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Feminist design framework for envisioning gender-inclusive ride-hailing sector:
Perspectives from India

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Abstract

The rapid rise of the ride-hailing sector is opening new avenues for women to participate in the Indian platform economy. However, women continue to be underrepresented as transport providers as much of the debate in the ride-hailing sector centers around women as transport users, not as transport providers. In this paper, we critically explore the strategies to enhance the participation of women drivers in the ride-hailing sector by conducting in-depth qualitative interviews with the stakeholders such as women taxi drivers, platform providers, NGOs, and policy and research support groups in India. The interviews are supported by analyzing documents related to government policies, platform companies, organizations, and the policies mentioned by the participants. This study builds on the Feminist HCI (Human-Computer Interaction) theory that proposes technologies should integrate feminist values in the design (Bardzell, 2010). The paper advocates for redesigning the ride-hailing platforms in alignment with marginalized actors.

Introduction

The debut of the ride-hailing platforms[1] invited a mixed reaction from scholars and activists. On the one hand, supporters believed that the platforms challenged the traditional model of the taxi industry and enabled a fast, flexible, low-cost, and user-friendly mobility in urban areas for middle-class consumers. On the other hand, the critics questioned the claims of the platforms to monetize underused resources, reduce carbon footprint and provide equal economic and social opportunities to marginalized people including women from low-income backgrounds (Schor, 2016; Shaheen et al., 2016; Zanoni, 2019). Despite the criticism, these platforms expanded quickly around the world with Uber, Lyft, Didi Chuxing, Ola, and Cabify dominating the markets. Currently, there are around 90 ride-hailing and ride-sharing platforms globally (RideGuru, 2021), with Uber being the largest ride-hailing platform in the world (Curry, 2021). However, women continue to be underrepresented as transport providers in this sector with only 14% of female drivers in Uber worldwide (Srivastava, 2019). Lack of access to public spaces due to socio-cultural norms in many parts of the world restricts women's freedom of mobility and limits their access to various job opportunities. The negative stereotype of inferior women drivers further exacerbates the situation of keeping women in the home (Berger, 1986). Hence, for many women, driving is symbolic of and synonymous to freedom – both social and mobile. This qualitative study seeks to increase their access to safe and secure mobility by addressing gender-based concerns in the ride-hailing sector.

In the last decade, a considerable amount of research has been done in the ride-hailing sector of the platform economy. Researchers believe the expansion of this on-demand economy allow for flexible sources of income outside conventional (Graham et al., 2020; Heeks, 2019), but at the same time, foster a new class of precarious workers, also termed as "Cybertariat" (Huws, 2015, para 1). A growing body of academic literature has been investigating the working conditions of the resultant digital labor globally (Chen, 2017; Fielbaum & Tirachini, 2020; Surie, 2018), where platforms immunize themselves (van Doorn, 2017), act as 'intermediaries' and do not classify these workers as 'employees' (Cherry, 2016; Choudary, 2018), regulate the work practices (Beerepoot & Lambregts, 2018), create

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[1] The usage of the terms "ride-hailing", "ride-sharing" and "ride-sourcing" have been debatable with some researchers and even the platforms using these interchangeably. Though, the term "ride-hailing" gained more public acceptance after the Associated Press declared the usage of the term "ride-sharing" as a misnomer, and adopted "ride-hailing" in its stylebook. To maintain consistency, we will use the term 'ride-hailing' for this paper.

information and power asymmetry (Schmidt, 2017), violate fundamental labor rights (De Stefano & Aloisi, 2018), indulge in algorithmic management and control (Lee et al., 2015; Rosenblat & Stark, 2016), and foster economic exclusion due to discrimination and occupational segregation (Graham et al., 2017).

However, there is a noticeable gender and platform skew since the majority of the studies in this domain focus on the driving experiences of male cab drivers and lack diversified data from various platforms. Further, wherever there is a focus on gender discrimination, it is in the backdrop of the overall gig or on-demand economy (Hunt et al., 2019; Kasliwal, 2020). There is a dearth of research on the gendered experiences and perspectives in the ride-hailing sector in the Global South context, where the issues of class domination (socio-economic), patriarchal structures, institutions, and gendered norms intersect with each other. In fact, the automation of this sector could reproduce and perhaps amplify the gendered discriminatory practices that have long pervaded these contexts as evident in the scholarship on legacy structural exclusions, manifesting in systems of algorithmic bias and oppression (Hanrahan et al., 2017; Muller, 2020; Page et al., 2017).

