Promises and Paradoxes of Migration in the Digital Age: A Review of Evidence from India and Southeast Asia*

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Abstract

Digital identity frameworks are central to contemporary governance systems, but they carry both potential benefits and risks for migrants. This paper examines how digital governance initiatives are reshaping the management, rights, and everyday lives of migrant populations across India and selected Southeast Asian nations. Building on recent conceptual work on "Digital Migration" and region-specific policy analyses, the study maps convergences and divergences across three policy domains: identity and registration systems, labour market interfaces (recruitment, contracts of workers), and cross-border data governance and protection. The central argument is that digitalisation, while promising administrative efficiency and service access, simultaneously produces layered outcomes: it extends state capacity to manage mobility, creates novel forms of inclusion, and produces new exclusions and vulnerabilities where infrastructure, legal safeguards, and power asymmetries are weak or contested. Methodologically, the paper synthesises evidence from peer-reviewed studies, policy reports, and institutional white papers within a Comparative Mixed Model Framework grounded in Most Similar Systems Design (MSSD). The paper concludes with policy recommendations aimed at reconciling efficiency with rights protection across the region.

Keywords: *Digital Governance, Workers Migration, Biometric Identity, Southeast Asia, Surveillance, Welfare.*

1. Introduction

Migration as we understand is a quintessential feature of human history and has been responsible for shaping societies, economies, and cultures across the globe. It is an elaborate and intricate event that embodies the movement of individuals or groups from one place to another, driven by many factors. Migration represents a global social as well as economic phenomenon with direct effects, both on destination and origin countries. There is no universal definition for the term "migration" as it is a result of many factors, reasons, and causes. By and large, it represents the flow or movement of people outside the country of their origin or birth. Since there are no fixed criteria for defining migration, its effects and types also differ from one country to another. (De Haas, H., Castles, S., & Miller, M. J.,2019). Therefore, this unpredictability comes as a challenge in classifying different types of migration due to their overlapping nature or domain. In the same analysis we have also to understand that in the last twenty years or so, migration has also been seriously impacted by the dissemination of technology.

In the recent period it has been observed that the emergence of "Digital Governance" marks a transformative shift in the way modern states conceptualize authority, administration, and citizen engagement. In the Twenty-First century, Governance is increasingly mediated through Digital Infrastructures, Algorithmic Systems, and Data driven Decision-making processes. This shift reflects broader trends associated with the "Digital State," wherein governance is reconstituted through data infrastructures, algorithmic decision making, and platform based service delivery. In migration contexts, Digitalisation is often justified through narratives of efficiency, transparency, and inclusion. Governments argue that digital systems reduce fraud, streamline service delivery, and expand access to welfare and labour protections. However, these promises coexist with significant paradoxes. Digital systems also intensify surveillance, reinforce asymmetrical power relations, and create new forms of exclusion. Migrants, particularly low-skilled workers are often subject to heightened forms of digital monitoring while lacking meaningful control over their data or mobility. This paper addresses a central question: **How does Digital Governance reshape migration in ways that simultaneously expand state capacity and produce new forms of inequality?**

The transformations in the day to day Governance that have been introduced specifically over the last two decades with the advent of internet based technological evolutions, collectively glossed as "Digital Governance", have attracted growing scholarly attention, yet the field remains fragmented: studies tend to focus either on specific technologies or on particular migrant communities, leaving the broader ecosystem of digital migration governance under analysed. This paper addresses that gap by offering a comparative, integrative analysis of how digital governance instruments are reshaping migration across two analytically distinct but empirically connected regional contexts: India as a major migrant-sending state, and selected Southeast Asian nations most notably Singapore and Malaysia as migrant-receiving states with distinct employer-linked digital labour governance architectures. The study is organised around three policy domains that together constitute the digital migration governance ecosystem:

(1) Identity and Registration systems; (2) Labour market interfaces covering the recruitment, contracts, and (3) Cross-border Data Governance and Protection frameworks. **The central argument of this paper is that Digitalisation is not a "Neutral Administrative Reform". Rather, it produces layered and sometimes contradictory outcomes simultaneously**: extending state capacity to manage mobility, creating new forms of inclusion through service access and record portability, and generating novel exclusions and vulnerabilities wherever digital infrastructure is uneven, legal safeguards are absent or unenforced, and power asymmetries between migrants, employers, and states remain pronounced. These paradoxes the coexistence of promises and perils within the same technological frameworks are the analytical core of this study.

The paper proceeds as follows. **Section 2 situates the study within the existing literature on digital governance and migration, introducing the conceptual vocabulary of "Digital Migration" and identifying the principal research gaps this paper addresses. Section 3 describes the methodological framework: a Comparative Mixed Model based on Most Similar Systems Design (MSSD) that integrates qualitative institutional analysis with quantitative data examination. Sections 4, 5, and 6 present the three core empirical domains. Section 7 synthesises cross-cutting findings and develops a comparative typology of digital governance instruments and their outcomes. Section 8 presents policy recommendations, and Section 9 reflects the limitations that have been recognised while the last Section 10 offers conclusions.**

2. Existing Literature and the Gap within them

2.1 Conceptualising Digital Governance and Migration

The growing intersection between Digital Governance and Migration has generated a substantial body of scholarship that reconceptualizes migration regulation as increasingly mediated by digital infrastructures. Within "Migration Governance Theories", migration is understood as a structured regulatory domain shaped by state sovereignty, labour market demands, and institutional constraints (Betts, 2011; Hollifield & Foley, 2022). In the Southeast Asian context, this regulatory landscape is characterized by state-centric governance, fragmented regional coordination, and a heavy reliance on temporary labour migration regimes (Yeoh, 2017; Kaur, 2018; Chee, 2015). These studies collectively demonstrate that Migration Governance in the region is not primarily rights-based but oriented toward economic management and labour control. **The integration of**

Digital Technologies into these systems must therefore be interpreted not as a transformative break but as an extension of pre-existing governance logics.

Digital Governance scholarship provides the institutional lens necessary to understand this transformation. The concept of "Digital era Governance" emphasizes the consolidation of administrative functions through integrated information systems, enabling states to centralize data, streamline service delivery, and enhance monitoring capacities (Dunleavy et al., 2006). In Asia-Pacific contexts, this transformation has been particularly pronounced, with governments adopting digital identity systems, interoperable databases, and platform-based service architectures. Regional policy analyses highlight that digital government initiatives are increasingly framed as tools for inclusive development and administrative efficiency (UN ESCAP, 2022; World Bank, 2022). However, these same analyses also underscore structural constraints, including uneven digital infrastructure, limited interoperability, and regulatory fragmentation, which complicate the realization of inclusive outcomes. For migrant populations, these constraints are especially significant, as their mobility often places them at the margins of national administrative systems. Another strand of literature examines the intersection of digital identity systems and migration governance, focusing specifically on how biometric and digital identity credentials shape the administrative inclusion or exclusion of migrant populations (Gelb & Clark, 2013; Atick, 2016; Breckenridge, 2014). This strand is particularly relevant to the South and Southeast Asian context, where large-scale digital identity programmes have been rolled out in parallel with increasing cross-border labour mobility.

Leurs (2022) argues that digital migration involves the production of "Datafied Migrant Identities", where access to rights and services is mediated through digital systems. In Southeast Asia, this dynamic is evident in the proliferation of employer-linked digital labour management platforms, such as Singapore's work-pass systems, which integrate biometric data, employment records, and immigration status into centralized databases. These systems exemplify how digital governance enhances state capacity while simultaneously embedding migrants within tightly controlled institutional frameworks. Importantly, they also reveal how digital governance reinforces dependency relations by linking migrants' legal status to employers through technologically mediated systems.

Surveillance studies provide a critical perspective on these developments by highlighting the power asymmetries embedded in digital governance. Lyon (2007) conceptualizes modern governance as increasingly reliant on surveillance mechanisms that categorize and manage populations through data. In migration contexts, digital identity systems and labour management platforms facilitate what Lyon describes as "social sorting," enabling states to classify migrants according to risk, skill level, and legal status. This is particularly evident in Southeast Asian migration regimes, where digital platforms are used to monitor compliance, track mobility, and enforce contractual obligations. While such systems improve administrative efficiency, they also raise concerns about autonomy, privacy, and the potential for exploitation, especially in contexts where migrants have limited legal protections.

