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Effects of IT-enabled entrepreneurship on gender equality in a digital economy: Evidence from Qualitative Studies

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Li Xu [1], Hao Zhu[2], Songyu Jiang[3*], Qu Zheng[4] and Chunyang Yu[5]*

School of Artificial Intelligence and Electronic Engineering, Sichuan Technology and Business University, Chengdu, Sichuan, 611745, China[1]; School Of Busines, Geely University, Chengdu, 641419, China[2]; Rattanakosin International College of Creative Entrepreneurship, Rajamangala University of Technology Rattanakosin, Nakhon Pathom 73170, Thailand[3*], Chongqing Shipeng Culture Communication Co., Ltd., Chongqing, 400053, China[3*]; Department of Student Affairs, Chengdu medical college, Chengdu 610500, China[4]; Sichuan Vocational College of Cultural Industries , Chengdu, 610213, China[5]

***For Correspondence:** Email: *jiang.song@rmutr.ac.th*; *chenhao19831106@163.com*

Abstract

Persistent digital divides and gendered health inequalities constrain women's participation in the digital economy, even in highly connected contexts like China. This study develops an explanatory framework for how information-technology-enabled entrepreneurship (ITEE) affects women's economic security, health, and capabilities. Using a constructivist grounded theory approach based on 80 interviews in China, the analysis reveals four themes. Capability formation shows how increased income and flexibility allow women to invest in health. Algorithmic exposure highlights the dual nature of platform visibility, boosting sales but also enabling harassment and anxiety. Care negotiation examines how unpaid care duties and infrastructure impact sustainability, showcasing adaptive strategies. Trajectory configuration integrates these into differentiated pathways, from vulnerable to health-enhancing, depending on aligned support. The findings position health centrally in digital capability and link platform governance and care ecologies to sustainable empowerment, suggesting safe platforms, caring support, and integrated policies are essential for women's wellbeing. *(Afr J Reprod Health 2026; 30 [8]: 85-101).*

Keywords: Digital Empowerment; Women Entrepreneurs; Information Technology Enabled Entrepreneurship; Health Capabilities; Platform Governance

Résumé

Les fractures numériques persistantes et les inégalités de santé genrées limitent la participation des femmes à l'économie numérique, même dans des contextes très connectés comme la Chine. Cette étude élabore un cadre explicatif sur la façon dont l'entrepreneuriat basé sur les technologies de l'information (ITEE) affecte la sécurité économique, la santé et les capacités des femmes. Adoptant une approche de théorie ancrée constructiviste basée sur 80 entretiens en Chine, l'analyse révèle quatre thèmes. La formation des capacités montre comment un revenu et une flexibilité accrus permettent aux femmes d'investir dans leur santé. L'exposition algorithmique souligne la double nature de la visibilité sur les plateformes, stimulant les ventes mais facilitant aussi le harcèlement et l'anxiété. La négociation des soins examine comment les tâches de soin non rémunérées et les infrastructures impactent la durabilité, en montrant des stratégies adaptatives. La configuration des trajectoires intègre ces dynamiques en voies différenciées, de vulnérables à bénéfiques pour la santé, selon le soutien aligné. Les résultats positionnent la santé au cœur de la capacité numérique et lient la gouvernance des plateformes et les écologies de soin à un empowerment durable, suggérant que des plateformes sûres, un soutien solidaire et des politiques intégrées sont essentiels pour le bien-être des femmes.. *(Afr J Reprod Health 2026; 30 [8]: 85-101).*

Mots-clés: Autonomisation Numérique, Femmes Entrepreneures, Entrepreneuriat Basé Sur Les Technologies De L'information, Capacités De Santé, Gouvernance Des Plateformes

Introduction

Achieving gender equality in the digital economy is not only a moral imperative but also a growth strategy for inclusive and sustainable development[1,2]. Yet, women's equitable participation remains constrained by persistent digital divides and health disparities that mutually reinforce each other[3, 4]. Recent global statistics indicate that, in 2024, 70% of men and 65% of women used the internet, leaving 189 million more men than women online[5]. Although this gap has narrowed since 2021, it still structurally limits women's access to information, markets, and digitally mediated services central to modern livelihoods[6].