We move beyond the normative borders of the Global North and foreground the feminist ideology and perspective to global development and design that would consider the lived experiences of a diverse range of users (P. Arora & Raman, n.d.). For sustainable change in this sector, we use feminist approaches where we foreground the female taxi drivers and women-focused taxi platforms and critically engage with their concerns and practices. The paper addresses the gap in translating the Feminist HCI (Human-Computer Interaction) theory (Bardzell, 2010) into practice by applying some of the principles such as participation and pluralism. Rather than "establish[ing] an objective, distant, and scientific relationship with subjects" (Bardzell, 2010, p. 1306), we sought to collaborate with the various stakeholders and value participatory processes. We imbibe Bardzell's quality of pluralism to "nurture the marginal," (p. 1305) in our approach and analysis. Thus, this study helps in bringing forth the otherwise neglected sector and advocates for redesigning the ride-hailing platforms in alignment with the marginalized actors. This paper is a part of a larger study on the Future of Work and digital labor platforms in the Global South.

Ride-hailing sector in India

According to IFC and Uber Technologies (2018), "Ride-hailing services—sometimes called transportation network companies—digitally connect the driver of a car or other vehicle with a user, generally via an app but sometimes using a website" (p. 9). In India, the government classifies such companies as 'aggregators'— digital mediators or marketplaces connecting passengers and drivers for the purpose of transportation (Business Today, 2020). In India, some of the key players acting as 'aggregators' in the shared mobility space are Ola, Uber, BlaBlaCar, Rapido, Meru, Wheelstreet, Vogo, Bounce, Zoomcar, Yulu, and Revv, which offer different services such as ride sharing, ride hailing, car rental, car sharing, bus/shuttle and two-wheeler sharing (Frost & Sullivan, 2019; Prescient & Strategic Intelligence, 2021). This study focuses on the ride-hailing model where passengers book a taxi either through apps or websites.

The Indian government has acknowledged that these platforms create work, provide entrepreneurial opportunities, and contribute towards skill development of laborers. In 2016, the government asked Uber and Ola to train one lakh (0.1 million) commercial drivers annually, especially women, and set up driver training institutes as part of the 'Skill India' initiative (R. Arora, 2016). Similarly, other schemes such as the MUDRA loan scheme, provides loans to buy commercial vehicles for livelihood purposes, and the Stand-Up India scheme facilitate loans between INR 10 lakh (USD 13,400) and INR 1 crore (USD 1,34,000) to socially underserved members of the scheduled caste or tribe community, or a women entrepreneur, to start any greenfield enterprise[2] (Prabhat et al., 2019; Ramachandran & Raman, 2021). A few Indian state governments such as – Telangana Government introduced the 'Driver Empowerment Programme' to provide financial assistance to minority drivers belonging to backward classes (A. Y. Khan, 2020); the West Bengal government under the Gatidhara scheme aided jobless youth to buy vehicles for commercial use (Mitra, 2019); and the Punjab government under the 'Apni Gaddi Apna Rozgar' scheme decided to double the subsidy support for purchasing commercial vehicles post-coronavirus market recession (Sharma, 2020). However, the problem with these initiatives is that they are few and far in between. They also lack proper channels of communication and are cumbersome in nature. For instance, most drivers in a study conducted by Prabhat et al.(2019), preferred taking loans

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[2] In this context, green field signifies the first time venture of the beneficiary in the manufacturing, services, agri-allied activities or the trading sector (Stand-Up India Scheme Features, n.d.)

from corporate lenders to prevent themselves from painful documentation and identification process.

Women drivers in India's ride-hailing sector

Both the mainstream ride-hailing platform companies in India, Ola and Uber, have not quoted the exact number of female drivers working with the platforms in any official reports. In the earlier mentioned report of IFC and Uber (2018), India was excluded from their data due to a low sample size of women drivers as there were only eight active drivers with Uber at the time. In 2018, Ola, said the number of female-driver partners rose by 40% in every quarter for them (Sridharan, 2018).