James C. Scott's *Seeing Like a State* offers a foundational critique of modern statecraft by demonstrating how states seek to render complex social realities "legible" through simplification, categorization, and standardization. Scott's concept of "High-modernist Ideology" underscores the belief that scientific rationality and centralized planning can optimize social order and economic productivity. However, such projects often fail because they disregard local knowledge, embedded in everyday practices and social relations. Complementing this structural critique, Rob Kitchin's *The Ethics of Smart Cities* foregrounds the normative and ethical dilemmas inherent in data-driven urbanism. Kitchin argues that smart cities are often framed as inherently progressive, promising enhanced efficiency, sustainability, and quality of life. However, he cautions that these benefits are unevenly distributed and frequently accompanied by significant risks, including pervasive surveillance, erosion of privacy, opaque algorithmic decision-making, and the commodification of citizen data. Importantly, Kitchin highlights the emergence of "Technocratic Governance", where decision-making authority is increasingly delegated to data analytics and algorithmic systems, potentially undermining democratic accountability and public participation.

The normative dimensions of digital governance are further explored through literature on data governance and privacy. Solove (2021) argues that privacy concerns in digital systems extend beyond individual data breaches to encompass broader issues of data aggregation, surveillance, and institutional power. For migrants, these concerns are amplified by their precarious legal status and limited access to legal recourse. International frameworks, such as those developed by the International Organization for Migration (2023, 2025), advocate for rights-based approaches to digital identity and data governance, emphasizing principles of consent, accountability, and data minimization. However, the implementation of these principles varies significantly across Southeast Asia, reflecting broader disparities in legal and institutional capacity. This unevenness reinforces the argument that digital governance outcomes are contingent not only on technological design but also on the broader regulatory environment.

2.2 Analysis of Specific Policies in India and South East Asian Nations

India's Digital Infrastructure consists of multiple architectures. The most significant of them is the Aadhaar System which is considered the world's largest biometric identity database, encompassing over 1.3 billion enrolled individuals has been extensively studied as both an achievement of administrative modernisation but also as an apparatus infringing upon rights concerns (Ramakumar, 2018; Khera, 2019; Datta, 2023). Aadhaar's integration with welfare delivery systems has improved access for some beneficiaries while creating "exclusion errors" for others, particularly among marginalised populations including internal migrants who move between states and may lack the documentation required for enrolment or re-linking (Muralidharan et al., 2016; Jean Dreze et al., 2017). While Aadhar is a universal identification system, The Indian Government has also introduced the eMigrate system, introduced by India's Ministry of External Affairs to regulate the emigration of low-skilled workers to Emigration Check Required (ECR) countries, represents a distinct application of digital governance to international labour migration. eMigrate mandates that recruitment agents, foreign employers, and insurance providers register on a centralised digital platform before workers can legally emigrate. Studies of eMigrate have identified both genuine improvements in pre-departure transparency and persistent implementation gaps, including informal labour recruitment channels that circumvent the system entirely (Rajan & Joseph, 2020; Khadria, 2019).

On the other hand South East Asian Nations like Singapore and Malaysia have developed distinct but comparable digital labour governance architectures that primarily regulate migrant workers through employer-linked digital systems. Singapore's Work Pass integrated systems which is administered through the Ministry of Manpower, tie a migrant worker's legal status to their employer, creating structural dependencies that scholars have linked to vulnerabilities including wage theft, passport confiscation, and restricted freedom of movement (Huang & Yeoh, 2003; Loh et al., 2023). Malaysia's Foreign Workers Centralised Management System (FWCMS) similarly digitises the recruitment, deployment, and monitoring of migrant workers but has been criticised for consolidating recruitment power in the hands of approved agencies with documented records of exploitation (Kaur, 2008; Wickramasekara, 2016). Empirical and policy-oriented literature further illustrates how digital governance operates in practice across the region. National systems such as Malaysia's foreign worker management platforms and Singapore's digital work-pass systems demonstrate the increasing reliance on digital tools to regulate migrant labour. These systems align with broader regional trends identified in policy reports, which emphasize efficiency, transparency, and administrative integration as key objectives of digital transformation (World Bank, 2022; UN ESCAP, 2022). However, they also highlight the persistence of employer-centric governance models, where digital technologies reinforce hierarchical labour relations rather than promoting migrant autonomy. In this sense, digital governance can be understood as both a tool of modernization and a mechanism of control, reflecting the dual imperatives of economic efficiency and political regulation. Taken together, this body of literature suggests that digital migration governance in Southeast Asia operates as a hybrid system that combines technological innovation with entrenched institutional and political structures. While digital tools offer significant potential for improving administrative efficiency and service delivery, their impact on migrant inclusion and rights remains uneven. The literature consistently points to a central tension between the promise of digital inclusion and the reality of exclusion, where access to digital systems is shaped by legal status, digital literacy, and infrastructural constraints.

Despite these advances**, Important Gaps** remain. **First, there is a lack of systematic comparative research that examines digital migration governance across both sending and receiving states, particularly between India and Southeast Asia thus causing exclusion of how different regulatory models produce different outcomes for similar migrant populations. Second, existing studies tend to focus on individual technologies or national contexts, limiting the development of integrated frameworks that capture the full ecosystem of digital governance. Thirdly, the normative implications of data governance and privacy in migration contexts remain underexplored, especially in relation to transnational data flows and emerging regulatory frameworks, and Finally the three governance domains examined in this paper Identity Systems, Labour Market Interfaces, and Data Governance are mostly studied in isolation rather than as components of an interconnected ecosystem.** This paper seeks to address some of the gaps through its integrative comparative methodology.

3 Methodology : Comparative Mixed Model Framework

The Comparative Mixed Model Framework (CMMF) is not a single method but a systematic integration of multiple methodological traditions: Comparative Politics specifically the Most Similar Systems Design, Qualitative Institutional Analysis, Quantitative Data Examination, and Mixed-Methods Research Logic. Its architecture is designed to address a common challenge in comparative migration research: the need to capture both the structural determinants of governance outcomes which require macro-level comparison and the lived, experienced, and contested nature of those outcomes which often require closer, contextually sensitive analysis. The CMMF adopts a mixed methods logic that incorporates the systematic combination of qualitative and quantitative research which is grounded in the principle of complementarity (Greene, Caracelli & Graham, 1989). Complementarity holds that different methods illuminate different dimensions of the same phenomenon; their combination produces a more complete picture than either could provide alone. This is distinct from both the triangulation logic i.e using multiple methods to verify the same finding and the expansion logic using different methods to study different components of a research question. In the CMMF, qualitative institutional analysis illuminates the mechanisms, processes, and contextual conditions through which digital governance produces particular outcomes for migrants, while quantitative data examination maps the scale, distribution, and cross-case variation of those outcomes. Neither strand is subordinate to the other; they are integrated at the level of interpretation.

In our case we know that the "N" that is the Number of Units for analysis is just 3 which include India, Singapore and Malaysia. The available literature on Comparative Methodology tell us that Large-N statistical comparison across many cases maximises generalisability but sacrifices the contextual richness needed to understand how and why particular governance configurations produce particular outcomes. Single-case ethnographic or historical research achieves depth but cannot support comparative inference. Small-N comparative analysis, of the kind employed in the CMMF, occupies a deliberate middle position: it studies enough cases to enable genuine comparison while retaining sufficient depth to analyse mechanisms and context. The theoretical foundations of small-N comparative methodology in political science are associated primarily with the seminal work of Przeworski and Teune (1970), who systematised the distinction between two comparative strategies: the Most Similar Systems Design (MSSD) and the Most Different Systems Design (MDSD). In this Research Paper, The Most Similar Systems Design (MSSD) has been used as it selects cases that are similar on as many background characteristics as possible, in order to isolate the effect of the specific variables that differ across cases. The logic parallels the experimental method's use of control groups: by holding background conditions constant through selection, the researcher attempts to ensure that observed differences in outcomes can be attributed to the differences in the key independent variables rather than to background variation. As already mentioned in our case, the CMMF selects India, Singapore, and Malaysia as the primary comparative cases. This selection is analytically motivated by the identification of four structural similarities that justify treating these cases as members of the same comparative family, alongside three key differences that constitute the independent variables of interest.

The four structural similarities across cases are:

Postcolonial governance histories: All three cases are former British colonies whose administrative architectures including civil service structures, legal frameworks, and approaches to population registration and identification that were shaped by colonial governance legacies. This shared institutional inheritance means that observed differences in contemporary digital governance arrangements cannot straightforwardly be attributed to fundamentally different administrative traditions.