In low- and middle-income countries (LMICs), where mobile connectivity is the primary on-ramp to the internet, women remain 15% less likely than men to use mobile internet, translating into hundreds of millions of women excluded from digital opportunity[7]. These inequities depress both individual capabilities and macro-level productivity in an increasingly data-driven economy. Gender equality in the digital economy is not adequately captured by parity in access; it additionally requires equity in benefits, mobility, and health outcomes, with safety and dignity treated as prerequisites for participation[8].

Women's health challenges add urgency to closing these gaps. Globally, an estimated 260,000 women died from pregnancy- or childbirth-related causes in 2023, about one every two minutes, a stark reminder that essential services and timely information remain unevenly distributed[9, 10]. At the same time, technology-facilitated abuse, including harassment, stalking, and non-consensual image sharing, undercuts women's safety online and offline, chilling participation and eroding trust in digital platforms that increasingly mediate access to care, commerce, and community[11, 12].Over half of girls and young women report experiencing online harassment, and women journalists face disproportionate online violence, highlighting health-adjacent risks such as anxiety, depression, and barriers to help-seeking[13, 14].

Paradoxically, the same digital transformation that amplifies risks also creates historically novel avenues for empowerment. Digital empowerment denotes a process through which access to devices, connectivity, and data skills expands individuals' information reach, market entry, and autonomy, thereby enlarging the set of executable choices[15].Digital tools can expand health literacy (e.g., evidence-based reproductive and preventive care information), reduce transaction costs in care navigation (e.g., telehealth, e-pharmacies), and open pathways to income via platform work, social commerce, and fintech, each a social determinant of health via improved autonomy, bargaining power, and ability to invest in wellbeing[16, 17]. Lowering entry barriers and information frictions can translate into measurable household income gains and entrepreneurship growth, especially in underserved regions[18]. IT-Enabled Entrepreneurship (ITEE) refers to entrepreneurial activity in which value creation and delivery depend on digital platforms, data, and mobile connectivity, encompassing livestream commerce, social commerce, and platform-mediated micro-enterprises[19].China offers a particularly salient context for interrogating these dynamics at scale. Its digital economy is one of the world's largest, with RMB 50.2 trillion in output and 41.5% of GDP in 2022, underpinning rapid diffusion of mobile payments, social commerce, and digital public services[20]. Women's labor force participation remains comparatively high by global standards (about 60% in 2024), yet long-term decline, occupational segregation, and care burdens persist[21, 22]. On the consumer side, gender parity in basic internet access is near national demographic parity (male:female netizen ratio 51.1:48.9 in 2024), but parity of use does not guarantee parity of outcomes when capital, networks, data skills, and platform governance remain uneven[23].

From a women's health vantage point, China has achieved striking mortality reductions (maternal mortality fell to ~14–16 per 100,000 live births by 2024), yet prevention gaps remain, notably in HPV vaccination and cervical cancer screening—areas where digital outreach, reminders, and telehealth triage could be transformative[24, 25]. Recent national surveillance suggests cervical screening coverage among women aged 35–64 rose to ~51.5% in 2023–2024, with rural areas approaching but still below target—an equity gap that digital solutions could help

bridge through targeted engagement and frictionless appointment systems[26, 27].

Crucially, IT-enabled entrepreneurship (ITEE), including livestream commerce, micro-stores on super-apps, and digitally native SMEs, appears to be a high-leverage pathway linking digital empowerment to women's economic security and health agency. Women owned 54% of Taobao's top-100 stores by sales in 2023/24, signaling that when barriers to entry and discovery fall, women not only participate but lead in high-growth niches[28, 29]. Complementary micro-evidence finds that internet use narrows the gender gap in entrepreneurship at the individual level, consistent with theories of information access, network externalities, and reduced search/marketing costs. Through income, flexibility, and social capital formation, ITEE can enhance women's ability to finance care, manage time-sensitive health needs, and buffer shocks—key preconditions for sustained health improvements[30].

At the same time, China's digital public sphere has surfaced growing concerns over technology-facilitated gender-based violence (TFGBV), from doxing to non-consensual imagery, highlighting the need for robust platform governance and legal redress to ensure that digital empowerment does not entail disproportionate exposure to harm. High-profile cases and investigative reporting reveal enforcement and jurisdictional challenges on encrypted or foreign-hosted platforms, underscoring the policy salience of safety-by-design in entrepreneurship-critical ecosystems[31].