The potential benefits of the ride-hailing sector for women workers are multifold. First, these platforms help bridge the gendered digital divide (Florito et al., 2018) by offering smartphones and imparting the necessary skill-based training to potential workers (Aneja & Shridhar, 2019). Second, they allow flexibility to determine one's own hours and decide the amount of work to be taken up, which is one of the major enablers for women as they continue to perform family and household duties (Kasliwal, 2020). Third, they help in fostering "inclusivity" and creating "entrepreneurship" for "people without the right degree, ethnic minorities or from poor neighborhoods" (De Morgen, 2016, as cited in Zanoni, 2019, p. 149). Fourth, this sector helps in generating new and non-traditional sources of income and asset access and ownership for women (IFC and Uber Technologies, 2018). Fifth, ride-hailing platforms enhance freedom of movement and provide greater sense of independence to both women riders and drivers. A survey conducted by IFC and Uber Technologies (2018) reveals many women like the social aspect of driving and would like to break the cultural barriers and resistance in relation to this profession.

However, women's participation in the ride-hailing sector is affected by a range of barriers starting from social and legal to financial and safety concerns. Women are structurally and socially more vulnerable to external shocks and hence often face double discrimination in this sector. The gender- related cultural norms intersecting with class discrimination restrict women to take up taxi driving as a profession. For instance, it is more difficult for a Dalit Muslim woman to get trained and employed as a taxi driver as people from these communities are expected to take up manual scavenging or toilet cleaning jobs (Chugh,

2016). To mitigate some of these barriers, a few platform companies in India launched gender-segregated transport services with different operational models – from for-women-by-women"[3](Meru Eve, Taxshe, Sakha Cabs, Koala Kabs, Viira Cabs, Pink Ola, Pink Taxi, and GoPink Cabs) to "a women-for-all"[4] (She Taxi 2020, Kudumbashree, Priyadarshini Taxi). They work either by straddling the old call-a-cab model and ride-hailing: passengers must book the cab via a phone number or through the company's website and the cabs are equipped with a GPS tracker and safety button or a completely app-based model for bookings.

Methodology

Feminist HCI scholars propose integrating values such as agency, fulfilment, identity, equity, empowerment, and social justice into the technological systems (Bardzell, 2010). Built on the feminist standpoint theory, it advocates for the use of women's viewpoints and experiences as an alternative point of departure for social science research. The marginalization of women and their social disadvantages can be channelized as resources and be turned into our scientific and political advantage. Our methodology focusing on the women taxi drivers help us understand both the perspectives – 'female' drivers in a male-dominated segment, and the dynamics of 'platform drivers'. Similarly, centering women-focused taxi initiatives help in uncovering the challenges faced by platforms who are marginalized in terms of the resources. Our work represents a "generative contribution" that "involve the use of feminist approaches explicitly in decision-making and design process to generate new design insights and influence the design process tangibly" (Bardzell, 2010, p. 1308). Hence, this paper can prove to be an essential guide for policymakers, platform providers, and designers in the digital platform economy.

One of the prominently discussed methodologies for policymaking and collaborative design process is the stakeholder approach. This approach helps in the identification of the relevant actors in relation to the issue being addressed and uncovers the perspectives and experiences of different stakeholder groups while understanding connection between these networks. However, there is only a feeling of equality amongst the different stakeholder groups as it often deems invisible the marginalized groups that are already fraught with inequality and precarity. This makes the stakeholder approach a rather reductionist one in

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[3] The platforms register only women drivers who are matched with women passengers and/or children and senior citizens
[4] The platforms register only women drivers, but they serve both female and male passengers

which "shadows of the context" are not considered (Eskerod and Larsen, 2018, p.1). Focusing on the perspectives and lived experiences of the marginalized stakeholder groups can bring this shadow conceptual information to visibility i.e., already considering the context within which these products and policies emerge. This could be cultural stigma, discrimination, and preconceived stereotypes.

Thus, using a combination of feminist and stakeholder approaches, we bring forth the concerns and experiences of people who are most affected whenever policymaking and designing happens in vacuum. In doing so, we take a critical stance and understand that it is an interpretation of the interpretation. We also acknowledge our positions as people belonging to a certain class, caste, and gender. To mitigate these challenges, we have represented most of the data through direct quotes, and these quotes are not modified to correct grammar or colloquial language and slangs.

