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Gender, Technology, and Changing Family Structures in Urban India: A Socio-cultural Analysis

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Abstract—This study examines how digital technology adoption intersects with gender relations and household structure in urban India. Using an explanatory sequential mixed-methods design, survey data were collected from 612 adult respondents across Delhi NCR, Bengaluru and Pune, followed by 34 semi-structured interviews. Results show a persistent gendered gap in digital autonomy: men scored significantly higher than women on a composite Digital Access Index (78.3 vs 66.9, $t(610) = 9.87$, $p < .001$, $d = 0.80$), while women reported 241 minutes of daily unpaid domestic work compared with 78 minutes for men. Household structure moderated these relationships: women in nuclear households reported substantially higher decision-making participation ($M = 68.4$) than women in joint households ($M = 51.7$), with a significant gender × household-type interaction, $F(2, 606) = 7.94$, $p < .001$. Regression analysis indicated that digital access ($\beta = .29$), independent income ($\beta = .24$) and nuclear residence ($\beta = .21$) positively predicted women's household decision participation, while perceived surveillance of device use was a significant negative predictor ($\beta = -.22$); the model explained 48.7% of variance. Qualitative findings identify a pattern of households that are residentially nuclear but digitally joint, in which messaging platforms sustain extended-kin authority across physical separation. The paper argues that technology in urban Indian families operates simultaneously as an instrument of individual autonomy and as an infrastructure of familial control.

Keywords—gender; digital technology; family structure; urban India; household decision-making; digital surveillance

Introduction

The Indian family has long been treated as the central institution through which gender, generation and authority are organised. Classical sociological accounts described a transition from joint to nuclear residence accompanying urbanisation and wage employment, though later scholarship complicated this linear narrative by showing that joint kinship obligations frequently survive nuclear residence (Shah, 1998; Uberoi, 1993). Over the last two decades, a second transformation has overlaid the first. Affordable handsets, inexpensive mobile data and near-universal messaging platforms have restructured how family members communicate, coordinate labour, manage money and monitor one another (Doron & Jeffrey, 2013; Arora, 2019).

These two transformations are rarely analysed together. Studies of the digital divide typically treat the household as a static background, while family sociology often treats technology as a neutral conduit. Yet the household is precisely where devices are purchased, shared, permitted and restricted. Whether a young married woman owns a phone, whether she can use it unobserved, and whether her earnings are visible to her in-laws are all outcomes negotiated within domestic hierarchies (Tenhunen, 2018).

The present study addresses this intersection in urban India, where nuclear residence is most common, female labour force participation is highest, and digital penetration is deepest. It asks how gender and household structure jointly shape digital autonomy, and how digital autonomy in turn reshapes women's position within the family.



Literature Review

Indian family scholarship has consistently resisted the assumption that urbanisation dissolves extended kinship. Shah (1998) demonstrated that census categories overstate nuclearisation because they capture residence rather than functional interdependence. Uberoi (1993) similarly argued that kinship obligations, property arrangements and marriage practices sustain joint orientations within nuclear dwellings. Sonawat (2001) documented the coexistence of structural

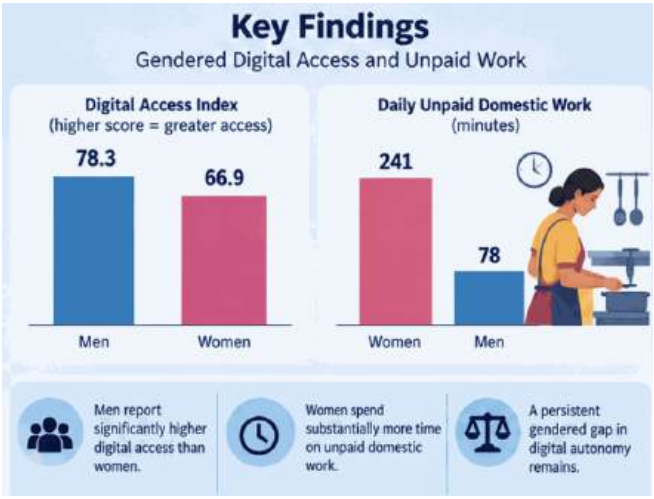
change and normative continuity in Indian households, noting that authority patterns adapt more slowly than residential arrangements.