This paper advances the debate by theorizing and empirically examining how ITEE translates digital empowerment into women's health and equality gains in the Chinese digital economy. We articulate a capability-based framework in which digital capital (devices, connectivity, data skills), platform affordances (discovery algorithms, trust/identity, payments), and institutional safeguards (safety, privacy, consumer protection) jointly shape the health-economic returns to women's entrepreneurship. This study addresses five research questions (RQ):

RQ1: In what ways does ITEE restructure women's economic/temporal capabilities, and how do these capabilities enable health-promoting practices?

RQ2: How does algorithmic visibility both enable commercial outcomes and erode psychological safety via TFGBV and online harassment?

RQ3: Under what care work and infrastructural conditions do capability gains translate (or fail to translate) into improved health and livelihoods?

RQ4: How do stage and sector shape trajectory configurations from vulnerable to empowering pathways, and what role does institutional learning play?

RQ5: How do digital capital, platform affordances, and institutional safeguards combine to yield the observed health and economic outcomes?

By centering health outcomes, not only economic metrics, we respond to calls for integrated "digital-gender-health" approaches that align entrepreneurship policy with SDG 3 (Good Health and Well-being), SDG 5 (Gender Equality), and SDG 8 (Decent Work and Economic Growth).

Literature review

Capability formation

In platform-mediated entrepreneurship, the value of digital participation lies not only in access but in the conversion of digital resources into stable capabilities that enlarge women's feasible set of actions[7]. Empirical work shows that online channels can lower entry costs and diversify demand, effects that are associated with greater earnings predictability and enhanced discretion over scheduling relative to casual wage work[32]. Yet such resource gains constitute capability expansion only when they can be mobilized toward valued ends, among which health is increasingly treated as an intrinsic dimension of empowerment rather than a residual by-product of income. Health literacy and perceived control function as proximate mechanisms of this conversion by reducing informational frictions, clarifying the benefits of prevention, and supporting adherence to routine self-care and check-ups[33]. At the same time, the conversion process is contingent: algorithmic volatility and campaign rhythms intensify time pressure and disturb rest, especially when sellers chase visibility under opaque evaluation systems. Outside the platform, surges in unpaid care and uneven connectivity or logistics compress

discretionary time and raise the costs of maintaining both online operations and health routines, making postponement of care and sleep loss more likely[34]. Synthesizing these strands, capability formation in ITEE is best conceptualized as the enhancement of economic and temporal capacities, their translation into health practices through literacy and efficacy, and the fragility of these gains under platform, care, and infrastructural shocks.

P1: Participation in ITEE enhances women's economic and temporal capabilities by increasing income stability, financial autonomy, and scheduling flexibility, thereby enlarging the feasible space for health-promoting action.

P2: These capability gains, realized through improvements in health literacy and self-efficacy, shift preventive expenditure and everyday self-care from discretionary choices to routine investments.

P3: The benefits of capability enhancement are contextually fragile such that concurrent algorithmic volatility, platform campaign demands, and acute family events readily displace time and resources for health, leading to postponed care and curtailed sleep.

Algorithmic exposure

Recommendation and ranking systems determine the distribution of attention, lower customer acquisition costs, and can precipitate rapid surges in reach and sales, particularly in livestream and social commerce settings[35]. The same amplification mechanisms, however, increase contact with unknown audiences and raise the likelihood of technology-facilitated gender-based abuse, harassment, and intrusive messaging, which cumulatively erode psychological safety. Qualitative and organizational studies of platformised work further show that opaque evaluation and engagement metrics encourage over-exposure and constant responsiveness, reinforcing anxiety, sleep disturbance, and self-censorship as workers attempt to sustain algorithmic favor[36]. Where governance is weak—slow moderation, low transparency, or ineffective appeals—affected users frequently adopt defensive tactics such as disabling comments, reducing personal disclosure, or shortening streams; these strategies alleviate stress in the short run but suppress reach and conversion over time. The net effect is a structural trade-off in which practices that maximize visibility often undermine wellbeing, while practices that preserve psychological safety attenuate commercial performance[37].