Data Collection

11 semi-structured in-depth qualitative interviews of vested stakeholders such as four female taxi drivers working/worked for different platforms in various cities of India, founder of Priyadarshini Taxi, founder of Koala Kabs, Director COO of Taxshe, Programme Director of Azad Foundation, Project Associate with The Gender Park, and two researchers (together) of Ola Mobility Institute (OMI) were conducted (details in Table I, Appendix). Centralizing the theme of women drivers and women-focused taxi initiatives, an attempt was made to include random samples from different strata or groups such as female taxi drivers (both currently working and non-working), popular women-focused taxi platforms, closed or shut-down women-focused taxi platform, re-launched and government supported taxi initiatives, NGOs and support groups, and policy research organizations and think tanks.

The interviews were supported by carrying out a document analysis of over 50 documents related to the government policies, platform companies, organizations and the policies and references mentioned by the participants. These documents included annual reports, mission and vision statements, research reports, company blogs, media articles (news stories, features, opinion columns, and editorials), and a few case studies on the platforms. Most of these were downloaded from the official websites of the companies by visiting their 'about us', 'latest news', 'blogs', and 'annual reports' sections. The remaining were accessed by conducting a Google search and using keywords related to the companies, organizations,

and government policies in context to women taxi drivers. The document selection was based on the "relevance of documents to the research problem and purpose" (see Bowen, 2009, p. 33).

Data Analysis

A hybrid approach combining technique of inductive and deductive thematic analysis (Fereday & Muir Cochrane, 2006) was used. Inductive TA helped in coding from the data based on the interview participants' responses and experiences, and deductive TA helped in drawing on the theoretical constructs from feminist HCI scholarship as explained in the earlier sections. After the interviews were transcribed and documents collated, the transcripts and documents were read simultaneously in entirety to recognize the voices and views of the people and understand the whole picture. Then, initial codes were generated upon reading every word and sentence of the interview transcripts and documents. Some of these elemental codes included flexibility, agency, upskilling, car loans, perception, access, safety, clean toilets, technology, tracking, feedback, data privacy, and app design. The data was scrutinized and compared with codes in order to organize ideas and concepts that seemed to cluster together. This further helped in refining the codes to include conceptual information, for instance, perception changed to perception of women taxi drivers and perception of the profession. Similarly, access was refined to include concepts related to agency, awareness, training, and public interaction. These refined code clusters that seemed to share unifying characteristics were put under substantive themes, and then these themes were compared across interview transcripts and data from documents.

Results and Discussion

The below framework serves as device to make sense of the data from the interview transcripts, previously described documents, and establish connections between various other related empirical and theoretical studies. This five-point framework could serve as a conceptual design for inclusive labor reforms in the platform economy.

1. Appropriate gendered framing and positionality

While the perception of honourable and decent work prevails for women in the beauty segment of the platform economy (IT for Change, forthcoming as cited in Zainab, n.d.), interviewees reported negative perception towards the participation of women as transport providers. Several interviewees pointed out how women driving on the road as a 'taxi driver' is either viewed as 'claiming male dominated public spaces' or a form of 'desperation' and not 'choice'. Former platform driver, Malini Tyagi, elucidates these points:

> [Certain people] want to take advantage of the fact that they have landed in a situation where   there is a women driver, and if they can have their way with this person, because, of course, you know, the woman who is driving the car is not doing it out of her own choice. She's doing it out of compulsion and will obviously be facing financial issues and will do anything to make money. *(Malini Tyagi)*

Sushil Shroff, Director COO, Taxshe further elaborates that the profession does not appeal to lower middle and upper middle-class women due to the element of 'blue-collar' work and the perception of such women as 'cheap' and 'available':

> Cabbies were like the blue-collar job, and the general tendency in India is that if a woman is driving, then she is a cheap and available woman, because anyone can sit in her car and talk anything to her, and she'll have to take it.

The situation signals further vulnerability of female drivers, who are "doubly oppressed by their status as women in Indian society, and their status as drivers in a professional hierarchy that does not seem to place a lot of value on service jobs" (Researchers, OMI). The framing and branding by the platform companies plays an important role in this scenario. For instance, women-only driving platform, Taxshe, has positioned female drivers as 'alternate moms' who drive women and kids safely to their destinations, and have labelled them as 'Roo', inspired from the animal 'Kangaroo'. This led to the parents trusting women drivers for ferrying their children to school and agreeing for paying higher prices for the 'premium' and 'rare' service – being driven by women.

