Gender by Design

Principles for Gender-responsive Public Digital Infrastructure

IT for Change

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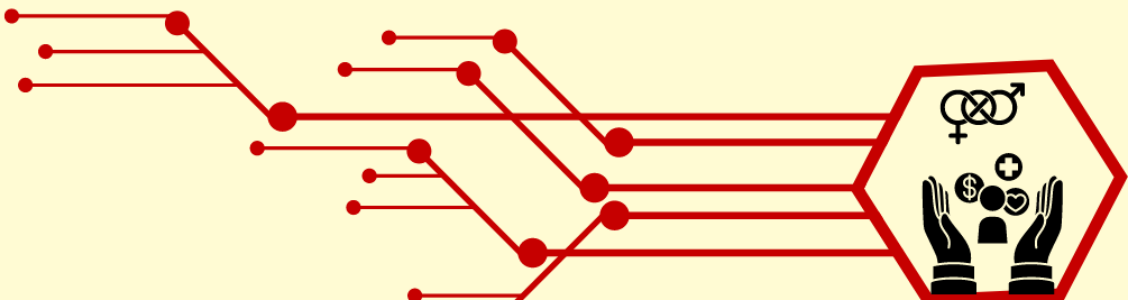

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1. Background and Context

The use of information and communication technologies (ICTs) in public administration is seen as a significant tool for improving efficiency, transparency, and accountability in governance. Over the last two decades, ICTs have become an important part of the implementation of different types of programs and schemes by the Government of India in the form of 'large-scale public digital information systems'. These may be defined as public sector-owned information technology systems oriented towards the delivery of services to citizens. These include systems designed for the implementation of anti-poverty programs in India, including both programs oriented towards welfare and social protection, as well as services in areas such as agriculture, health, education, nutrition, and broader governance delivery.

Under programs such as the National e-Government Plan (NeGP) and Digital India, the Government of India has made it a priority to digitize the implementation of different types of programs. 'Traditional' public digital information systems, in the form of Management Information Systems (MIS), have been deployed widely for purposes of program monitoring and evaluation to enable fund disbursement and make necessary changes in how a program is being implemented.[1] Gradually, the role of information systems transitioned from being used for monitoring and planning, to assisting more directly with beneficiary identity authentication (Aadhaar), entitlement transfer, grievance redressal, and other similar functions along the entirety of the service delivery lifecycle.[2]

The manner, scope, and intention of public digital information systems are currently undergoing another transition. The release of documents such as the National Open Digital Ecosystem (NODE) framework, IndEA 2.0,[3] and plans for digitization of service delivery in areas such as agriculture and health, emphasize a transition from passive, closed information systems that are used for internal efficiency, to platforms that are utilized by different stakeholders in the development ecosystem to enable bespoke solutions with the government as a facilitator or rule-making authority. The 'Agri-stack', or the India Digital Agriculture Ecosystem (IDEA), for example, has been built on the foundation provided by the database of beneficiaries for the PM-KISAN scheme.[4] IDEA itself is envisaged to play a facilitating role for private and public sector actors to be able to deliver services to farmers. This

[1] Mehrotra, S., Indrakumar, D., & Saxena, V. (2013). *Management Information System (MIS) of Indian Government's Flagship Programmes.* Institute of Applied Manpower Research. http://iamrindia.gov.in/writereaddata/UploadFile/MISPaper.pdf

[2] Das, S., & Masiero, S. (2019). The datafication of anti-poverty programmes: Evidence from the public distribution system in Karnataka. In *Proceedings of the Tenth International Conference on Information and Communication Technologies and Development* (ICTD '19) (pp. 1-5). Association for Computing Machinery. https://doi.org/10.1145/3287098.3287135

[3] IndEA BENEFITS. (n.d.*). National e-Governance Division.* http://ftpindea.negd.in/

[4] Press Information Bureau. (2021, March 10). *Union Cabinet approves PLI scheme for Pharmaceuticals, IT Hardware Products and White Goods (Rs. 18,100 crore for next 5 years)*. https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1796560

change is further highlighted by Open Data Policy (ODP) documents that have been released recently, at both the national and state levels, which lay the foundation for more open use of the data generated by public information systems for wider services.