Feminist scholarship supplies the mechanisms through which such continuity is reproduced. Chakravarti (1993) theorised the control of women's sexuality and mobility as constitutive of patriarchal structures in the subcontinent. Sen (1990) modelled the household as a site of cooperative conflict in which bargaining power derives from perceived contribution and fallback position, and Kabeer (1999) reframed empowerment as the expansion of strategic life choices via resources, agency and achievement. Palriwala and Neetha (2011) extended this to the Indian care regime, describing a "stratified familialism" in which the state assumes that families — in practice, women — will absorb care work. National time-use evidence supports this: women in India spend an average of 299 minutes per day on unpaid domestic services against 99 minutes for men, with 81.2 per cent of women and 26.1 per cent of men engaged in such work (NSO, 2020).

Middle-class ethnographies show that these obligations intensify rather than relax with mobility. Donner (2008) describes urban mothers whose respectability depends on intensive domestic management, and Radhakrishnan (2011) shows how professional women in India's technology sector perform a "respectable femininity" that reconciles paid work with family duty. Belliappa (2013) similarly finds that reflexive individualisation among educated urban women remains bounded by family expectations.

Technology scholarship offers competing readings. Wajcman (2004) rejects both technological determinism and essentialism, arguing that gender and technology are mutually constituted; she later shows that digital connectivity fragments rather than frees time (Wajcman, 2015). Livingstone and Helsper (2007) demonstrate that access is graded rather than binary, so ownership statistics conceal differences in quality of use. In India, Doron and Jeffrey (2013) found that mobile phones expanded women's privacy and autonomy but rarely overturned gender and seniority hierarchies, because use remained closely monitored by family elders. Tenhunen (2018) similarly observed that telephony was absorbed into existing kinship logics. Arora (2019) cautions against deficit framings of users in the global South while acknowledging that family surveillance is a routine condition of women's connectivity.

Aggregate data confirm the scale of the gap. GSMA (2023) reports that India has among the widest mobile gender gaps of the low- and middle-income countries surveyed, with women markedly less likely than men to own a handset or use mobile internet; 19 per cent of female mobile internet users in India access it only on someone else's device, compared with 8 per cent of men. NFHS-5 (IIPS & ICF, 2021) shows rising but uneven female phone ownership, with a persistent urban advantage.



Research Gap and Objectives

Existing work establishes that a gender gap in digital access exists, and separately that household structure shapes women's autonomy. What remains under-examined is the interaction between the two in urban settings, and the role of intra-familial surveillance as a distinct constraint separable from access itself.

The study pursues four objectives: (i) to measure gender differences in digital access and autonomy among urban adults; (ii) to assess whether household structure moderates these differences; (iii) to identify predictors of women's household decision participation; and (iv) to interpret, through qualitative accounts, how digital technology mediates kinship authority.

Hypotheses

H1: Men report significantly higher digital access and autonomy than women, controlling for education and income.

H2: Women in nuclear households report higher household decision participation than women in joint or extended households.

H3: Digital access positively predicts women's household decision participation.

H4: Perceived surveillance of device use negatively predicts women's household decision participation, independent of access level.

Methodology

Design. An explanatory sequential mixed-methods design was used, with a structured survey followed by semi-structured interviews with a purposive sub-sample.

Setting and sampling. Data were collected in three metropolitan regions selected for variation in migration

profile and occupational structure: Delhi NCR, Bengaluru and Pune. A multi-stage stratified sampling procedure selected municipal wards, then residential clusters, then households, with quotas for household type. One adult (18–60 years) per household was interviewed. Of 720 households approached, 612 yielded usable responses (response rate 85.0%).

Instrument. The schedule comprised five sections: demographics; device access and use; unpaid domestic and care work (recall-based, minutes per day); household decision participation; and perceived surveillance of device use. Three composite scales were constructed, each transformed to a 0–100 range:

- *Digital Access Index (DAI)* — 9 items covering device ownership, connectivity, application breadth, digital financial use and self-rated skill (α = .82).
- *Household Decision Participation Score (HDPS)* — 11 items covering expenditure, children's schooling, healthcare, mobility and property decisions (α = .87).
- *Perceived Surveillance Scale (PSS)* — 6 items on device checking, password sharing under pressure, and location accountability (α = .79).

Analysis. Independent-samples t-tests and chi-square tests assessed gender differences; two-way ANOVA tested gender × household-type effects on HDPS; hierarchical multiple regression identified predictors of HDPS among women. Qualitative data from 34 interviews (20 women, 14 men) were analysed thematically using inductive coding with a second coder (Cohen's κ = .81).

Ethics. Informed consent was obtained; interviews with women were conducted in private settings where possible, and no device content was inspected.

