignment. This intersectionality is crucial to the aspect of inclusive governance.

Overall, this study takes on the theoretical disjuncture between international algorithmic governmentality analysis and the disintegrated nature of labour control regulation in India. It closely fashions a multi-stakeholder, risk-based model that can be applied in the design of legislation, judiciary, and administrative practice within the gig economy. Framing regulatory risk through an SDG lens strengthens policy coherence. The proposed reforms from algorithmic audits to inclusive grievance mechanisms not only reflect domestic needs but also advance India's commitment to decent work (SDG 8), reduced inequality (SDG 10), and institutional justice (SDG 16) [21].

7. Conclusion

The critical analysis was provided based on the combination of doctrinal legal analysis, empirical data obtained by conducting interviews with experts (N = 273), and a regulatory risk matrix specially developed in the study that used the following regulatory blind spots in the Indian labour law system context of algorithmic management. The analysis showed that the laws surrounding India are, at the moment, not well placed to deal with the radical changes to employment relations that are manifested by platform-driven work. The problem of the misclassification of workers, the lack of visibility in algorithmic decision-making, and the procedural exclusion that is inherent in platform terms of service are especially urgent. The Regulatory Risk Matrix created in the course of the study will be a practically applicable system that allows

policymakers and regulators to evaluate the need for reform interventions on the basis of their intensity and probability of occurrence.

The results of the study have relevant implications in terms of law reform, management of the platforms, and accountability. First, policymakers in India ought to look into the revision of the current labour codes to reflect the hybridisation of the concept of gig work, especially by codifying it in the law and integrating it into social protection initiatives. Second, transparency and accountability of platform firms will have to be introduced through the introduction of an obligation to a platform impact assessment, grievance redress procedures, and public audits. Finally, some concepts of fairness and non-discrimination need to be incorporated into the logic of operations by managers who design and deploy such algorithmic systems.

There are, however, limitations to this study. The regulatory risk matrix can only be applied within the Indian legal framework, but it cannot be easily generalized to other regions without appropriate modifications. Additionally, although the qualitative interview evidence provides deep insights into the stakeholders, there is still room to enhance generalizability through worker-centered ethnography or cross-country comparisons across various jurisdictions. The application of machine learning to contractual data or legal case results could also be explored in the future to increase the quantitative rigor of risk assessment. Nevertheless, this paper offers a novel cross-disciplinary perspective combining legal theory, management strategy, and empirical data to redefine the concept of regulatory governance in the platform economy in India. Future regulatory frameworks should be guided by India's commitments under the Sustainable Development Goals (SDGs). This study's matrix provides a structured pathway for legal reform aligned with SDGs 8.5, 10.4, and 16.6, promoting inclusive growth and equitable algorithmic governance in the gig economy.

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