2. Implications of Welfare Digitization for Women

There are recognized benefits of digitizing welfare for all citizens, including women and marginalized communities, both due to the benefits of being recognized by the state as rightful citizens, and due to the "increased information, knowledge, and income-generating outputs" they may be able to promote.[5] However, the digital-by-default trend that has taken over welfare delivery, particularly in the face of a digital divide that remains acutely gendered, means that women continue to face challenges in effectively using emerging digital opportunities and realizing their full potential. Poverty, higher rates of illiteracy among women, a lack of relevant content, women's low levels of confidence in using technology, and safety concerns – all play a role in constraining women's digital access and skills.[6] In addition, offline community norms that associate mobile and internet use with character and reputational risk continue to mediate women's use of digital technologies,[7] often either increasing their dependence on or strengthening male gatekeeping institutions. For example, a study examining the impact of Kilkari, a maternal messaging program in rural India, found that exposure to Kilkari increased men's but not women's immunization knowledge, and that even when women reported owning their phones, husbands and other household members are likely to have answered and listened to a portion of the calls.[8]

Secondly, digitalization can have adverse impacts on the intended beneficiaries, particularly, marginalized communities. The increasing use of Aadhaar in welfare delivery, for example, has led to increased data entry and processing errors (such as incorrect deletion during de-duplication or bank account number entry) in databases of social security pensions and the National Rural Employment Guarantee Act (NREGA).[9] This has led to unfair exclusion from welfare entitlements, particularly for women, given their lack of digital fluency and textual literacy, and also an increased dependence on male members of the family for survival.[10] Beyond exclusions, women also face considerable security

[5] United Nations Economic and Social Commission for Asia and the Pacific. (n.d.). *Unit 11: E-government for women's empowerment and gender equality.* E-Government for Women's Empowerment and Gender Equality Toolkit. https://egov4women.unescapsdd.org/toolkit/unit-11-e-government-for-women%E2%80%99s-empowerment-and-gender-equality#unit-113

[6] BBC Media Action India. (2021). *Women's digital literacy in rural India: Insights from a qualitative research study.* https://downloads.bbc.co.uk/mediaaction/pdf/india-research-study-women%E2%80%99s-digital-literacy-2021.pdf

[7] Ibid.

[8] Singh, K. (2021). Information and communication technologies and gender equity: Emerging issues for the global South. *BMJ Global Health.* https://doi.org/10.1136/bmjgh-2021-005489

[9] Gurumurthy, A., Chami, N., & Bhartur, D. (2017). *'Democratic accountability in the digital age', Bengaluru: IT for Change*. ResearchGate. https://www.researchgate.net/publication/324151426_%27Democratic_accountability_in_the_digital_age%27_Bengaluru_IT_for_Change

[10] Kapur, P. (2021, April 2). Question of access: Welfare and health for women during COVID-19. *Economic and Political Weekly.* https://www.epw.in/engage/article/question-access-welfare-and-health-women-during

and privacy risks that follow digitization efforts. For example, in the implementation of the Government of Karnataka's 'Bhoomi' initiative, though the aim was to increase transparency by publishing information online, the initiative led to small landholding owners being harassed by land sharks who identified and located them through the database.[11] Digital ID systems can often gather data that, in the wrong hands, could be used to target and persecute people whose rights are already at risk.[12] A women's rights group in Thailand raised the issue of trafficking survivors being 'blacklisted' by financial institutions, unable to get loans or extend their passports, because of data that showed a history of working in the sex trade.[13]

Thirdly, the increasing participation of private sector stakeholders in the delivery of welfare services also gives rise to risks of 'lock-in' and the ensuing challenges of regulating the monopolization of access to basic public services. In 2012, the South Africa Social Security Agency entered into a partnership with Net1, a private firm developing digital payments and biometric solutions to manage its welfare distribution.[14] Exploiting its access to the banking details of welfare recipients, the company started making unauthorized deductions from beneficiary accounts towards loans and financial services of its sister concerns.[15] The state found itself severely constrained in taking punitive action against the company, which threatened to walk away with the entire database if the contract was terminated.[16] The case of Net 1 also points to how the absence of a strong data protection regime can lead to the exploitation of commercial interests over public good.

It is therefore important to understand that technology/digital systems do not work in evidently deterministic ways, rather they are embedded in and can exacerbate existing power asymmetries, often leading to an increase in the marginalization of disenfranchised groups. Technology design must therefore account for the ways in which contextual power systems interact with technology choices, leading to variable outcomes for individuals and communities. This forms the core of 'thinking gender by design', i.e., design that is tailored to respond to the complexities that define women's roles and relationships and the differential socio-cultural contexts that they are embedded in, with the ultimate aim of maximizing gender justice outcomes. This cannot happen if left to chance, and neither can it be understood as a one-off step in the system design lifecycle. Rather it is a continuous process of making deliberate and conscious choices to prioritize the aims of gender equality and social justice across all stages of the system design and implementation.

[11] Davies, T. G., & Bawa, Z. A. (2017). The politics of transparency and the calibration of knowledge in the digital age. *Communication +1,* 6(1), pp. 1-15. https://doi.org/10.7275/R55M63CZ
[12] Baker, S., & Rahman, Z. (2020). *Understanding the Lived Effects of Digital ID: A Multi-country Study.* The Engine Room. https://digitalid.theengineroom.org/assets/pdfs/200310_TER_Digital_ID_Report+Annexes_English_Interactive_Edit3.pdf
[13] Ibid.
[14] Gurumurthy, A., & Chami, N. (2020). *The intelligent corporation: Data and the digital economy.* Transnational Institute. https://longreads.tni.org/stateofpower/the-intelligent-corporation-data-and-the-digital-economy
[15] Ibid.
[16] Ibid.