P4: Algorithmic visibility simultaneously increases traffic and sales while elevating exposure to technology-facilitated abuse and harassment, imposing sustained pressure on psychological safety that manifests in anxiety, insomnia, and self-censorship.

P5: When platform governance and appeals are slow or ineffective, participants adopt self-limiting visibility strategies that reduce immediate stress yet constrain commercial reach and, by limiting the deployment of income and time gains toward routine self-care, weaken the health benefits specified in capability formation.

Care and infrastructure

Care responsibilities and infrastructural conditions jointly shape the extent to which gains in income and temporal control are converted into stable health practices and sustainable livelihoods[38]. Increases in unpaid childcare and eldercare compress women's discretionary time and raise coordination costs, even when work is nominally flexible[39]. Time fragmentation associated with segmented caregiving and on-platform responsiveness elevates fatigue and disrupts recovery cycles, which is consistent with patterns of postponed appointments and irregular adherence to preventive routines.The quality of socio-technical infrastructure mediates these pressures by determining the reliability of core inputs to digital entrepreneurship. Regions with stable broadband, dependable last-mile logistics, and accessible digital public services enable asynchronous work routines, predictable fulfilment, and lower error rates, reducing stress and smoothing cash-flow[40]. Where connectivity is intermittent or delivery networks are weak, sellers face higher transaction frictions and reputational risk from delays or cancellations, which amplifies emotional strain and leaves less bandwidth for health maintenance[41].

Infrastructure also conditions access to and uptake of health services within digital participation. Telehealth portals, e-pharmacies, and appointment systems can reduce search and travel costs, but their effectiveness depends on device

capability, network stability, and user literacy, which remain uneven across locales[42]. In settings with reliable connectivity and supportive community facilities, caregivers can navigate care blocks and work windows more efficiently, preserving time for rest, check-ups, and routine self-care.

P6: Childcare and eldercare burdens coupled with fragmented time weaken the conversion of economic and temporal gains into health practices, increasing chronic fatigue and the likelihood of off-peak or delayed care.

P7: More robust digital and logistics infrastructure strengthens the pathway from capability gains to improved health and livelihoods by reducing operational frictions and emotional exhaustion.

Trajectory configuration

Digital entrepreneurship rarely follows a single, upward path; rather, outcomes evolve through configurations that combine stage of business development, sectoral ecology, and the depth of institutional learning. Early phases are typically marked by volatile demand, heavy experimentation with formats, and close tracking of engagement metrics, all of which lengthen working hours and compress recovery time even when work is nominally flexible[43]. As routines, analytics use, and cash-flow buffers stabilize, entrepreneurs increasingly shift from reactive firefighting to planned cycles that accommodate rest and preventive care within the operating calendar.

Sectoral contexts modulate these trajectories through distinctive visibility regimes and interaction intensities. Livestream and social commerce rely on performative presence and real-time responsiveness, creating stronger exposure to audience volatility and to technology-facilitated harassment, with downstream consequences for sleep and stress regulation[44]. By contrast, health, wellness, and education–adjacent segments tend to reward informational credibility and asynchronous engagement, which more readily supports reflective practice and the internalization of health-promoting routines.

Institutional learning, formal platform training, financial capability programs, accelerator participation, and peer communities—functions as a mechanism that converts ad hoc participation into sustainable operating rhythms. Evidence from skills and MSME programs indicates that structured learning increases process predictability, improves working-time organization, and reduces error and escalation rates, thereby lowering emotional load and enabling consistent self-care[45, 46]. Peer networks further diffuse coping know-how about scheduling, boundary setting, and the use of safety and privacy tools, which cumulatively lessen the health cost of visibility-dependent models.

P8: Early-stage participation is more likely to follow a vulnerable trajectory characterized by overwork, disordered schedules, and the de-prioritization of health, whereas the accumulation of institutional learning and peer support facilitates transitions into an empowerment trajectory marked by stabilization and the routinization of health practices.

P9: Sectoral heterogeneity shapes health costs such that social and livestream commerce entail higher visibility pressure and greater TFGBV risk, while wellness-related segments more readily foster reflective, health-promoting practice.

P10: Platform training, financial education, incubators, and peer networks mediate and amplify the conversion of capability gains into routine self-care by transforming episodic participation into sustainable operating routines.