These experiences and quotes indicate the need for careful framing and positioning of female drivers to challenge the traditional mindset and view platform driving as a viable livelihood choice for women.

2. Outreach, mobilization, and characterizing target population

Platform representatives and support groups expressed the need for adopting a nuanced approach for outreach, mobilizing, and appropriately characterizing those women who could be potential participants in the ride-hailing sector. The majority of women drivers in this sector belong to the marginalized section of society and outreach and mobilization efforts of NGOs like Azad Foundation and Neeva Foundation help in building confidence and establishing trust among potential women drivers and their families. Once this is done, another challenge faced for recruiting women is the higher percentage of migrant populations who lack proper documentation. Amrita Gupta, Azad Foundation, says 85% to 90% of women they engage with are migrants who do not have the identity proofs or necessary documents for obtaining the driving licenses. Their annual report further elucidates the issue in context of gender:

> The basic documents required for a learner's license are proof of address and proof of age. Many women do not have a birth certificate. Proof of address is not available as household arrangements are set under names of the men in the households. Young girls who attend schools are rarely encouraged to keep their documents safely, as families do not have professional aspirations for them. (Annual Report 2014-15, Azad Foundation, p. 8)

After the outreach and mobilization activities, another crucial aspect is identifying the core characteristics of this target group and devising adequate training programmes as per their need assessment. Taxshe, whose main segment consists of women above the age of 35, explains the dynamics as follows:

> Most of our women are above the age of 35...Now, these are uneducated women who have a maximum of seventh standard or eighth standard of education in their villages, not even in a proper school in gram panchayats, and all they have done is this education. And surprisingly all of them have left education when in seventh standard

or eighth standard because it is the time when girls become mature. And in their villages and all they have never had washroom facilities in their schools, let alone at the time of their periods. So, they simply drop out of school, they are just pulled out of school as simple as that. (Sunil Shroff)

Neeva Foundation's website elaborates this group as "women from financially weak segments, single mothers, burn victims, rape and abuse victims, college students, home makers." Hence, while formulating policies, it is essential to consider the core character of this population and the implications on access and ability.

3. Broadening access

While the Fairwork Principles discuss fair conditions that ensure work being carried out in a healthy and safe environment (Graham et al., 2020), participants argue that it is also essential to recognize multiple forms of 'access' that can be facilitated by platform companies, support groups or NGOs, and workers' families to carry out this work:

Access to transformative training and upskilling: Sunil Shroff expresses need for both technical and non-technical training in context to the marginalized resource poor women, who are at the intersection of caste, class, and different identities. He says that Taxshe's model consists of 100 hours of driving training and an additional 70-80 hours of imparting other knowledge and skills, which are clubbed under 'soft skills' such as English speaking, legal rights, financial literacy, first aid, self-defence, sexual and reproductive health, grooming, work readiness and reporting, and communication skills.

In contrast, the one-day training programs of mainstream platforms are sometimes even inadequate for the male drivers. Malini Tyagi, who was also a fleet owner with Ola, elucidates how the drivers used to contact her often to understand the app and payment features. Hence, the interview participants call for a transformative or at least an extensive training module, on job upskilling opportunities in line with the changing market and to meet the demands of digitization and automation for retaining women in this sector.

Access as awareness: NGOs like Azad Foundation insist on self-defence training for prospective women drivers that moves beyond just basic safety training. The idea is to make women aware of their surroundings and take prompt action in case required:

> *The idea [of self-defense] is the awareness. The awareness of how to behave, the awareness of what to say and what not to say. For example…there is a girl who said that when I am out on the road at night, I am aware that I keep my eyes around. Looking at people who might be following me. In case I see somebody following me, I quickly check the nearest police station and drive my car towards the police station. So, it's like awareness of your surroundings, awareness of what to do. (Amrita Gupta)*

Access to interacting with the public: Women drivers Malini Tyagi and Maya Sharma exuded confidence in terms of handling the passengers while driving, however Sunita Mishra and Madhuri expressed concerns about the lack of confidence in terms of interacting with the public. The long gendered issue of women being often relegated to the domestic sphere is evident in Madhuri's quote, "We were staying inside home, we were not going outside for jobs, so we were not having any contact with public." In this scenario, the soft-skill training accompanied with 'confidence-building' played an important role in Sunita's life – a widow with two daughters.