3. Thinking Gender by Design - Principles for the Design and Development of Gender-responsive Public Digital Systems

The project of 'gender by design' involves making techno-design and institutional-design choices that are grounded in correcting existing gender asymmetries and accounting for potential imbalances that may arise from the introduction of digital mediation. The guiding principles outlined in this section are situated within the ongoing entanglements between gender, power, and technology, and the many intersecting forms of inequalities that they produce, and therefore acknowledge the possibility of gender-responsive design producing uneven outcomes for different groups of women based on gender identity, caste, socio-economic status, and other axes.

They embrace the idea that gender-transformative change can begin only if we get to the root of inequality, identifying and making visible the ideas and institutions that perpetuate intersectional forms of oppression. This by no means is a neatly solvable problem. Indeed, the very fact that discrimination is produced by interlocking systems of subordination and privilege is what makes 'gender by design' a complex task. The attempt of this paper therefore is not to 'thin' the evidently 'thick' discourse of gender equality, but to provide a starting point to make connections and think critically about the relationship between gender identity, technology, and citizenship rights, and inculcate an approach that is contextual, reflexive, and intentional about gender-just outcomes. In putting forward these principles, we also subscribe to the approach that gender does not equal women only, and a gender-inclusive approach does not equal a shopping list of categories of people, rather it is about being continually mindful about whose voices are heard, whose experiences are represented, and whose interests are addressed.[17]

a. Data in information systems embodies and exercises power, and therefore design choices must be evaluated through the gender justice lens.

What we understand as digitization is essentially a process by which individual/group/community records are translated into machine-readable data.[18] This by no means is a neutral process, rather systems are designed to allow individuals/communities to be 'recognized' in specific ways (deserving or not) and 'assigned' specific treatments (entitlement decisions).[19] Digital systems can either challenge or reinforce unequal power relationships in society, manifested in the way data renders

[17] Bradshaw, S., Chmutina, K., Field, J., Fordham, M., Le Masson, V., Ruszczyk, H., & Walmsley, O. (2020, May 29). *Gender in DRR: Mainstreamed into invisibility.* GRRiPP. https://www.grripp.net/post/gender-in-drr-mainstreamed-into-invisibility
[18] Masiero, S., & Das, S. (2019). Datafying anti-poverty programmes: Implications for data justice. *Information, Communication & Society, (7).* https://www.tandfonline.com/doi/full/10.1080/1369118X.2019.1575448
[19] Ibid.

people and groups visible or invisible to decision-makers.[20] Therefore, issues of representation, i.e., who is recognized, what are the terms of recognition, and who benefits from such recognition are important considerations in developing gender-responsive digital welfare systems. For example, the recently launched e-Shram database, a portal that aggregates information on India's informal sector in order to enable their access to social protection, captures 'occupation' data through fields titled "primary" occupation, and "secondary" occupation, ignoring a crucial aspect of India's informal sector, i.e., that most workers in the unorganized sector, particularly women, have multiple jobs, and therefore will find it very difficult to define a primary occupation.[21] Additionally, the list of 156 occupations available on the portal excludes several occupations dominated by women such as home-based work, sex work, platform work, etc., leaving unanswered questions on the extent to which women will benefit from occupation-specific social security benefits offered by the state.[22]

Box 1. eKasih Malaysia: A gender intentional approach to welfare distribution

eKasih allows members of households to apply, and is not restricted only to heads of households. This means that women members of a household who are not heads of households can, on their own, apply for their households to be included in eKasih. Such a measure helps address some power dynamics that can take place within a household, such as neglect of the welfare of household members due to the absence of male heads of households.

Source: E-Government for Women's Empowerment in Asia and the Pacific

Similarly, a system that recognizes only land-owning individuals as farmers can exclude women farmers, many of whom are landless women working on others' lands.[23] In some cases, even when they include tenant farmers, they may perpetuate existing caste and class inequalities through procedural mandates such as requirement of landowners signature, etc. For example, a study of the Rythu Bharosa cash subsidy scheme for small and marginal farmers using the data justice lens found that Dalit women in particular were reluctant to approach the upper caste landowners for their signature fearing a loss of trust in the landowner's part, resulting in many of them not applying for the scheme.[24] Till date, national ID registration processes in some countries perpetuate patriarchal constructs by requiring women to show a copy of their marriage certificate for registration, or including her husband's name