Expanding digital infrastructure: All three cases have experienced rapid expansion of digital infrastructure including mobile connectivity, internet penetration, digital payment systems, and government digital service platforms in the period under study (approximately 2010–2024). This shared context means that observed differences in digital governance outcomes are not attributable to simply having or lacking digital infrastructure.

Significant migrant populations: All three cases have substantial populations involved in international labour migration, whether as migrants themselves (India's 18+ million strong diaspora), while as major receiving states like Singapore's approximately 40% non-citizen resident population and Malaysia's estimated 3–5 million migrant workers. This shared characteristic ensures that the governance of migration is a politically and administratively salient issue in all cases.

Regional embeddedness: All three cases are embedded in the South and Southeast Asian regional migration system, participating in common bilateral and multilateral governance frameworks including the Colombo Process, ASEAN instruments on labour mobility, and bilateral Labour Sending Agreements. This shared regional context controls for the effect of regional geopolitical dynamics on governance outcomes.

The Major Differences across the three Case Studies which can be used to research based on the Independent Variables include :

Data Sources :- The methodological approach integrates qualitative and quantitative evidence. The qualitative dimension involves systematic analysis of: (1) government policy documents, legislative frameworks, and institutional reports from India's Ministry of External Affairs, Singapore's Ministry of Manpower, Malaysia's Ministry of Home Affairs, and regional bodies including ASEAN and the Colombo Process; (2) reports from international organisations including the International Labour Organization (ILO), the International Organization for Migration (IOM), and the United Nations High Commissioner for Refugees (UNHCR); and (3) peer-reviewed academic literature, identified through systematic searches of databases including Scopus, Web of Science, and Google Scholar using search terms combining "digital governance", "migration", "biometric identity", and country-specific terminology. The quantitative dimension draws on publicly available datasets including World Bank remittance flow data, ILO labour migration statistics, GSMA mobile connectivity data, and country-level digital identity coverage figures. These data are used descriptively and comparatively rather than inferentially, to contextualise the qualitative institutional analysis. The limitations of this approach should be acknowledged as well that is the study does not include original ethnographic or interview-based data from migrant workers, relying instead on secondary accounts of lived experience documented in existing studies and reports

Integration of Qualitative and Quantitative Data -- In the Comparative Mixed Model Framework, the most technically demanding aspect of the research is not the conduct of individual qualitative or quantitative strands but their integration that is the combination of different types of evidence into coherent analytical conclusions. Creswell and Clark (2017) identify three primary integration strategies: convergent integration (combining findings from independent qualitative and quantitative analyses); sequential integration (using one strand to inform the design of the other); and embedded integration (nesting one strand within the design of the other). The CMMF employs a primarily convergent integration strategy with sequential elements. In our case, the integration of qualitative and quantitative findings is organised through an analytical framework called **the Digital Governance Outcome Matrix (DGOM)**. The DGOM assesses each digital governance instrument across four dimensions which includes :-

Access- Does the instrument extend or restrict migrants' access to services, rights, and legal status?

Agency- Does the instrument enhance or diminish migrants' capacity to make autonomous choices about their work, movement, and data?

Accountability- Does the instrument create mechanisms through which states, employers, and digital platforms can be held accountable to migrants?

Asymmetry- Does the instrument reproduce, reduce, or intensify power asymmetries between migrants, employers, and states?

4. Domain One : Digital Identity and Registration System

The scholarly literature on identity and migration governance has long recognised that the question of who gets documented — and on whose terms — is fundamentally a question of power (Torpey, 2000; Caplan & Torpey, 2001). Documentation systems create differential populations: those whose identity is recognised by the state and who can therefore access rights, services, and legal status, and those whose identity is not recognised or is recognised only in degraded or conditional forms. Historically, migrants particularly low-skilled labour migrants have been among the populations most likely to experience the negative pole of this distinction, either lacking documentation entirely or holding documentation that marks them as subject to exceptional rather than ordinary state power (Walters, 2006; De Genova, 2002). The advent of digital and biometric identity systems has introduced new complexity into this longstanding dynamic. Scholars working at the intersection of migration studies and surveillance studies have identified what Aas (2011) terms 'Crimmigration' , the convergence of criminal justice and immigration enforcement through shared digital databases show one dimension of this complexity. Ajana (2013) has theorised biometric governance as a mode of 'bio-bordering' in which the body itself becomes the site of bordering practices, carrying within it the marks of institutional recognition or exclusion. More recently, Beduschi (2021) has extended this analysis to the specific context of artificial intelligence and algorithmic decision-making in migration management, arguing that digitalisation intensifies both the individualisation of migration governance (each migrant is assessed through their individual digital profile) and its opacity (the criteria and processes of assessment become increasingly inaccessible to migrants and their advocates).

For the purposes of this analysis, three analytical distinctions drawn from this theoretical literature are particularly productive. First, the distinction between “Identity as recognition” that includes the positive dimension of documentation, through which individuals gain access to rights and services and “Identity as surveillance” consisting the monitoring dimension, through which states gain persistent knowledge of individual locations, movements, and transactions (Lyon, 2009; van der Ploeg, 2012). Second, the distinction between “Universal identity systems” which aim to document all members of a polity on equal terms and “Differentiated identity systems” which create distinct categories of documentation for different populations, with different associated rights and restrictions (Breckenridge, 2014). Third, the distinction between “Portable identity”, the credentials that migrants can carry across employers, states, or national borders and “Tethered identity”, credentials that are bound to a particular employment relationship, geographic location, or institutional sponsor, and that expire or become invalid when that relationship changes (Gelb & Clark, 2013; IOM, 2021). These distinctions structure the comparative analysis that follows.

India and its multiple Digital Tool creating “Layered Digital Identity”-

India's Unique Identification Authority of India (UIDAI), established under the Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act 2016, administers what is by any measure a remarkable institutional achievement: a biometric identity database encompassing over 99% of India's adult population, linked through the Direct Benefit Transfer (DBT) mechanism to an expanding portfolio of government welfare schemes, financial services, and administrative processes (UIDAI, 2023). The normative ambition of Aadhaar which was articulated explicitly in the founding documentation and subsequent government communications is precisely that of universal recognition: a single, portable identity credential, grounded in biometric distinctiveness rather than documentary history, that would enable even the most marginalised and mobile members of Indian society to establish their identity and access the services to which they are entitled. But multiple scholars through their field work and systemic analysis have shown that the failure of achieving its targeted Goals are not just incidental implementation defects that could be resolved through better management. But rather they are, as Khera (2019) and Ramakumar (2018) have argued more broadly about Aadhaar-linked welfare exclusions, structurally produced by the design choices embedded in the system: the privileging of biometric authentication over alternative verification modes; the dependence on internet connectivity that is unevenly distributed across geography and income; and the construction of portability as a feature that requires migrants to actively navigate a complex bureaucratic system rather than as a default entitlement. These design choices reflect, in turn, a conception of the welfare recipient as a sedentary, digitally capable, and formally documented individual a conception that maps poorly onto the actual characteristics of India's most mobile and marginalised migrant populations.

On the other hand, If Aadhaar represents India's approach to the identity dimension of internal migration governance, the eMigrate system that is administered by the Ministry of External Affairs' (MEA) represents its approach to the governance of international labour migration, specifically for workers emigrating to **Emigration Check Required (ECR)** countries in the Gulf Cooperation Council, Southeast Asia, and elsewhere. Introduced in its current digital form in 2015, eMigrate mandates that foreign employers, recruitment agencies, and insurance providers register on a centralised digital platform before Indian workers in manual or low-skilled occupations can receive emigration clearance. The system is designed to create a documented, verifiable chain of authorisation from the overseas employer through the registered recruitment agent to the individual worker, with the MEA able to verify at each link that regulatory requirements have been met. The eMigrate system represents a genuine advance over the pre-digital registration regime in several respects. It creates a searchable record of employment offers, insurance documentation, and recruitment agent registration that is accessible to government officials, enabling a degree of post-hoc accountability that paper records did not permit. The Electronic Overseas Worker Contract (e-Contract) facility, which allows workers and employers to sign contracts digitally with MEA verification, has in principle reduced the frequency of contract substitution that is the practice by which workers are presented with different, less favourable contracts upon arrival in destination countries than those they were shown before departure (Rajan & Joseph, 2020; Khadria, 2019).