Access is agency: Interview participants define 'agency' in terms of 'flexibility' and 'choice' afforded to women – to be able to walk out of the extensive training programmes and rejoin at any point; to decide which passenger (male or female) to pick; to opt to work during morning, afternoon, or even late at night; and to decide the number of hours they want to spend on the road working in the 'flexible' platform economy.

With context to 'walkouts', Amrita Gupta elaborates agency as follows:
> *But the idea is to give flexibility… a woman has her care work responsibility, she will be the first one to be pulled out of the training, when there is a bereavement in the family, or there is a sickness in the family…We say walkouts, because at this point, the woman is being given multiple opportunities to come back. We go back to the families, we negotiate with their families and after that if she has taken the decision to walk out, that's her own agency. She has chosen it, right.*

With context to work hours, agency is exemplified by the representatives of Taxshe and Priyadarshini Taxi. They stressed the need to facilitate women to pick the desired time slot in lieu of their care responsibilities. "Minimum of nine to ten hours you have to work, minimum. Which hours, morning, evening, afternoon, late night, is the call of the woman," says Susieben Shah. Sushil Shroff adds:

> *We have flexible timings. And they can also divide the shift into two parts, four hours in the morning and four hours in the afternoon. So that they can go back to their home, school for the kids, do some work and yet be on the job and still make money for the family.*

With context to deciding which passenger (male or female) to pick, the Indian platform companies do not have that option as of now. However, ride-hailing company '99' in Brazil and Uber's 'Women Rider Preference' feature in Saudi Arabia and Brazil allow women drivers to "elect to serve either men or women passengers or opt in to serve only women passengers at any time" (IFC, 2020, p.3).

Thus, there is a need to identify various kinds of access that should be facilitated for women drivers in order to bridge the gendered gaps and encourage more women to take up driving as a profession.

4. *Gender-sensitive sustainability*

The data suggest being responsive to gender and focusing on the sustainability of women-centric platforms and professional driving for women in the following ways:

Feminist funding: One of the main challenges faced by women-only taxi initiatives is that of funding or finding the investors who are supportive of women entrepreneurs. Sushil Shroff elaborates:

> *In the investment segment, woman is not considered as the right bet to put your money...So anywhere, you will find that if there's a woman entrepreneur who's heading the thing, she will have a lot of difficulty in finding the right funding partners, in finding the right technology partners, and all that.*

Amrita Gupta highlights the lack of support from the corporates and the government for this kind of unique model that requires extensive training and handholding which may go beyond three months. Further, the funding seems to be a major issue for this asset-heavy model that at least two platform representatives reported extreme difficulties during the pandemic, with one of them having to close the business.

Gender-responsive infrastructure: A lack of gender-responsive infrastructure is another concern raised by the interview participants that hinders the ability of women to be on the road. Driver Malini Tyagi expressed inconvenience in terms of 1) locating a nearby washroom and 2) finding a clean washroom. To overcome this challenge, Taxshe has mandated the schools and clients to allow women drivers to use washrooms inside the school premises and their homes while ferrying school children. OMI points towards the lack of awareness and adequate training in relation to locating the washroom through the mainstream apps.

Secondly, contrary to the popular belief, it was found that most women prefer working during the night as 1) it helps them balance the household and childcare responsibilities during the day, 2) night time fares are higher, and 3) the traffic congestion is low. In this context, OMI recommends following infrastructural changes:

> *Make the night time more comfortable and make that more accessible. And by that, I mean better street safety at large, comfort stations, social spaces that open late into the night that are accessible for drivers, women drivers and women passengers and other kinds of travellers. All of them have to be more vibrant, have to be more safe.*

Safety and harassment: Both Malini and Maya expressed their discontent with the mainstream platforms reporting the problematic male passengers. Maya Sharma says:

> *No action was taken except their promise to talk to the customer about it… "We will look into the matter and discuss internally". Whenever we spoke to the customer care, they said we are registering a complaint and we will forward it to the right person.*

Moreover, she did not even lodge a First Information Report (FIR) because, "we never had the number of the customer and other details. There was no number given in the app. We used to

get the call from the customer through the app." Malini Tyagi believes that men approaching women is common in all the sectors but in a blue collar profession like driving, women are more prone to harassment as men do not ask in a polite way and in certain cases, they assume that they do not even have to ask.