[20] UN Global Partnership for Sustainable Development Data. (2020). *Reimagining data and power: A roadmap for putting values at the heart of data.* https://www.data4sdgs.org/reimagining-data-and-power-roadmap-putting-values-heart-data
[21] Kirasur, N. (2021*). Notes from field| Recording the unorganized sector: Reflections on the e-Shram database.* IT for Change. https://itforchange.net/notes-from-field-recording-unorganized-sector-reflections-on-e-shram-database
[22] Centre for Internet & Society, & IT for Change. (2021). *A civil society agenda for e-Shram.* https://itforchange.net/sites/default/files/add/CIS-ITfC-A-civil-society-agenda-for-e-shram-Dec-21.pdf
[23] IT for Change. (2015). *Inputs from IT for Change to MAKAAM's Charter of Demands for Women Farmers.* https://itforchange.net/sites/default/files/IT%20for%20Change-InputstoMAKAAMNov2015.pdf
[24] Masiero, S. (2021). *Data justice in digital social welfare: A study of the Rythu Bharosa scheme.* ResearchGate. https://www.researchgate.net/publication/354088407_Data_Justice_in_Digital_Social_Welfare_A_Study_of_the_Rythu_Bharosa_Scheme

on the national ID card, with no such corresponding requirement for men.[25] It is therefore critical to understand how the design of digital systems may reinforce unequal power relationships, or perpetuate gender stereotypes across all stages of the system lifecycle, and take steps to examine the gender justice considerations at each stage.

b. Digital systems and datafication processes should respond to the complexities of women's embedded realities.

Feminist work has repeatedly highlighted that public information tools in general that capture gender-disaggregated data repeatedly flatten women's experiences by ironing out that which cannot be easily quantified: the contextual, the nuances, the silences, the absences.[26] Whether it is the unpaid care work of poor rural women receiving conditional cash transfers, or the invisibilized labor (emotional and otherwise) of the family members of 'officially counted' victims of gender-based violence, or the repeated under-reporting of women's work as cultivators or agriculture laborers on small parcels of land,[27]datafication mechanisms dislocate women's experiences from the context they are embedded in and provide partial representations of their realities.[28] Not only does this create an erroneous notion of homogeneity of women's experiences, but it also reduces claims about women to quantifiable information captured on the systems. For example, the data on women's bank account ownership cannot always be taken as a reliable indicator for financial empowerment of women, given that women may need household permission for withdrawals from their bank accounts.[29] Similarly, there is considerable debate on the extent to which official crime statistics are able to paint an accurate picture of the nature of sexual crimes against women in India because of the stigma with regards to reporting such crimes, and also patriarchal constructs surrounding consensual pre-marital sex.[30] It is therefore important for design processes to continually engage with the nuances of women's realities and build approaches to manage non-standard cases.

[25] Braunmiller, J. (2020). *The importance of women's equal access to identification in times of global crisis.* World Bank Blogs - Development Talk. https://blogs.worldbank.org/developmenttalk/importance-womens-equal-access-identification-times-global-crisis
[26] Fuentes, L., & Cookson, T.P. (2019). Counting gender (in)equality? a feminist geographical critique of the 'gender data revolution'. *Gender, Place & Culture.* https://www.tandfonline.com/doi/abs/10.1080/0966369X.2019.1681371
[27] Kumar, S. (2020). *Can better data change the fate of India's invisible female farmers?* Devex. https://www.devex.com/news/can-better-data-change-the-fate-of-india-s-invisible-female-farmers-96664
[28] Ibid.
[29] Women's World Banking. (2021). *The power of Jan Dhan: India's financial inclusion story.* https://www.womensworldbanking.org/wp-content/uploads/2021/08/WWB-The-Power-of-Jan-Dhan-Report-Web.pdf
[30] Rukmini, S. (2018). *On crime against women, bad questions, poor answers*. The Indian Express. https://indianexpress.com/article/opinion/columns/on-crime-against-women-bad-questions-poor-answers-5265159/

For example, cultural and social barriers in digital ID registrations, particularly for women wearing headscarves, or women's inability to prove that they are legally separated to claim their single status, or errors they may make at the time of data capture due to lack of literacy or information – are all important considerations in ensuring accessibility and use of digital identity systems by the most marginalized women. It is also important to evaluate the right indicators (qualitative and quantitative) that need to be captured in order to account for on-ground realities. In a representation of their demands to the Government of India in 2020 for example, women farmers sought a more inclusive approach to identifying farm suicides and a maintenance of a data system about survivors and their families.[31]

Box 2. A context-sensitive approach to implementing digital solutions at scale

During the pandemic, the Kerala Government went the digital way to provide select services at scale. These include, among others, the creation of a wide network of telemedicine services as one option for non-Covid healthcare and emergency care for senior citizens, especially single women. A disability-friendly online portal, accessible through smartphones and laptops, provides consultations for general medicine and specialist healthcare services, free of charge. For senior citizens, especially single women, weekly team visits by healthcare workers are backed by an emergency care system that alerts the local police through radio-frequency technology. A specialized patrol is sent and an ambulance service is alerted shortly after the call.