However, multiple empirical assessments have identified persistent structural weaknesses in the eMigrate architecture. First and most significantly, the system's reach is confined to the formal recruitment channel: workers who migrate through informal networks which remain substantial, particularly for migration to Gulf states with large established Indian diaspora communities are not captured by eMigrate's documentation requirements (Rajan & Joseph, 2020). Second, the verification capacity of Indian diplomatic missions abroad which are nominally responsible for validating employer declarations submitted through eMigrate is widely acknowledged to be insufficient relative to the volume of emigration clearances processed. Embassy Labour Welfare Officers (LWOs) responsible for destination countries with populations of hundreds of thousands of Indian workers are often severely under-resourced for meaningful verification (Ministry of External Affairs, 2021; MOIA, 2019). Third, the system covers only workers in ECR categories those requiring emigration clearance and thus excludes the growing population of skilled and semi-skilled Indian workers who migrate on tourist or business visas and subsequently transition to work visas, a pathway that circumvents eMigrate's protections entirely. The combined effect of these limitations is that eMigrate functions, in practice, less as a comprehensive protective governance mechanism and more as a documentation system for a particular segment of formal labour migration. Its protections are unevenly distributed precisely along the lines of existing vulnerability: the workers most at risk of exploitation especially those using informal channels, those in unverified employment, those transitioning visa status are the least likely to be captured within its framework.

Singapore and its Employer tied Identity Architecture-

Singapore's management of migrant worker identity operates through a fundamentally different institutional logic from India's universal biometric model. Rather than extending a common identity credential to all residents on equal terms, Singapore's Work Pass system creates a stratified hierarchy of identity documents that simultaneously confers legal status and defines the scope of rights, restrictions, and administrative surveillance to which their holders are subject. The three primary categories : the **Employment Pass (EP)** for professionals and managers, the **S Pass** for mid-level skilled workers, and the **Work Permit** for lower-skilled workers in designated sectors including construction, manufacturing, marine and process industries, and domestic service are not merely administrative classifications. They constitute what Yeoh (2006) has termed 'Bifurcated' or, more precisely, multi-layered incorporation: a system in which migrants are formally included within the state's governing jurisdiction while being systematically excluded from the political community and many of the social entitlements that membership in that community would confer. The digital dimension of this system the online **Work Pass Integrated System (WPIS)** administered by the Ministry of Manpower (MOM) extends this stratified logic into the digital infrastructure of identity management. Every Work Permit holder is registered in the WPIS with a profile that links their identity, employment status, employer registration, medical screening records, foreign worker levy payment status, and accommodation details. This comprehensive digital profile constitutes a form of identity that is radically different from a universal identity credential: it is contingent, conditional, and employer-mediated. A Work Permit is not an identity document that a worker possesses independently and brings to an employment relationship; it is an administrative artefact of the employment relationship itself, which expires, lapses, or is cancelled when that relationship ends.

While studying Migration Studies, we come across the concept of 'Structural Vulnerability' developed by Strauss and McGrath (2017) and building on earlier work by Schierup, Hansen and Castles (2006), refers to a condition in which vulnerability to exploitation is produced not by individual characteristics or choices but by the institutional architecture within which migrants are embedded. Singapore's employer-tied pass system is a paradigmatic case of institutionally produced structural vulnerability: the design of the system itself independently of the intentions of any particular employer creates conditions in which workers have strong incentives to tolerate sub-standard conditions, since the alternative (losing their pass and their legal status simultaneously) is sufficiently severe to deter complaint, even where complaint mechanisms formally exist. The digitalisation of this system has added new dimensions to this structural vulnerability without resolving its institutional foundations. On one hand, digital processes have in some respects increased administrative transparency: online salary crediting requirements introduced in 2016 for Work Permit holders in the construction sector, and subsequently extended to other sectors, create a digital record of wage payments that can in principle be accessed by MOM in the event of a wage dispute. On the other hand, the same digitalisation has created new vectors of vulnerability. The concentration of worker data employment history, medical records, levy status, accommodation in a single employer-accessible database creates informational asymmetries that advantage employers in dispute situations. Workers who dispute their employer's account of an employment relationship face the challenge of contesting a digital record in which the employer's documentation is often more comprehensive and formally structured than the worker's own records (Loh et al., 2023). A further dimension of structural vulnerability produced by the employer-tied digital identity system is what might be termed 'administrative immobility': the difficulty workers face in changing employers even when they experience abuse, non-payment of wages, or other serious violations of their employment terms. While MOM's regulations nominally permit workers to change employers in specified circumstances, the administrative process requires employer cooperation or MOM mediation both of which are contingent on the worker's willingness to formally complain, which itself carries risks of employer retaliation, including cancellation of the work pass before a new employer has been secured (Huang & Yeoh, 2003; Piper, 2005). Digital registration does not resolve this structural catch-22 situation.

It is important to note that the structural vulnerabilities described above are not uniformly distributed across Singapore's Work Pass hierarchy. Employment Pass holders who are predominantly high-skilled professionals in financial services, information technology, and management experience a qualitatively different digital identity regime from Work Permit holders. Their pass is less tightly tied to a specific employer (they retain a period of legal stay to seek new employment following retrenchment), their data is less comprehensively monitored, their accommodation is not subject to sector-specific restrictions, and their access to dispute resolution mechanisms is both formally and practically superior. The digital identity system, in other words, does not merely reflect pre-existing inequalities between migrant categories; it actively reproduces and institutionalises them through differential design. This internal differentiation within Singapore's pass system has been analysed by Tan (2015) and Yeoh (2006) as a form of 'Managed Diversity' that serves both labour market and social control functions: it recruits the human capital that Singapore's economy requires from across the skill spectrum while maintaining clear administrative distinctions that prevent the convergence of different migrant categories into a homogeneous politically mobilizable constituency. The digitalisation of this system extends its administrative precision and enforcement capacity without fundamentally altering its distributional logic.

Malaysia: Informality, Regulated Intermediaries and Digital Governance-

Malaysia's approach to digital migration governance is shaped fundamentally by a structural feature that distinguishes it from Singapore: the large-scale and persistent presence of irregular migration alongside formal labour migration channels. Estimates of Malaysia's irregular migrant population vary widely from 1.2 million to over 2 million, depending on methodology and definitions but there is broad consensus that irregular migrants represent a substantial proportion, possibly approaching half, of the total migrant worker population (ILO, 2022; US Department of State, 2023). This structural feature has profound implications for the effectiveness of digital governance: a system designed to regulate formal labour migration can only govern those migrants who participate in formal channels, and the incentive structures facing both employers and workers frequently favour informality over formal registration. The **Foreign Workers Centralised Management System (FWCMS**), Malaysia's primary digital platform for the registration and management of foreign workers, was designed to address precisely this problem: by creating a centralised digital registry linking employer registration, worker documentation, visa processing, and levy payment, it aimed to bring recruitment and employment practices into a formally governed digital space that would be both more transparent and more enforceable than the pre-existing paper-based system The critical scholarly literature on Malaysia's digital migration governance has focused particularly on the market structure of the approved recruitment agency system the intermediary layer between employers seeking migrant workers and workers seeking employment that FWCMS both regulates and, critics argue, entrenches (Kaur, 2008; Wickramasekara, 2016). The requirement that employers recruit through FWCMS-registered agencies, combined with restrictions on the number of approved agencies and the fees they may charge, has in practice created an oligopolistic market structure in which a small number of approved agencies particularly those with political connections exercise disproportionate market power. This market structure generates conditions conducive to excessive fee-charging, inflated recruitment costs, and debt bondage, as workers particularly those from Indonesia, Bangladesh, Nepal, and Myanmar borrow heavily to pay recruitment fees and are then unable to exercise exit options because leaving their employment before repaying these debts would deepen their financial distress (US Department of State, 2023; ILO, 2022).