System alignment

Sustained gains from IT-enabled entrepreneurship depend on how digital capital, platform affordances, and institutional safeguards are configured as a system rather than as isolated inputs[47]. Digital capital, encompassing skills, reliable connectivity, and data literacy, enables producers to interpret analytics, automate routine tasks, and navigate risk, but its payoff is contingent on trustworthy transaction rails and credible governance on the platform side[48]. Where ranking, reputation, payment protection, and moderation are transparent and timely, capability conversion is less vulnerable to shocks, reducing error cascades and emotional load. Institutional safeguards, including training, childcare access, and legal recourse, further stabilize participation by protecting time for recovery and providing mechanisms to address abuse and disputes, which in turn preserves adherence to health routines[49]. In such aligned

configurations, improvements in income security and psychological safety reinforce one another, producing cumulative returns that appear as steadier cash flows, predictable schedules, and routinized preventive care.

By contrast, misalignment among these layers yields constrained trajectories. High skills without governance support expose sellers to volatile visibility and harassment risks; robust platform rails without care infrastructure leave time too fragmented for rest and medical appointments[50]; and training without device or network quality limits the uptake of digital tools[51]. These gaps reintroduce precarity, lengthen response cycles during peaks or disputes, and crowd out health maintenance when attention is redirected to firefighting rather than planning. The implication is that empowerment programs should be designed as *bundle interventions*—coordinating capability-building with safety-by-design and care supports—if they are to translate digital opportunity into durable well-being.

P11: When digital capital (skills, connectivity, data literacy), platform affordances (trust, payments, governance), and institutional safeguards (training, childcare, legal protection) are strongly aligned, women experience cumulative returns in both economic security and health, whereas misalignment produces persistently constrained trajectories.

P12: Income growth alone is insufficient to sustain well-being, because without temporal flexibility and psychological safety, preventive care and everyday self-care fail to stabilize as routine practices.

Methods

Data collection

Semi-structured in-depth interviews served as the primary data source and were supplemented by analytic memos and field notes. Between March and October 2025, we conducted 80 interviews: 58 with women engaged in IT-enabled entrepreneurship (ITEE), 12 with platform/ecosystem actors (e.g., product, merchant operations, trust-and-safety), and 10 with institutional stakeholders (e.g., government, industry associations, and health or women's organizations). The analytic focus was on how digital capital, platform affordances, and institutional safeguards jointly shape the health-related and economic returns of women's participation in ITEE.

Within the 58 entrepreneur interviews, we used purposive quotas to achieve balance across key attributes while retaining heterogeneity. By business stage, entrepreneurs were distributed as start-up (19), growth (19), and consolidation (20). By sector, cases comprised social commerce (15), livestream retail (14), B2C storefronts (14), and wellness/health-tech SMEs (15). By region, the distribution was coastal/provincial-capital (20), lower-tier urban (19), and rural/peri-urban (19). We also captured cross-cutting conditions: 28 entrepreneurs reported high caregiving burdens (versus 30 moderate/low), and 13 reported recent exposure to technology-facilitated gender-based violence (TFGBV). These counts refer to the same pool of 58 entrepreneurs and therefore represent overlapping classifications rather than additive totals.

All interviews were conducted face to face or via encrypted videoconferencing, according to participant preference. With informed consent, interviews were audio-recorded and transcribed verbatim in Chinese; identifying details were removed during transcription, and pseudonyms are used in all analytic materials. Data collection relied on semi-structured interviews guided by an interview schedule aligned with the three core mechanisms of the study. For women entrepreneurs, the discussions traced their pathways into digital entrepreneurship, the accumulation of digital capital in the form of devices, connectivity and platform skills, and the financial and time costs involved in learning. Participants were invited to describe their experiences with platform affordances, including how they became visible to algorithms and users, how they managed ratings and complaints, how payment, delivery and risk control arrangements affected their operations, and how they engaged with platform-provided analytics and training resources. Interviews also explored encounters with privacy and consumer protection procedures, the use and perceived effectiveness of anti-harassment tools, self-rated health, changes in

healthcare-seeking and preventive behaviour, concrete applications of health information and the organisation of household labour, caregiving responsibilities and psychological safety.