Source: IT for Change

Additionally, the context in which systems are being introduced must be considered. For example, conflict-prone areas or disaster-related settings where resources are low can be particularly stress-inducing for women, and therefore barriers to access and use may need to be reset/revisited accordingly.

c. The design and implementation of digital systems must account for women's time poverty and unpaid labor.

For women, one of the core challenges is the disproportionate amount of unpaid labor expended by them on care work and domestic work, which creates significant time poverty in their lives. Gender-transformative change is possible only when the vision of the digital accounts for the gendered nature of the social reproduction function in society and takes adequate steps to bridge these inequalities. For example, running offline structures in parallel to online structures (e.g., filling up a form and submitting information online) can be disempowering for women by virtue of adding to their workload – a study

[31] Jitendra. (2020). *Women farmers demand recognition from govt at 2-day meet*. Down to Earth. https://www.downtoearth.org.in/news/agriculture/women-farmers-demand-recognition-from-govt-at-2-day-meet-69029

found community healthcare workers in rural India to be overburdened by the requirement of having to maintain information in both registers and tablets.[32]

Box 3. Responding to community needs: An alternate approach to ICT programming in dealing with violence against women (VAW)

The Society for the Elimination of Rural Poverty (SERP) in Andhra Pradesh has demonstrated an alternative approach to ICT programming in the fight against VAW. SERP's main strategy is to utilize a self-help-group approach for the economic and social empowerment of poor women. Tackling gender-based violence (GBV) is considered a critical part of this strategy, and hence, in all the villages it works in, SERP created Social Action Committees of women volunteers willing to challenge domestic violence, human trafficking, sexual assault, child marriage, and other such rights violations against women in their local communities. The Social Action Committee volunteers have been trained to liaise with district-level institutions such as Family Counselling Centers, Free Legal Aid Cell, and alternative dispute resolution mechanisms to assist women who are facing GBV. In 2012, SERP created an IVR-based reporting and tracking mechanism to support the work of the Social Action Committee in timely reporting of GBV instances in their local communities, and coordinated assistance for individual victims from the district machinery.

Source: E-Government for Women's Empowerment in Asia and the Pacific

Similarly, requiring multiple visits to the Common Service Centers (CSCs) for a single issue, either because of technical failures, or because of a lack of information to resolve the matter is not just a question of accountability, but also a lack of sensitivity to women's time poverty. Ultimately, this also increases dependence on male gatekeepers, for example, studies on maternal healthcare systems have documented how registration failures despite multiple visits to Aadhaar centers have led to women relying on their husbands' documentation for registering themselves for delivery at the hospital.[33] By the same logic, integrating initiatives like the e-Shram portal with existing social security schemes so that information on women already enrolled into these schemes can be automatically transmitted into the portal[34] can have positive impacts for women by saving them additional time and labor required to re-register themselves into the e-Shram portal, while also preventing unwarranted exclusions. It is therefore important for information systems to pay attention to the ways in which digital systems may be perpetuating the inequalities of patriarchal structures and take measures to mitigate them.

[32] Pandey, P., & Zheng, Y. (2020). Power, Technology and Empowerment. In *The Future of Digital Work: The Challenge of Inequality*. https://link.springer.com/chapter/10.1007/978-3-030-64697-4_13

[33] Tandon, A. (2021*). Privacy and Reproductive Health: Curtailing Rights and Choices.* https://77c86aee-837e-44bb-89c9-565f7c248f89.filesusr.com/ugd/d56aa6_1381d0607eda4e97a6ca7e50a12103cb.pdf

[34] Working People's Charter. (2021). *E-Shram portal: India's first database for unorganized workers holds great promise.* https://workingpeoplescharter.in/media_statements/e-shram-portal-india-s-first-database-for-unorganized-workers-holds-great-promise/

d. Patriarchal social norms and information literacy gaps are particularly acute for marginalized women, requiring last-mile strategies to be gender agile.

Studies on last mile implementation of digital systems or programs have often highlighted the role of human intermediaries/offline infrastructure/architecture in ensuring that the services reach those who belong to the last mile.[35] Women and girls are over-represented in last-mile populations because of sexism, exclusion, discrimination, and other systemic gender inequalities that leave them the farthest behind.[36] Importantly, they bear the disproportionate burden of last-mile challenges because of their inability to produce documents required for inclusion into national ID or digital welfare systems, which, when coupled with issues of literacy, both digital and otherwise, makes them more likely to fall prey to rent-seeking strategies deployed by informal intermediary structures, such as extra charges for filling up registration forms,[37] etc., while also weakening their trust of the state. It is therefore important that last-mile implementation strategies are designed in a way that is attentive to the gendered nature of such exclusions.