The digitalisation of this system through FWCMS has not resolved these market structure problems and may have intensified them in certain respects. Digital registration requirements create barriers to entry that favour established, FWCMS-registered agencies over smaller or newer entrants, reinforcing incumbent advantages. The concentration of recruitment through a small number of digital intermediaries creates opacity rather than transparency: it is more difficult, not less, for individual workers or civil society organisations to trace the flow of recruitment fees through digitised multi-party transactions than through direct bilateral relationships. And the formal documentation generated by FWCMS including contracts, receipts, levy payments can be used by employers and agencies to present a veneer of regulatory compliance that masks underlying exploitative practices (Fernandez, 2014). This is not to argue that FWCMS's digital architecture is without value: the creation of a centralised worker registry does provide a basis for enforcement action in cases of egregious violations, and electronic salary transfer requirements introduced in recent years have made wage theft somewhat more detectable. But the overall picture that emerges from the empirical literature is of a digital governance system whose design has been captured by the interests of those it nominally regulates a dynamic that political scientists have theorised as regulatory capture (Stigler, 1971) and that is particularly likely in contexts where regulated industries have concentrated political connections and workers have limited voice.

Thus, the comparative analysis of digital identity governance across India, Singapore, and Malaysia reveals a common paradox that takes different institutional forms across the three cases. In each case, the digitalisation of identity governance extends state capacity to document, classify, and monitor migrant populations a genuine administrative achievement that creates the conditions for improved accountability and service delivery. And in each case, the realisation of this potential is systematically incomplete in ways that disproportionately affect the most vulnerable migrant populations: India's Aadhaar-linked welfare portability fails precisely for the least formally documented and most mobile workers; Singapore's digital pass system produces structural vulnerability that is most acute for Work Permit holders in low-wage sectors; and Malaysia's FWCMS creates regulatory structures that favour formally registered intermediaries over the workers they nominally serve. This pattern suggests that the paradox of digital identity governance for migrants is not primarily a technical problem that is a matter of implementation defects that could be resolved through better engineering or more resources but rather a political one. Digital systems are designed by and for particular interests within governance fields; the interests of migrant workers, who are systematically underrepresented in policy design processes, tend to be subordinated to those of states which prioritise control and employers which prioritise labour market flexibility and cost minimisation. The theoretical contribution of this analysis is to connect the micro-level observation of individual system failures to this macro-level claim about the political economy of digital governance design.

5. Domain Two : Digital Labour Market Interfaces

The labour market interfaces through which migrants are recruited, contracted, and paid constitute a second critical domain of digital governance, and one in which the consequences of digital transformation are perhaps most immediately material in their impact on migrant workers' economic security and rights. Our first criteria of analysis is recruitment through Digital Channels. The theoretical case for digital recruitment platforms as a mechanism for improving migrant worker outcomes rests on information economics. Classical migration scholarship has long recognised that information asymmetries between workers and employers, between sending and receiving country labour markets, and between migrants and recruitment intermediaries are a primary source of migrant worker vulnerability (Piore, 1979; Stark & Bloom, 1985). Employers know more about actual working conditions than they disclose to prospective recruits; recruitment agents know more about the terms they have negotiated with employers than they reveal to workers; and workers in sending countries have limited access to information about destination labour markets that might allow them to evaluate job offers independently. Digital platforms, their proponents argue, can reduce these asymmetries by creating searchable, comparable, and independently verifiable information about job offers, employer records, and recruitment agent histories. The empirical record of digital recruitment platforms in the South and Southeast Asian migration context provides only partial support for the transparency thesis. Several interacting factors limit the effectiveness of digital platforms in reducing information asymmetries in practice.

First, platform design and governance structures matter as much as the fact of digitalisation. Government-sponsored platforms such as eMigrate are designed primarily to ensure regulatory compliance that employers are registered, that insurance is in place, that contracts meet minimum standards rather than to provide workers with the comparative, peer-reviewed information that might genuinely reduce information asymmetries. The information accessible through eMigrate is largely binary like employers are registered or they are not rather than evaluative like this employer has a good or poor record of meeting contract terms. Second, the digitalisation of formal recruitment channels has not displaced informal recruitment but has instead produced a dual-track system in which formal and informal channels coexist. Workers who use informal channels often because they lack the documentation required for formal registration, or because informal brokers offer faster placement or lower upfront costs operate entirely outside the information environment of digital platforms, with no access to the protections those platforms nominally provide. This dual-track dynamic is particularly pronounced in Malaysia, where the scale of informal and irregular migration means that a substantial proportion of workers arrive and work through channels entirely disconnected from FWCMS or any other formal digital governance mechanism (ILO, 2022). Third, the expansion of private digital recruitment platforms ranging from global professional networking platforms to sector-specific apps targeting domestic workers, construction workers, and care workers has created new forms of intermediation that are effectively ungoverned in all three jurisdictions. These platforms extract significant data value from migrants: location data, employment history, skills profiles, and in some cases financial information are collected and may be monetised through data sales, targeted advertising, or sale to third parties including employers and government agencies. Workers using these platforms typically have limited awareness of how their data is being used and no effective mechanism to control or contest that use (Taylor & Meissner, 2023; Beduschi, 2021). The governance gap between formally regulated recruitment channels and the rapidly expanding private platform ecosystem represents one of the most significant and under addressed challenges in contemporary digital migration governance.

Another inter connected aspect is that Algorithmic hiring systems trained on historical recruitment data risk encoding and perpetuating the discriminatory preferences of past employers: if historical data reflects employer preferences for workers from particular nationalities, age groups, or demographic profiles, algorithmic systems trained on that data will reproduce those preferences in their recommendations (O'Neil, 2016; Raghavan et al., 2020). In migration contexts, where discrimination on the basis of nationality, ethnicity, and gender is both prevalent and inadequately regulated, the introduction of algorithmic screening tools risks institutionalising discriminatory patterns in a form that is both more systematic and more opaque than the informal discrimination it replaces. The limited regulatory frameworks governing algorithmic employment in all three jurisdictions studied provide minimal protection against this risk.

The Second Criteria of analysis focuses upon the concept of "Migrant Consent" in the Digital Era. The scholarship on contract literacy, informed consent, and the sociology of legal documents provides reasons for caution about the extent to which digital contracts actually serve worker interests rather than merely documenting employer compliance (Biber, 2010; Marder, 2013). The crucial question is not whether a digital contract exists but whether the worker who signed it understood its contents sufficiently to give meaningful consent. This question of substantive informed consent as distinct from formal documented consent is particularly acute in migration contexts for several intersecting reasons. Language presents the most immediate barrier to informed consent in digital contracts. Standard employment contracts in Singapore are issued in English; in Malaysia, in Bahasa Malaysia or English; and the eMigrate e-Contract system issues contracts in English with optional Hindi or local language versions for certain components. Workers who constitute major shares of the low-skilled migrant worker population in both Singapore and Malaysia frequently have limited proficiency in any of these contract languages. The formal provision of translated contracts, where it exists, often involves machine translation of legal texts that produces documents of limited intelligibility even for workers with high literacy in their own language (Loh et al., 2023). Beyond language, digital literacy barriers create additional obstacles to substantive informed consent in digitally mediated contract processes. The physical act of signing a paper contract even one that is not fully understood carries social and experiential weight that communicates to the signatory that they are entering a significant obligation. The digital equivalent clicking 'accept' on a touchscreen, or having a thumbprint placed on a biometric device by a recruitment agent lacks this social weight and may not register in the same way as a meaningful act of consent. Qualitative research on migrant worker experiences of digital contracting, documented in civil society reports from organisations including Migrant Forum in Asia and the Centre for Migrant Advocacy, consistently finds that workers report signing digital documents without reading or understanding them, often under time pressure and with social expectations of compliance that make refusal difficult (Migrant Forum in Asia, 2022; CMA, 2021). Therefore, The adaptive dynamics shown above illustrate a general principle that is central to this paper's theoretical argument: Digital Governance does not eliminate exploitation but transforms its modalities. Where pre-digital exploitation operated through document manipulation, debt, and physical coercion, digital-era exploitation increasingly operates through informational asymmetry, consent manufacturing, and the exploitation of gaps between formal documentation and informal practice.