Interviews with platform and ecosystem actors focused on design rationales, operational constraints and enforcement practices surrounding discovery and ranking systems, identity and reputation management, merchant education programmes, risk and fraud controls and anti-abuse mechanisms. These participants were asked to reflect on how such systems might differentially affect women entrepreneurs, particularly those in smaller firms or in more vulnerable positions. Institutional stakeholders were invited to explain the legal and policy frameworks governing data protection, consumer rights and TFGBV, to describe enforcement processes and cross-sector collaboration, and to assess gaps in service provision for women engaged in digital entrepreneurship. All interviews were conducted either face to face or via encrypted videoconferencing tools, depending on participants' location and preference. With informed consent, interviews were audio recorded and subsequently transcribed verbatim in Chinese. Identifying information such as names, precise locations and platform or store identifiers was removed during transcription, and pseudonyms were used in all analytic products.

Data analysis, saturation and linkage to research questions

Following grounded theory, analysis advanced iteratively with data collection. Transcripts were imported into qualitative software and subjected to line-by-line open coding by two researchers using in-vivo labels; a common codebook was produced through constant comparison and reconciled through periodic reliability checks (Cohen's $\kappa \geq 0.70$). Axial coding then grouped first-order codes into relational categories that connected digital capital, platform affordances, institutional safeguards, care contexts, and health outcomes. Selective coding integrated these categories into higher-order themes consistent with the study's capability-oriented framework, supported by analytic memos that traced decisions and reflexive shifts. Saturation was monitored with a rolling log: code saturation was reached when no new first- or second-order codes emerged in three consecutive interviews within a participant stratum, and meaning saturation when the central linkages among governance experiences, psychological safety, participation choices, caregiving conditions, and infrastructural settings stabilized across stage, sector, and region, with later interviews enriching rather than redirecting interpretations.

Throughout, triangulation of entrepreneur narratives with platform accounts of tools and enforcement and with institutional perspectives on childcare, infrastructure, and service access ensured that the evolving code architecture remained tightly aligned with the study's research questions and yielded a qualitatively grounded, systematically organized explanation of when and how IT-enabled entrepreneurship produces durable economic and health gains.

Ethical considerations

This study involved qualitative research procedures with human participants. Ethical approval was obtained from the Ethics Committee of Chongqing Shipeng Culture Communication Co., Ltd. (Chongqing 400053, China) in February 2025 (Approval No.: CQSPIRB2025-02-14), and the approval remains valid until February 2026. All participants were recruited on a voluntary basis and were informed of the study's aims, the interview process, potential minimal risks, and their right to decline any question or withdraw at any time without consequences. Written or recorded informed consent was obtained prior to data collection.

To protect confidentiality, no unnecessary personally identifiable information was collected; interview records were anonymized using pseudonyms/codes, and any potentially identifying details were removed during transcription and reporting. All data were stored securely with restricted access to the research team and used solely for academic purposes in accordance with applicable ethical and data protection principles.

Table 1: Participants and sample parameters (N = 80; entrepreneur subsample n = 58)

Dimension	Denominator	Category	n	%
Respondent type (full sample)	N = 80	Women entrepreneurs (ITEE)	58	72.5
		Platform/ecosystem actors	12	15
		Institutional stakeholders	10	12.5
		Total	**80**	**100**
Firm stage (entrepreneurs)	n = 58	Start-up	19	32.8
		Growth	19	32.8
		Consolidation	20	34.5
Sector (entrepreneurs)	n = 58	Social commerce	15	25.9
		Livestream retail	14	24.1
		B2C storefronts	14	24.1
		Wellness/health-tech SMEs	15	25.9
Region (entrepreneurs)	n = 58	Coastal/provincial-capital	20	34.5
		Lower-tier urban	19	32.8
		Rural/peri-urban	19	32.8
Care burden (entrepreneurs)	n = 58	High	28	48.3
		Moderate/low	30	51.7
Recent TFGBV exposure (entrepreneurs)	n = 58	Yes	13	22.4
		No	45	77.6