Box 4. Solving for the digital divide at the last mile: An example of official vital statistics system in Columbia

Ensuring that vital statistics on maternal and newborn events are more complete is a critical step towards ending preventable maternal deaths, especially in some of the most remote communities in Colombia. Yet, non-facility births and deaths in remote regions like Chocó are not included in the official vital statistics system in Colombia. Asorepidar Chocó, an association of more than 800 midwives in Chocó, has partnered with DANE and UNFPA to address this situation. The partnership leverages the critical role that traditional midwives play in facilitating safe birth for Africa-Colombian and indigenous women, by linking the midwives to the National Statistics Office (DANE) via handheld devices. This linkage of systems and data ensures that births are registered and pregnancy-related deaths are systematically documented and included in the vital statistics system. Hence this initiative is helping to improve the civil status of the Afro-Colombian and indigenous communities and ensure that their vital events are integrated into the official vital statistics of the country.

Source: United Nations Population Fund

[35] Sharma, L., Natarajan, S., & Udhayakumar, K. (2020). *Last mile report: Building offline architectures to enable better access to the state.* Aapti Institute. https://uploads.strikinglycdn.com/files/294143ba-333f-4bcc-9379-6d4742d15509/Last%20Mile%20Report-Digital-Aapti%20Institute.pdf

[36] Davison, C. M., Bartels, S. A., Purkey, E., Neely, A. H., Bisung, E., Collier, A., et al. Last mile research: a conceptual map. *Global Health Action.* https://www.tandfonline.com/doi/pdf/10.1080/16549716.2021.1893026

[37] Haqdarshak. (2022). *The link between identity documents and welfare delivery.* https://haqdarshak.com/2022/03/14/the-link-between-identity-documents-and-welfare-delivery/

The need to engage with traditional gatekeeping functions and local power structures such as informal community leaders, political party workers, government field officials, etc., to provide the much-needed human intermediation for last mile delivery[38] must be evaluated against the extent to which such structures may be masculinized and governed by patriarchal norms, thereby alienating women and other vulnerable citizens from access to them. For example, studies have highlighted the need for gender-sensitive intermediary strategies in order to deal with the reluctance of families to extend social protection or banking systems to their female members, resulting in their exclusion from several digital welfare schemes.[39] Similarly, CSCs have been seen as male-dominated spaces with few female trainers, making them socially unacceptable for women to be a part of.[40] Last-mile strategies therefore need to adopt a strong citizen-centric, gender-aware, and women's rights-based approach in their design and implementation.

e. Data and data-enabled intelligence from information systems must be governed through legal-institutional frameworks that are adequate for women's human rights.

Most communities have a group in mind that they would rather keep their data away from. For example, activists may not want their data shared with political parties; people living with HIV may want to keep their data out of the hands of religious institutions; sex workers and transgender folks may have concerns about their data being shared with the police,[41] and so on. For women in particular, the centrality of digital identification and data-driven systems in the delivery of welfare, particularly in areas such as reproductive healthcare, etc., means that they will increasingly find it difficult to access services in these areas without an institutionalized privacy and data protection framework that is centered around their needs.[42] A legally binding data governance framework that recognizes their rights, duties, and obligations as data subjects is therefore central to their ability to use digital systems in ways that are empowering to them. Importantly, such frameworks need to ensure that subjects not only have the right to dignity, privacy, personal autonomy, and the right to be represented in decisions about their data, but also the right to collectively determine how the social commons of data are preserved and promoted for “public value and public benefit”.[43] Women and marginalized communities need to be accorded primary claims over their data, and the rules-in-use aspect of the

[38] Ibid.
[39] Ibid.
[40] Tyers, A., Highet, C., Chamberlain, S., & Khanna, A. (2021). *Increasing women’s digital literacy in India: What works.* BBC Media Action. https://downloads.bbc.co.uk/mediaaction/pdf/india-research-study-women%E2%80%99s-digital-literacy-2021.pdf
[41] Baker, S., & Rahman, Z. (2020). *Understanding the Lived Effects of Digital ID: A Multi-country Study.* The Engine Room. https://digitalid.theengineroom.org/assets/pdfs/200310_TER_Digital_ID_Report+Annexes_English_Interactive_Edit3.pdf
[42] Tandon, A. (2021). *Privacy and Reproductive Health: Curtailing Rights and Choices.* https://77c86aee-837e-44bb-89c9-565f7c248f89.filesusr.com/ugd/d56aa6_1381d0607eda4e97a6ca7e50a12103cb.pdf
[43] https://datagovernance.org/report/beyond-data-bodies-new-directions-for-a-feminist-theory-of-data-sovereignty

common pool resources of data and digital intelligence has to be primarily managed through participatory, locally scrutinizable systems.[44]

Box 5. Alternate models for ownership of data

A number of different models are emerging for community-owned digitization and data ownership. One approach creates trust-like organizations that assist communities to exert greater control over their data, which may or may not be the implementers of the platform itself. FarmStack, for example, is a reference implementation of an open and interoperable data-sharing protocol in the agriculture sector, soon to be released by Digital Green. It provides a means for farmers consuming digital services to store their data in a 'data wallet' to manage consent to share data to specific organizations in return for anticipated returns.