6. Domain Three : Cross Border Data Governance and Protection

Migrants are among the most intensively datafied populations in contemporary governance systems. The process of datafication includes the translation of social phenomena and human behaviour into quantifiable, searchable, and analysable digital data (Mayer-Schönberger & Cukier, 2013) and begins before migrants leave their country of origin and continues throughout their migration trajectory. In the Indian context, a worker seeking emigration clearance through eMigrate will have their biometric data collected by UIDAI for Aadhaar enrolment, their employment and insurance documentation recorded in the eMigrate system, their passport details registered with the Bureau of Immigration, and their international movement recorded by both sending and receiving country immigration systems. Upon arrival in Singapore or Malaysia, they will be enrolled in the receiving country's work pass system, screened for infectious diseases through mandatory medical examinations, registered with their employer's accommodation management system, and in Singapore it is required to maintain an address registered with MOM. The cumulative digital profile generated through this process is extraordinary in its depth and breadth. A migrant worker who has moved through formal channels between India and Singapore, for example, will have generated data records held simultaneously by UIDAI, India's MEA, the Bureau of Immigration, Singapore's MOM, the Central Provident Fund Board for the workers covered by CPF, Singapore's Ministry of Health through mandatory health screening, private employers, and potentially multiple financial institutions. This data is not merely abundant; it is persistent, the digital records are maintained indefinitely in most cases and increasingly interconnected, as government data-sharing initiatives link databases across agencies.

From the perspective of migrant workers, this datafication creates a profound asymmetry: states and employers have access to comprehensive, durable, and institutionally validated data about workers, while workers have at best limited access to the data held about them and virtually no capacity to contest, correct, or delete it. This asymmetry is not incidental but structural as it reflects the design logic of governance data systems, which are built primarily to serve administrative and enforcement needs rather than the informational interests of the populations they document. Simultaneously, the degree of interoperability: the extent to which data collected in one governance domain (immigration) is linked to and accessible from another (health, finance, criminal justice) determines the comprehensiveness of the state's digital profile of migrant workers. Singapore's integrated government digital platform which is powered by the National Digital Identity (NDI) framework and "Singpass Authentication System" which enables a high degree of cross-agency data sharing, creating the conditions for what Zuboff (2019) would term a 'surveillance architecture' in which individual behaviour across multiple life domains is comprehensively monitored and potentially subject to algorithmic analysis. Malaysia's data architecture is less integrated and less technically sophisticated, but its combination of FWCMS, immigration databases, and National Registration Department records similarly creates conditions for extensive cross-agency data access with limited worker awareness or consent. Also, the degree of cross-border data sharing: migration is inherently a cross-border phenomenon, and migrant worker data routinely flows across national boundaries in ways that are largely ungoverned by effective legal frameworks. The Advance Passenger Information (API) systems through which aviation and maritime border control agencies exchange passenger data; the bilateral information sharing provisions embedded in Labour Sending Agreements between India and Gulf or Southeast Asian receiving states; and the informal data exchanges between immigration and law enforcement agencies represent flows of migrant personal data across jurisdictions with different and often incompatible data protection frameworks. The migrant whose data crosses a border typically has no awareness that this has occurred and no recourse against misuse in the receiving jurisdiction.

Beyond the generic limitations of existing data protection frameworks, migrants face specific vulnerabilities in data governance contexts that existing frameworks fail to address. Four deserve particular emphasis. First, Consent barriers: effective data protection under consent-based frameworks requires that data subjects can give meaningful, informed, and freely given consent to data processing. For migrant workers whose digital enrolment occurs in the context of immigration registration where refusal to consent may jeopardise visa status or employment registration where refusal to consent may jeopardise employment, consent is structurally compromised it is neither freely given nor, in any meaningful sense, an expression of genuine autonomy. The gap between formal consent like a signature or biometric captured in a database and substantive consent like a genuine understanding and voluntary agreement is a general problem in data protection law, but it is particularly acute for migrant workers operating under conditions of economic pressure, information disadvantage, and institutional power asymmetry. Second, Jurisdictional complexity: a migrant worker whose data is held in databases in both their country of origin and their destination country faces the challenge of navigating two or more legal systems when seeking to exercise data rights. Even where data protection rights formally exist in both jurisdictions, exercising them requires knowledge of and access to legal processes in both countries a capacity that is beyond the practical reach of most low-skilled migrant workers, particularly those in irregular status.

Third, Data retention and the digital trace: unlike physical documents that can be lost, destroyed, or left behind when a migration episode ends, digital records are persistent and, in principle, permanent. A migrant worker who was employed in Malaysia on a formal work permit ten years ago may still have detailed records of their employment, medical screening results, accommodation history, and any disciplinary or immigration compliance issues recorded in government databases. The implications of this persistent digital trace for future migration episodes, employment applications, or encounters with state institutions are not well understood and are not regulated by existing data protection frameworks. Fourth, Data as enforcement tool: the same digital data that is collected nominally for governance and welfare purposes can be, and is, used for immigration enforcement. The integration of labour, health, financial, and immigration data creates the conditions for sophisticated enforcement operations that target irregular migrants through their digital footprint like bank transactions, mobile money usage, employer levy records rather than through physical surveillance alone. This enforcement use of welfare data is rarely disclosed to migrants at the point of collection and may represent a fundamental violation of the purpose limitation principles that data protection frameworks nominally uphold.

The last aspect which can’t be missed while analysing the usage of Data as a tool while offering jobs is that the scholars working at the intersection of race studies and surveillance studies have argued that digital surveillance in migration contexts is not merely intensive but selectively intensive like that particular migrant populations are subject to more comprehensive, more presumptive, and more enforcement-oriented surveillance than others, in ways that map onto racialised and nationality-based hierarchies (Aas & Bosworth, 2013; Khosravi, 2010). In both Singapore and Malaysia, the surveillance dimensions of digital migration governance are significantly more intrusive for workers from South Asian countries (India, Bangladesh, Nepal, Myanmar) than for those from OECD countries or regional high-income states. Work Permit holders in Singapore's construction and domestic sectors are subject to housing restrictions, mandatory medical screening, restrictions on intimate relationships, and comprehensive employer monitoring that Employment Pass holders from Western countries are not. The digital systems that implement and record these differential requirements the WPIS, the Foreign Domestic Worker documentation system, the sector-specific levy and quota management systems encode and enforce racial and national hierarchies through apparently neutral administrative processes. This racialised dimension of digital migration surveillance is rarely acknowledged in official governance discourse, where digital systems are typically presented in the technocratic language of efficiency and regulatory compliance. Critical scholars have argued that this technocratic framing functions ideologically: by presenting differential surveillance as an outcome of neutral digital processing, it obscures the political choices that produced the surveillance architecture in the first place (Eubanks, 2018; Noble, 2018; Benjamin, 2019). The application of this critical framework to the South and Southeast Asian migration context represents a contribution to both the surveillance studies literature and the migration studies literature that this paper seeks to advance.

7. Cross Case Comparison : Applying The Digital Governance Outcome Matrix

The three empirical domains examined in Sections 4 through 6 converge on a set of analytical claims that can be synthesised into a comparative typology of digital migration governance models and a theoretical account of the relationship between governance design, institutional power, and migrant outcomes. Applying the DGOM's four analytical dimensions which include Access, Agency, Accountability, and Asymmetry systematically across the three cases and three domains yields a structured comparative picture of how different digital governance configurations produce different outcome profiles for migrant populations.

DGOM Dimension	India	Singapore	Malaysia
Access	Conditional: portability promised, unevenly realised; ECR workers formally covered, informal migrants excluded	Stratified: EP holders access broad services; Work Permit holders face systematic restrictions	Dual-track: formal migrants access FWCMS services; irregular migrants excluded from all digital channels
Agency	Limited: Aadhaar authentication required for welfare; workers cannot opt out without losing access	Severely limited: pass tied to employer; exit constrained by immigration status dependency	Minimal: informal migrants have no formal agency; formal migrants constrained by debt and agency lock-in
Accountability	Partial: eMigrate creates documentation but verification capacity limited; exclusion errors not systematically addressed	Formal but asymmetric: MOM dispute mechanisms exist but are structurally inaccessible for workers fearing pass cancellation	Weak: FWCMS generates compliance records but enforcement is selective; debt bondage and fee inflation unresolved
Asymmetry	Intensified: state gains comprehensive biometric data; workers gain conditional service access with limited data rights	Severely intensified: employer-state co-governance amplifies employer power; worker data comprehensively accessible to both	Intensified: oligopolistic agencies and employer networks gain digital leverage; irregular workers have no digital rights

Table : Digital Governance Outcome Matrix (DGOM) applied across cases and domains

Several findings from this comparative application of the DGOM deserve emphasis. The first and most striking is the consistency of the pattern across cases that differ significantly in their regulatory models and institutional architectures: in all three cases, digital governance produces conditional access, constrained agency, formally present but practically inaccessible accountability mechanisms, and intensified rather than reduced power asymmetries. This consistency across structurally different cases strengthens the inferential claim that these outcomes are not produced by the specific features of any one governance model but by more fundamental structural features of how digital migration governance systems are designed and for whom. The second significant finding from the DGOM comparison is the systematic variation within cases: across all three governance models, outcomes for higher-skilled, higher-wage, and formally documented migrants are significantly better than outcomes for lower-skilled, lower-wage, and informally documented migrants on all four DGOM dimensions. Digital governance does not merely fail to equalise outcomes across migrant categories; it actively differentiates them, encoding existing skill and wage hierarchies into technical architectures that reproduce and institutionalise those hierarchies.