Ownership capacity: The data indicated that women are not keen on owning the cars as several interviewees cited incidents where the male members of the family snatched away the cars, making a case for asset non-ownership:

> *It so transpires that the men of the family, whether it be the brother, the husband, the brother-in law, the father, took over the car. Let's say she would have a booking late in the night or say 9   o'clock, the car will be with the husband or the father or the respective men in the family. And the woman had no say... So, they suggested that madam, you start a company, you own the car, and we drive it for you. (Susieben Shah)*

Thus, asset ownership is a complicated issue that requires thoughtful solutions. Pushing women to purchase cars by providing subsidies ignores the deeper embedded issues in the Indian society, where   a woman has no power and control over the male members of her family.

5.   *Fairness in data management and design*

The analysis of the interview transcripts and the related documents also pointed towards the need for a   fair technological design that does not perpetuate any sort of discrimination; builds algorithms that cater to the requirements of women drivers such as the desire for fixed salary (and solve the accompanied   issues related to workers' accountability and quality control); and helps in establishing trust between   the platform drivers and the platform customers.

Social sorting: Interview participants shared how sometimes customers make strange requests that could lead to social sorting in the platform economy. For instance, Amrita Gupta describes the kind of requests they receive from potential customers for hiring drivers for private placements:

There is a lot of monitoring that is happening...And a lot more social, a lot of more selection is happening. "I don't want a girl who is dark. I don't want a girl with a Muslim name. What is her Surname? What is her caste?" And these are the things are happening on the platform economy as well... When we are dealing with private placements, we have had such comments – she is too short, she is too thin, she is too tall, she is dark, she doesn't look good, all of that.

Woman driver Maya Sharma shares an incident where she refused to drive as she felt uncomfortable with the requirements of the customer:

She selected me, but I wasn't happy. Even though the job was my need, we have been waiting for this job for five or six months after finishing the training and we were putting in all the effort ultimately for the job. My financial condition too wasn't very well at the time. I was in need of a job. But I wasn't happy when she told me the reason for selecting me. She said that she actually needed a young girl only. She said that she didn't want any old lady or any woman. She did not require a woman. She needed a young girl. So, she said you are perfect for us, for our home. So, I said, "ma'am, actually the thing is not about if the girl is young or not. The other two drivers who were with me were older than me. One of them was 40 and the other 35 years in age. The other two drivers that came with me for the test drive. So, I told her that ma'am it's not about the age. These two also do perfect driving. You should not say so, they would feel bad. It's my nature that I say it to the face." [This narration is in context to the driver placement service offered by a platform]

Amrita Gupta adds that the digital gig economy does not solve this problem either as platforms have access to the Aadhaar cards[5] of workers, where 'names' can reveal their castes and religions. In fact, a study by Rathi & Tandon (2021) found how certain mobile applications and websites allow users to filter the gender, caste, and religion of domestic workers leading to discriminatory differentiation in the platform economy. Another research article states that the platform economy can result in social sorting of "bodies using gender, class and race as categories of discipline and discrimination" (S. Khan, 2019, para 3).

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[5] Aadhaar is a 12 digit individual identification number issued by the Government of India. The number serves as a proof of identity and address.

In this context, Graham et al. (2017) writes that the digital platforms should be developed in a way that "can allow workers to access their local market through a veil of anonymity provided by the digital medium, masking the characteristic on the basis of which discrimination occurs" (p. 147). Hence, developing a non-discriminatory design is both a need and a challenge in the digital platform economy.

Fixed salary design: It was also found that most women drivers desire fixed salaries over the fluctuating or uncertain income model followed by the mainstream ride-hailing platforms. For instance, when the interview participant, Sunita Mishra, was asked multiple times that would she still prefer fixed salary over the option to earn more with the mainstream platforms, she maintained that she does not mind earning less, and is satisfied with it.

> *No, I am satisfied with my salary... No, no, I am satisfied with fixed salary only... Yes, even if it is less, I am satisfied. (Sunita Mishra)*

Similarly, Amrita Gupta, confirms vehemently that the drivers want salary as the salary and the social security benefits even help them procuring loans for purchasing cars. She adds that the salaried bank accounts are the mandatory requirement listed by most financial institutions for processing loan applications.