Farmobile, an agriculture data collection and software service developed an ownership framework that governs the ownership and control of farm data. They also created the Farm Data Marketplace, whereby Farmobile collects offers from companies who want to use the data, and brings it back to them, ensuring that they will receive payment for the use of their data. In the case of taxi workers, these services are mirrored by organizations such as Driver's Seat, which help drivers exert greater control over the data they generate on ride-hailing platforms while helping them monetize this information through sales to other platforms.

On the other hand, approaches are also being developed in which community-owned organizations take on the responsibility of retaining control and ownership of data with the assistance of a technology solution provider. SEWA, for example, is experimenting with approaches for women-led cooperatives to develop their own platforms, thus retaining control and ownership of data by design.

Finally, the example of the Kerala Food Platform (KFP) provides a model of a public data infrastructure that supports cooperative efforts. A platform ecosystem being developed by the Government of Kerala in India, KFP connects producers, consumers, and business enterprises in the agricultural value chain. The experiment seeks to leverage the value of data to support the state's extensive network of agricultural and labor cooperative institutions by providing them with a suite of publicly created, basic digital services for membership records management, business process tracking, and leveraging data-based analytics for activity planning, monitoring, revenue forecasting, and risk management. Data aggregated from cooperative institutions will be covered as a knowledge commons (i.e., it will be collectively owned and governed by a community of users) with conditional accesses provided to private players (for creating useful digital products and services for the cooperatives) as well as state agencies (for public policy decision-making).

Source: Digital Green, Data 2X; Intellecap; & IT for Change

[44] Ibid

The need for promoting advocacy of data rights among vulnerable populations alongside data-literacy improvements is fast gaining attention,[45] and groups like worker unions,[46] farmer communities, etc., are coming together globally to organize around collective data rights, evaluate alternate models of ownership, and set standards for responsible use of data. For example, workers across platforms have used privacy-preserving tools to gather and own vast amounts of data and data-enabled intelligence about their working time, travel time, wages etc., in order to negotiate better with employers in platformized workplaces.[47] Communities are also expressing the need for training materials and learning modules that build data literacy and digital rights through the use of creative tools, such as animated cartoons, dynamic videos, or short movies that seek to situate and humanize data as part of their realities.[48] While several of these efforts may still be in the nascent stage or highly localized in nature, they point to the increasing trend towards collectivization around data rights as a key element of digital justice and the need for a legal institutional data governance framework that recognizes data as an inappropriable commons that belongs to all citizens.[49]

4. Recommendations for Incorporating Gender-by-Design Principles

This section covers a set of recommendations built on the principles outlined above. It is not our intention to suggest that a straightforward application of these principles is possible, or that they can be consistently applied across a diverse range of systems to produce a standard set of outcomes. Rather, the suitability of these recommendations must be evaluated/modified using a context-sensitive gender justice lens and their implementation needs to take into account the nuances of the realities on the ground.

1. Create pathways for women to participate in the design and implementation of the information system - Collaborative governance mechanisms such as social audits of information systems in programs such as MGNREGA have historically provided a robust platform for women to table their realities and make gender-related inequalities visible. Civil society groups can play a lead role in collaborating with women's collectives to build capacities for social audits using a digital and/or data justice lens. Recommendations to have ongoing public consultations (rather than one-off) that

[45] Krishna, S. (2019). Aadhaar-Led Identification and Datafication Among Informal Workers in South India: A Data-Justice Perspective. *Development Informatics Working Paper No. 79.* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3460235
[46] The Future World of Work. (n.d.). *10 Principles for Workers' Data Rights.* http://www.thefutureworldofwork.org/opinions/10-principles-for-workers-data-rights/
[47] Gurumurthy, A., Chami, N., Chatterjee, S., & Shah, S. (2022). *Workers' Data Rights in the Platformized Workplace - A New Frontier for the Labor Agenda.* It for Change. https://itforchange.net/sites/default/files/2159/ITfC-Workers%E2%80%99-Data-Rights-Platformized-Workplace_0.pdf
[48] Albornoz, D., Reilly, K., & Flores, M. (2019). Community-Based Data Justice: A Model for Data Collection in Informal Urban Settlements. *Development Informatics Working Paper Series.* https://marieliv.com/wp-content/uploads/2020/09/SSRN-id3460245.pdf
[49] Singh, P. J. (2019). *Data and Digital Intelligence Commons (Making a Case for their Community Ownership).* Data Governance Network Working Paper 02. https://itforchange.net/sites/default/files/1673/Data-commons.pdf

make deliberate attempts to include the participation of those whose rights are often denied/who are invisible to the state must be considered.[50]

2. Institutionalize mechanisms for explainability and proactive disclosure - The data rights of women vis-à-vis information systems include a range of considerations that take into account not only the equality, dignity, and autonomy of women, but also the right not to be harmed. Automated/algorithmic decision-making systems must be scaffolded by procedures for explainability and transparency, and scrutiny of algorithmically mediated decisions must form a key component of social audits.