8. Policy Recommendations

Drawing on the comparative analysis, this paper offers four interlocking policy recommendations directed at governments, regional institutions, and international organisations involved in digital migration governance in South and Southeast Asia.

A) **Adopt minimum standard of Informed Consent and Data Protection** – Existing data protection frameworks in all three jurisdictions contain significant exemptions for state data processing that effectively remove migrant workers' data from meaningful legal protection. Governments should adopt through domestic legislation and bilateral or regional agreements minimum data protection standards specific to migration contexts, including: explicit consent requirements for biometric data collection; rights of access, correction, and erasure for migration-related personal data; and independent oversight mechanisms with authority to investigate complaints from migrant workers.

B) **Ensure Multi Modal Access to Digital Services** – Digital governance systems that require internet connectivity, smart phone ownership, or high levels of digital literacy create structural exclusion for migrant populations who lack these prerequisites. Governments and programme designers should mandate multi-modal access combining online, telephone, and in-person assisted channels for all digital migration governance systems. This includes: offline registration options for biometric identity enrolment; human-assisted digital contract review processes; and toll-free multilingual helplines for workers navigating digital employment and immigration systems.

C) **Foster Regional Dialogue to align Governance Norms –** The fragmented and often conflicting data governance frameworks across sending and receiving countries in South and Southeast Asia create jurisdictional gaps that systematically disadvantage migrant workers. Regional consultative processes including the Colombo Process, the ASEAN Forum on Migrant Labour, and bilateral Labour Sending Agreements should be used to develop shared norms for: the cross-border transfer and protection of migrant worker data; the mutual recognition of digital qualifications and employment records; and the development of joint enforcement mechanisms for digital governance standards affecting migrant workers. India, as the region's largest sending state and one of the world's most technically sophisticated digital governance actors, has a particular opportunity to lead regional norm development in this domain.

D) **Decentralised Process and creating Awareness both Online and Offline** – Rather than having Centralised process, it should be decentralised and efforts must be made to create awareness both through offline i.e the traditional means as well as the new technocratic means in order to reach a more wider audience especially those who are the most vulnerable population.

9. Acknowledged Limitations of this Research

- **Absence of Primary Data:** The study does not include original primary data collection interviews, surveys, or ethnographic observation with migrant worker populations. Lived experience evidence is drawn entirely from secondary sources, limiting the depth and representativeness of insight into migrant perspectives.

- **Case selection scope:** The focus on three cases within one region necessarily limits the generalisability of findings. The exclusion of other major migrant-receiving contexts (Gulf Cooperation Council states, East Asian destinations) means that findings may not apply beyond the South and Southeast Asian regional system.

- **Data Availability Asymmetries:** The availability and quality of quantitative data varies significantly across cases, with India's statistical system generally producing more granular and accessible data than Malaysia's or Singapore's for certain indicators. This asymmetry may introduce bias in the comparative analysis.

- **Temporal Scope:** The rapid pace of digital governance development means that some policy and institutional arrangements described may have changed between the period of analysis and the time of publication. The CMMF is designed to capture a historical snapshot rather than a continuously updated picture.

- **Researcher Positionality:** All research is conducted from a particular social position. The framework's emphasis on migrant worker rights and its critical orientation towards governance asymmetries reflects a normative commitment that should be acknowledged as shaping analytical choices.

10. Conclusion

The field of digital migration governance is nascent but consequential: the choices made now about how to design and govern digital systems for migrant populations will shape the rights and lives of hundreds of millions of people across coming decades. This paper has argued that digital governance in migration is neither the transformative inclusion mechanism that its proponents claim nor the unmitigated surveillance apparatus that its most critical analysts describe. It is, rather, a site of persistent paradox: systems designed to regularise and protect migrants frequently extend state and employer power over them; technologies that promise portability and service access frequently generate new forms of exclusion; and digital frameworks that could, in principle, be designed to enhance migrant worker agency are, in practice, consistently designed to serve the administrative and control interests of states and employers. These paradoxes are not inevitable features of digital technology but reflect political choices about system design, institutional architecture, and the allocation of data rights. The comparative analysis of India, Singapore, and Malaysia demonstrates that different regulatory models produce meaningfully different outcomes for similar migrant populations suggesting that policy intervention can shift outcomes in more equitable directions. The four policy recommendations advanced in this paper are not technically radical. The technologies required exist; the institutional frameworks for regional dialogue exist; the evidence base for the need for reform is substantial and growing. What is required is political will, grounded in recognition that the promises of digital governance can only be realised if the structural power asymmetries that characterise migration are addressed, not merely digitalised!

References

Aas, K. F. (2011). 'Crimmigrant' bodies and bona fide travellers: Surveillance, citizenship and global governance. Theoretical Criminology, 15(3), 331–346.

Aas, K. F., & Bosworth, M. (Eds.). (2013). The borders of punishment: Migration, citizenship, and social exclusion. Oxford University Press.

Agrawal, A. (2020). Platform economy and labour: Re-reading gig work and migrant labour in India. Economic and Political Weekly, 55(14), 35–43.

Ajana, B. (2013). Governing through biometrics: The biopolitics of identity. Palgrave Macmillan.

Allen, C. (2016). The path to self-sovereign identity. Life with Alacrity Blog. http://www.lifewithalacrity.com/2016/04/the-path-to-self-soverereign-identity.html

Anckar, D. (2008). On the applicability of the most similar systems design and the most different systems design in comparative research. International Journal of Social Research Methodology, 11(5), 389–401.

Atick, J. (2016). Digital identity: The essential guide. ID4Africa.

Bauman, Z., & Lyon, D. (2013). Liquid surveillance: A conversation. Polity Press.

Beduschi, A. (2021). International migration management in the age of artificial intelligence. Migration Studies, 9(3), 576–596.

Benjamin, R. (2019). Race after technology: Abolitionist tools for the new Jim Code. Polity Press.

Bhatia, G., & Mittelstadt, B. (2023). India's Digital Personal Data Protection Act 2023: A critical analysis. International Data Privacy Law, 13(4), 287–304.

Biber, E. (2010). Too much science? Overcoming ideology in the regulatory state. The University of Chicago Law Review, 77(3), 985–1043.

Breckenridge, K. (2014). Biometric state: The global politics of identification and surveillance in South Africa, 1850 to the present. Cambridge University Press.

Caplan, J., & Torpey, J. (Eds.). (2001). Documenting individual identity: The development of state practices in the modern world. Princeton University Press.

Centre for Migrant Advocacy. (2021). Digital contracts and migrant workers: A rights analysis. CMA Philippines.

Colombo Process. (2022). Thematic paper on digital governance and labour migration. Regional Secretariat.

Coletta, C., Evans, L., Heaphy, L., & Kitchin, R. (Eds.). (2019). Creating smart cities. London: Routledge.

Coutin, S. B. (2000). Legalizing moves: Salvadoran immigrants' struggle for U.S. residency. University of Michigan Press.

Creswell, J. W., & Clark, V. L. P. (2017). Designing and conducting mixed methods research (3rd ed.). SAGE Publications

Datta, A. (2023). Digitalisation and financial inclusion: Evidence from migrant remittance behaviour in South Asia. Journal of Development Economics, 162, 102987.

De Genova, N. (2002). Migrant 'illegality' and deportability in everyday life. Annual Review of Anthropology, 31(1), 419–447.

de Haas, H. (2010). Migration and development: A theoretical perspective. International Migration Review, 44(1), 227–264.

De Haas, H., Castles, S., & Miller, M. J. (2019). The age of migration: International population movements in the modern world. Bloomsbury Publishing.

Dekker, R., Engbersen, G., Klaver, J., & Vonk, H. (2018). Smart refugees: How Syrian asylum migrants use social media information in migration decision-making. Social Media + Society, 4(1), 1–11.