Table 1. Sample profile (N = 612)

Characteristic	Category	n	%
City	Delhi NCR	214	35.0
	Bengaluru	203	33.2
	Pune	195	31.9
Gender	Women	331	54.1
	Men	281	45.9
Household type	Nuclear	320	52.3
	Joint	168	27.5
	Extended (nuclear-plus)	124	20.3
Age (years)	M = 36.4, SD = 9.7	—	—
Education	Graduate or above	402	65.7
Employment	In paid employment	371	60.6
	Women in paid employment	152	45.9 (of women)

Results

Gendered digital access. Men scored higher than women on every access and autonomy measure (Table 2). The largest standardised difference was in unpaid domestic work time, followed by unsupervised device use. H1 was supported.

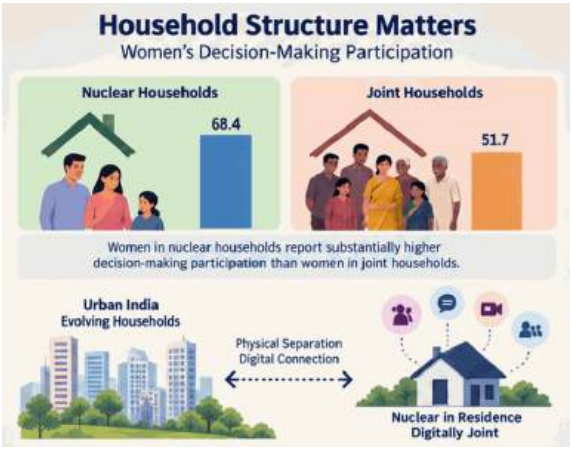


Table 2. Gender differences in digital access, autonomy and domestic work

Measure	Men (n = 281)	Women (n = 331)	Test statistic	p	Effect size
Personal device ownership (%)	96.8	81.3	$\chi^2(1) = 38.42$	<.001	φ = .25
Digital Access Index, M (SD)	78.3 (12.4)	66.9 (15.8)	t(610) = 9.87	<.001	d = 0.80
Unsupervised use index, M (SD)	84.6 (11.2)	62.4 (18.9)	t(610) = 17.63	<.001	d = 1.43
Uses own banking/payment app (%)	88.6	57.4	$\chi^2(1) = 74.19$	<.001	φ = .35
Perceived Surveillance Scale, M (SD)	21.7 (14.3)	46.8 (19.6)	t(610) = 17.80	<.001	d = 1.44
Unpaid domestic work (min/day), M (SD)	78 (52)	241 (78)	t(610) = 30.33	<.001	d = 2.46

Household structure and decision participation. A 2 (gender) × 3 (household type) ANOVA on HDPS returned significant main effects for gender, $F(1, 606) = 112.36$, $p < .001$, $\eta^2p = .156$, and household type, $F(2, 606) = 41.28$, $p < .001$, $\eta^2p = .120$, together with a significant interaction, $F(2, 606) = 7.94$, $p < .001$, $\eta^2p = .026$. The gender gap was widest in joint households (20.9 points) and narrowest in nuclear households (10.8 points). H2 was supported.

Table 3. Household Decision Participation Score by gender and household type

Household type	Women n	Women M (SD)	Men n	Men M (SD)	Gap
Nuclear	175	68.4 (13.2)	145	79.2 (10.4)	10.8
Joint	89	51.7 (15.6)	79	72.6 (12.1)	20.9
Extended (nuclear-plus)	67	57.9 (14.8)	57	75.1 (11.3)	17.2
All	331	61.8 (15.9)	281	76.4 (11.6)	14.6

Predictors of women's decision participation. Among women, DAI correlated moderately with HDPS ($r = .44$, $p < .001$); the corresponding correlation among men was weak ($r = .19$, $p = .001$). The regression model (Table 4) was significant, $F(7, 323) = 43.82$, $p < .001$, $R^2 = .487$, adjusted $R^2 = .476$. Digital access, independent income and nuclear residence emerged as positive predictors, and perceived surveillance as a negative predictor of comparable magnitude. H3 and H4 were supported.

Table 4. Regression predicting HDPS among women (n = 331)