Sushil Shroff elaborates upon the need for a fixed salary design in a different context. He said that the incentive-based system with long driving hours does not appeal to the women drivers. "Men in India drive about 14 to 16 hours, a woman possibly cannot do that much of work due to the disproportionate burden of the care work responsibilities that falls on women," adds the Taxshe Director COO. In this case, a woman will always lose out on the incentives or fail to achieve the Minimum Business Guarantee (MBS) targets set by the mainstream platforms, as she will be expected to drive a minimum of 12-14 hours in a day to make ends meet (Khatoon et al., 2019).

Thus, the data indicate that the platforms need to incorporate a fixed salary or income model as part of their design. However, a bigger challenge in the event of a fixed payments model is how to develop algorithms that ensure workers' accountability, quality control, incentives, and feedback from the customers. The mainstream platforms are currently able to penalize

and incentivize or reward the workers partly because they do not have a fixed salary design, as the workers are afraid to lose out on the business and money.

Hybrid model: Women drivers like Sunita Mishra were found to be more comfortable in driving on 'fixed routes' and with 'familiar-sensitized' customers. Sunita explained that the pick-up location was shared with her in advance, which helped her in mapping the route and registering the landmarks before she started ferrying the school children. Sushil Shroff elaborated that Taxshe creates WhatsApp groups where parents and drivers are added for communication and tracking, which results in a technology mediated 'circle of trust'. He further said that Taxshe acts as a mediator not only for connecting the two parties, but also to sensitize the customers:

> *They are sensitized about the driver...that if the driver is late… now suppose they pick up your child and you are two minutes late, the next child will be waiting, that parent will get angry. And they don't see why you're late, they just shout at you, that is the tendency of people's behavior with drivers. So, we go and sensitize them that if she's late, you're not going to shout at my lady drivers. If you shout, she may get nervous, it puts people at risk, or you will try to hurry up the next drive, so that puts your child at risk. So, you're not going to shout. If you have any problem about being late, you mention in a group that the driver was late. And the parent who had put the child a little late two minutes late or three minutes late, will take up the onus of saying that no it was late because of me. So, then the blame game does not happen. It should not reach my woman driver.*

At the same time, it is important to note that the app-based model was preferred by the customers (parents) of Koala Kabs. Shailja Mittal explains:

> *Parents wanted to book through app only because they could track it. They could track where the car is, where, what the speed is...If the kids are using the service, then what time my kid is being dropped in the class? What time is he being picked up? They used to get all the alerts from the app. The drivers were trained that way. They used the app that way. And that is how we used to rate our driving partners...that have you use the*

app properly or not, because for parents, it was very important to track that where the kids are. So that is why they always prefer to book the service through app only.

These scenarios and the interviewees point towards the need of a hybrid model where there is an integration of technology (apps) with human managers. It is imperative that a 'circle of trust' is built where female drivers feel safer to drive and their managers understand them. Sunita Mishra fondly speaks about her assignment manager and co-founder of the Taxshe:

They have that patience, that care, they care also…If it is an emergency, I can't help it out, they arrange it very fast. Aarti does all those Superman work. Vandana madam is also very understanding. That is the thing, she understands us.

Overall, this section highlights the issues in the current technological design of the ride-hailing platforms and pushes for a non-discriminatory and hybrid model, which protects the identity of the works and where technology is integrated with human connection.

Conclusion

"Inclusive transportation is a key, but often underemphasized, catalyst for gender equality" (IFC, 2020, p. 2). The underrepresentation of women as drivers has large-scale implications on women's freedom of movement and access to the job market. The findings indicate a need for a hybrid institutional model – non-profit foundation and for-profit taxi company that understands the complexities and underlying social norms to increase the participation of women drivers. Further, new technologies employed in the ride-hailing sector pose questions about digital safety and privacy, labor precarity and mental stress in the absence of human managers, and surveillance and tracking methods due to algorithm-driven models. In this case, an amalgamation of app-based technology and human-centric mediation can help in establishing trust, providing direct feedback, and sensitizing both the drivers and the customers. Here, we recentered the lived experiences of marginalized female drivers in India that are typically neglected in the ride-hailing sector and push for a cross-cultural framework that denaturalizes the Western hegemony. Ultimately, we aim to decolonialize the Anglo-Saxon normative perspectives on what constitutes as ethical platforms, fair work, and inclusive labor by privileging alternative cultural and sectoral contexts.

Acknowledgement

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