Diminescu, D. (2008). The connected migrant: An epistemological manifesto. Social Science Information, 47(4), 565–579.

Dreze, J., Khalid, N., Khera, R., & Somanchi, A. (2017). Aadhaar and food security in Jharkhand: Pain without gain? Economic and Political Weekly, 52(50), 50–59.

Eubanks, V. (2018). Automating inequality: How high-tech tools profile, police, and punish the poor. St. Martin's Press.

Fernandez, B. (2014). Traffickers, brokers, employment agents, and social networks: The regulation of intermediaries in the migration of Ethiopian domestic workers to the Middle East. International Migration Review, 47(4), 814–843.

Foucault, M. (1977). Discipline and punish: The birth of the prison. Pantheon Books.

Gelb, A., & Clark, J. (2013). Identification for development: The biometrics revolution. Center for Global Development Working Paper 315.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. Educational Evaluation and Policy Analysis, 11(3), 255–274.

Gillespie, M., Osseiran, S., & Cheesman, M. (2018). Syrian refugees and the digital passage to Europe: Smartphone infrastructures and affordances. Social Media + Society, 4(1), 1–12.

GSMA. (2022). State of the mobile internet connectivity report. GSMA Intelligence.

Huang, S., & Yeoh, B. S. A. (2003). The difference gender makes: State policy and contract migrant workers in Singapore. Asian and Pacific Migration Journal, 12(1–2), 75–97.

ILO. (2021). ILO global estimates on international migrant workers: Results and methodology (3rd ed.). International Labour Organization.

ILO. (2022). Review of the Malaysian foreign worker management system. ILO Country Office for Malaysia, Singapore, and Brunei Darussalam.

IOM. (2021). Digital identity and migration: Addressing key governance challenges. International Organization for Migration.

Kapur, D. (2004). Remittances: The new development mantra? G-24 Discussion Paper 29. UNCTAD.

Kaur, A. (2008). International labour migration in Southeast Asia: Governance of migration and women domestic workers. Intersections: Gender and Sexuality in Asia and the Pacific, 15.

Keshri, K., & Bhagat, R. B. (2013). Temporary and seasonal migration in India. Genus, 68(2), 25–47.

Khadria, B. (2019). Labour migration from India: Policy versus reality. In S. Naujoks (Ed.), India and the diaspora (pp. 123–148). Oxford University Press.

Khera, R. (Ed.). (2019). Dissent on Aadhaar: Big data meets big brother. Orient BlackSwan.

Khosravi, S. (2010). 'Illegal' traveller: An auto-ethnography of borders. Palgrave Macmillan.

Koskela, H. (2011). 'Don't mess with Texas': Surveillance, vigilantism and the politics of fear. In K. Ball, K. Haggerty, & D. Lyon (Eds.), Routledge handbook of surveillance studies (pp. 429–436). Routledge.

Landman, T. (2008). Issues and methods in comparative politics: An introduction (3rd ed.). Routledge.

Leurs, K., & Smets, K. (2018). Five questions for digital migration studies: Learning from digital connectivity and forced migration in(to) Europe. Social Media + Society, 4(1), 1–16.

Loh, K., Henderson, J., & Wong, P. (2023). Digital labour governance and migrant worker vulnerability in Singapore: A critical assessment. Journal of Industrial Relations, 65(2), 187–209.

Lyon, D. (2001). Surveillance society: Monitoring everyday life. Open University Press.

Lyon, D. (2009). Identifying citizens: ID cards as surveillance. Polity Press.

Marder, N. S. (2013). Jurors and the new media: Resolving the tension between free speech and fair trials. Chicago-Kent Law Review, 88(2), 585–635.

Mayer-Schönberger, V., & Cukier, K. (2013). Big data: A revolution that will transform how we live, work, and think. Houghton Mifflin Harcourt.

Migrant Forum in Asia. (2022). Digital tools and migrant worker rights in Southeast Asia: A critical assessment. MFA Policy Brief.

Ministry of External Affairs, Government of India. (2021). Annual report 2020–21. MEA.

Ministry of Overseas Indian Affairs. (2019). Annual report on emigration: eMigrate system review. MOIA.

Muralidharan, K., Niehaus, P., & Sukhtankar, S. (2016). Building state capacity: Evidence from biometric smartcards in India. American Economic Review, 106(10), 2895–2929.

Naik, N., & Jenkins, P. (2020). Governing biometrics: Privacy, technology and the public good. Cambridge University Press.

Noble, S. U. (2018). Algorithms of oppression: How search engines reinforce racism. New York University Press.

O'Neil, C. (2016). Weapons of math destruction: How big data increases inequality and threatens democracy. Crown Publishers.

Piore, M. J. (1979). Birds of passage: Migrant labour and industrial societies. Cambridge University Press.

Piper, N. (2005). Rights of foreign workers and the politics of migration in South-East and East Asia. International Migration, 43(4), 71–97.

Przeworski, A., & Teune, H. (1970). The logic of comparative social inquiry. Wiley-Interscience.

Raghavan, M., Barocas, S., Kleinberg, J., & Levy, K. (2020). Mitigating bias in algorithmic hiring: Evaluating claims and practices. Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency, 469–481.

Rajan, S. I., & Joseph, J. (2020). India's eMigrate system and the governance of international labour migration. Migration and Development, 9(3), 373–390.

Ramakumar, R. (2018). Aadhaar: A biometric history. In R. Khera (Ed.), The Aadhaar effect (pp. 1–28). Oxford University Press India.

Sadowski, J. (2019). When data is capital: Datafication, accumulation, and extraction. Big Data & Society, 6(1), 1–12.

Scott, J. C. (2020). Seeing like a state: How certain schemes to improve the human condition have failed. yale university Press.

Schierup, C.-U., Hansen, P., & Castles, S. (2006). Migration, citizenship and the European welfare state: A European dilemma. Oxford University Press.

Stark, O., & Bloom, D. E. (1985). The new economics of labor migration. American Economic Review, 75(2), 173–178.

Stigler, G. J. (1971). The theory of economic regulation. Bell Journal of Economics and Management Science, 2(1), 3–21.

Stranded Workers Action Network. (2020). 32 days and counting: COVID-19 lockdown, migrant workers, and the inadequacy of digital governance. SWAN Report.

Strauss, K., & McGrath, S. (2017). Temporary migration, precarious employment, and unfree labour relations: Exploring the 'continuum of exploitation' in Canada's Temporary Foreign Worker Program. Geoforum, 78, 199–208.

Tan, E. (2015). Migration governance in Singapore: Employer of choice? In D. Goh & P. Holden (Eds.), Asia as method in education studies (pp. 113–132). Routledge.

Taylor, L. (2017). What is data justice? The case for connecting digital rights and freedoms globally. Big Data & Society, 4(2), 1–14.

Taylor, L., & Meissner, F. (2023). A crisis of opportunity: Digital humanitarianism and the productive power of data. Sociology, 57(1), 3–20.

Torpey, J. (2000). The invention of the passport: Surveillance, citizenship and the state. Cambridge University Press.

UIDAI. (2023). Aadhaar dashboard. Unique Identification Authority of India. https://uidai.gov.in/aadhaar_dashboard/

US Department of State. (2023). Trafficking in persons report: Malaysia. US Department of State.

van der Ploeg, I. (2012). The body as data in the age of information. In K. Ball, K. Haggerty, & D. Lyon (Eds.), Routledge handbook of surveillance studies (pp. 176–183). Routledge.

Walters, W. (2006). Border/control. European Journal of Social Theory, 9(2), 187–203.

Wickramasekara, P. (2016). Bilateral agreements and memoranda of understanding on migration of low-skilled workers: A review. ILO.

Willen, S. S. (2007). Toward a critical phenomenology of 'illegality': State power, criminalization, and abjectivity among undocumented migrant workers in Tel Aviv. International Migration, 45(3), 8–38.

World Bank. (2023). Migration and development brief 39: Remittances brave global headwinds. World Bank Group.

World Food Programme. (2022). Digital identity for refugees: Lessons from the SCOPE and Building Blocks platforms. WFP Innovation Accelerator.

Yeoh, B. S. A. (2006). Bifurcated labour: The unequal incorporation of transmigrants in Singapore. Tijdschrift voor Economische en Sociale Geografie, 97(1), 26–37.

Zuboff, S. (2019). The age of surveillance capitalism: The fight for a human future at the new frontier of power. PublicAffairs.