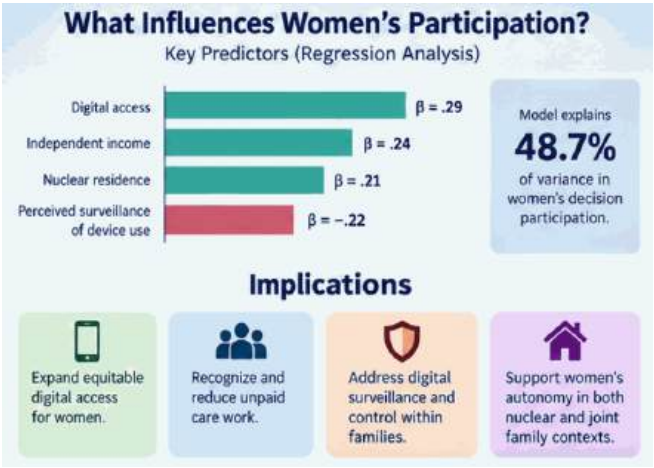
Predictor	B	SE B	β	t	p
Digital Access Index	0.29	0.05	.29	5.84	<.001
Independent income (1 = yes)	7.62	1.54	.24	4.95	<.001
Nuclear household (ref: joint)	6.84	1.66	.21	4.12	<.001
Extended household (ref: joint)	2.91	1.42	.09	2.05	.041
Years of education	0.88	0.31	.14	2.84	.005
Age (years)	−0.11	0.09	−.07	−1.22	.223
Perceived Surveillance Scale	−0.18	0.04	−.22	−4.50	<.001

Digitally mediated kinship. Membership of a family messaging group was near-universal (86.1%). Respondents in nuclear households reported a mean of 11.4 (SD = 5.2) digitally mediated contacts with extended kin per week, against 6.2 (SD = 4.1) in joint households, $t(486) = 11.63$, $p < .001$ — physical separation was associated with more, not less, mediated contact.

Table 5. Qualitative themes (34 interviews)

Theme	Interviews (n)	%
Family group chats as continuous kin-keeping labour	30	88.2
Digital dual burden: care coordination outside work hours	27	79.4
Device checking by spouse or in-laws	21	61.8
Payment apps as quiet financial autonomy	18	52.9
Renegotiated elder authority through video calls	16	47.1
Mobility permissions negotiated via location sharing	13	38.2

Interviewees described kin-keeping — remembering, greeting, relaying, mediating — as work that had migrated onto women's phones without being recognised as work. Several women in nuclear households reported that daily video calls reinstated in-laws' supervisory presence, producing households that were residentially nuclear but functionally and digitally joint. Conversely, payment applications allowed a minority of women to hold small balances that were not routinely visible to other household members.



Discussion

The findings support neither an emancipatory nor a purely reproductive account of technology. Digital access was the strongest single predictor of women's decision participation, which is consistent with bargaining models in which resources and perceived contribution shift household outcomes (Sen, 1990; Kabeer, 1999). Yet surveillance operated as an almost equally strong counterweight, confirming Doron and Jeffrey's (2013) observation that monitored use blunts the autonomy that ownership appears to confer. A woman may own a device, use it daily, and still exercise little unobserved discretion — the graded inclusion that Livingstone and Helsper (2007) describe, here graded by kinship rather than by infrastructure.

The interaction effect refines the nuclearisation thesis. Nuclear residence conferred a real participation advantage, but the kin-contact data indicate that separation is now

partially reversible: messaging and video calling restore the co-presence that migration once dissolved. This corroborates Shah's (1998) argument that residential form is a poor proxy for functional jointness, and extends it by identifying a new mechanism of continuity.

The domestic work gap observed here tracks national time-use evidence (NSO, 2020) and lends empirical support to Wajcman's (2015) contention that connectivity intensifies rather than compresses domestic time. Care coordination becomes ambient, and ambient work is easily naturalised as attentiveness rather than labour — the stratified familialism identified by Palriwala and Neetha (2011) in digital form.

Implications

For policy, digital inclusion programmes measured by ownership will overstate progress. Indicators should incorporate unsupervised use and independent financial access. For employers, hybrid work arrangements that presume a private domestic workspace may disadvantage women in multi-generational households. For platform design, granular privacy controls, discreet notification settings and separable financial profiles have direct gender-equity consequences.

Limitations

The sample is urban, metropolitan and comparatively educated, limiting generalisation to smaller cities and rural areas. Domestic work time was self-reported by recall rather than diary method and may be subject to social desirability bias in both directions. The cross-sectional design permits association but not causal inference: higher-participation women may acquire greater digital access rather than the reverse. Finally, interviews with women were sometimes conducted in households where complete privacy could not be guaranteed, which may have suppressed disclosure of surveillance.

Conclusion

Digital technology has entered the urban Indian household as neither a solvent of patriarchy nor a neutral tool. It expands the informational and financial resources on which women's household bargaining depends, while simultaneously furnishing families with low-cost instruments of oversight and extending the reach of kin authority across distance. The result is a household that is structurally more nuclear and communicatively more joint than at any previous point. Gender equity outcomes in this setting will depend less on whether women have devices than on whether they can use them unobserved.

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