3. Build mechanisms that allow women to challenge (mis)representation or errors - Women must be given the opportunity to challenge the decisions made by the system, be it in relation to the ways it constructs their identities (e.g., creditworthy or not) or in relation to the entitlements that may be due to them (e.g., pensions, cash benefit transfers, etc.). This will require the creation of a transparent, easy-to-access and human-mediated appeals process.

4. Prioritize information needs over access to systems - It is important that the use of and access to public information systems are tied to processes where information on and enrollment into related schemes, services, etc., may be facilitated through an analog support structure (either offline or online). For example, providing information on agriculture-related credit and insurance schemes for women farmers or supporting their enrollment into government subsidy programs in an e-marketplace may provide important incremental gains to them.

5. Introduce offline alternatives and support structures in context-sensitive ways - Women must be assured of adequate on-ground support that enables them to meaningfully engage with the information they receive, and know what to or whom to fall back upon when they encounter specific barriers. Allowing alternative procedures for those not comfortable with digital interfaces, through print-based or voice-based mechanisms, or through state-assisted models is one example of how such support may be embedded into the system. Importantly, care needs to be taken to ensure that offline structures do not give rise to duplication or reconciliation challenges (e.g., between paper-based and digital channels) which can potentially disempower women, either by increasing their labor or by reducing their agency to participate in the system on equal terms.

6. Strengthen grievance redressal touch points, particularly at the last mile - Local officials must be given the function and ability to record complaints and address grievances with clearly defined processes that do not involve dependence on centralized bureaucratic hierarchies. A clear listing of relevant officials, with accessible extension workers to help navigate the system must be

[50] Baker, S., & Rahman, Z. (2020). *Understanding the Lived Effects of Digital ID: A Multi-country Study.* The Engine Room. https://digitalid.theengineroom.org/assets/pdfs/200310_TER_Digital_ID_Report+Annexes_English_Interactive_Edit3.pdf

institutionalized, especially during a transition to a digital interface, and such mechanisms must be reviewed periodically for their timeliness and effectiveness in closing the feedback loop.

Box 6. Developing a community-based data collection model

Community-led data endeavors, supported by robust data governance laws, can provide an important pathway to prevent co-option of data by the socially powerful. Given below are a series of recommendations to build a community-based data collection model.

1. Collect information about expectations and aspirations of community members around data.
2. Collect multiple forms of data that reflect how communities wish to be portrayed publicly.
3. Co-design creative ways in which community members can share their own stories and perspectives beyond the use of quantitative data.
4. Explain the value of different forms of data to community members and how each form of data can be used to achieve different purposes.
5. Ask for consent both when collecting data, and again when using it. Ask for consent not just to collect data, but also about types of data use.
6. Create strategies to cross-reference and integrate community data and data collected at a larger scale by external organizations.
7. Build community capacities to use data for program and resource management.
8. Develop digital and non-digital mechanisms to share data with the community aimed at reaching diverse publics.
9. Design advocacy roadmaps that outline how data will be used to achieve community-defined objectives.
10. Design a community-based data infrastructure where communities who provided their data can access it, manage it, and set terms over how it is used.

Source: Centre for Development Informatics, Global Development Institute, SEED

7. Account for women's care work burdens and unpaid labor at every step - Timings of digital literacy or capacity-building programs, distance taken to travel to venues such as CSCs or field offices, complaint resolution and grievance redressal mechanisms – all need to account for the extent to which they can adversely impact women's ability to perform their day-to-day domestic responsibilities, which in turn will likely determine the extent to which they are able to benefit from the system.

8. Identify compelling use cases to build women's data literacy capacities - Digital literacy efforts must expand to include data literacy, i.e., people's ability to understand, analyze, and make decisions about data, and women's collectives must be equipped with these skills.[51] However, such programs need to speak to women's contextual realities and put their experiences at the center of design.

Civil society organizations that are currently working on women-centered digital literacy campaigns can play an important role in bridging this gap, by demystifying the subject of data and making it speak to their day-to-day lives.[52]

[51] UN Global Partnership for Sustainable Development Data. (2020). *Reimagining data and power: A roadmap for putting values at the heart of data.* https://www.data4sdgs.org/reimagining-data-and-power-roadmap-putting-values-heart-data
[52] TTE Team. *"You teach me YouTube. I will teach you to make pasta."* (2020). The Third Eye. https://thethirdeyeportal.in/pedagogy/you-teach-me-youtube-i-will-teach-you-to-make-pasta/