Results

Descriptive statistical analysis

Table 1 presents the composition of the study sample and the attributes of the entrepreneur subsample. We completed 80 semi-structured interviews between March and October 2024, comprising women engaged in IT-enabled entrepreneurship (n = 58), platform/ecosystem actors (n = 12), and institutional stakeholders (n = 10). As shown in the upper panel of Table 1, the design is entrepreneur-centered (72.5%), while platform and institutional informants provide governance, infrastructure, and service perspectives for triangulation. Within the entrepreneur subsample, the distributions by firm stage (start-up 32.8%, growth 32.8%, consolidation 34.5%), sector (social commerce 25.9%, livestream retail 24.1%, B2C storefronts 24.1%, wellness/health-tech SMEs 25.9%), and region (coastal/provincial-capital 34.5%, lower-tier urban 32.8%, rural/peri-urban 32.8%) are approximately balanced, enabling comparisons across development phases and market ecologies. Two cross-cutting contextual attributes are also reported high care burden in 48.3% of entrepreneurs and recent technology-facilitated gender-based violence (TFGBV) exposure in 22.4%. Because stage, sector, region, care burden, and TFGBV are attributes of the same 58 entrepreneurs, these distributions are overlapping rather than additive. Taken together, the composition summarized in Table 2 provides sufficient variation to examine how capabilities are converted into health practices under differing visibility regimes, care ecologies, and infrastructural conditions.

Overview of coding logic and thematic generation

Table 2 presents the four selective themes that were induced from the interviews and used to empirically validate the proposition set. The propositions (P1–P12) served as sensitizing concepts that guided attention to capability formation, algorithmic visibility and safety, care and infrastructure, and temporal–sectoral dynamics. We first derived themes inductively from participants' in-vivo language; we then examined how these themes map to, and corroborate, the propositions.

Theme 1: Capability Formation aggregates narratives of income predictability, financial autonomy, scheduling control, and the

Table 2: Hierarchical coding matrix from open codes to core themes

Selective Theme	Axial Categories	Representative Open Codes
Theme 1: Capability Formation	• Financial autonomy • Temporal flexibility • Health investment • Self-efficacy growth	Increased income stability; Independent decision-making; Flexible scheduling; Work–life integration; Reduced precarity; Reinvestment in wellbeing; Preventive care prioritization; Health literacy improvement; Expanded self-control; Emotional empowerment
Theme 2: Algorithmic Exposure	• Digital visibility • Online harassment • Platform governance • Psychological response	Algorithmic recommendation; Viral exposure; Hate comments; Gendered trolling; Non-consensual image use; Reporting fatigue; Slow moderation; Anxiety; Withdrawal; Self-censorship
Theme 3: Care Negotiation	• Family responsibility • Infrastructure limitation • Coping adaptation • Social dependency	Time poverty from childcare; Elderly caregiving; Interrupted workflow; Training absence; Weak connectivity; Logistics delay; Dependence on kinship; Community cooperation; Off-peak working; Self-sacrifice
Theme 4: Trajectory Configuration	• Entrepreneurial stage • Sector differentiation • Institutional learning • Cumulative wellbeing	Start-up anxiety; Scaling strategy; Transition to mentorship; Health-tech niche; Platform training; Financial literacy; Stress resilience; Lifestyle integration; Sustainable mindset; Professional identity

normalization of preventive health actions. The observed patterns confirm P1–P3 by showing that participation in ITEE enlarges economic and temporal capabilities, that these capabilities are converted into routine self-care through health literacy and perceived control, and that such gains are vulnerable when commercial volatility or household shocks compress discretionary time.

Theme 2: Algorithmic Exposure consolidates accounts of visibility surges, harassment, moderation experiences, and emotional responses. These materials substantiate P4–P5 by demonstrating the double-edged nature of visibility, simultaneous commercial opportunity and heightened risk—and by showing that slow or opaque governance precipitates self-limiting tactics that protect psychological safety at the cost of reduced market reach and weakened health routines.

Theme 3: Care Negotiation brings together evidence on childcare and eldercare, connectivity and logistics constraints, adaptive scheduling, and reliance on kin or community support. The recurrent co-occurrence of heavy care loads with fragmented worktime and postponed health behaviours supports P6, while cases situated in robust digital and logistics environments illustrate the strengthening mechanism posited in P7.

Theme 4: Trajectory Configuration integrates stage, sector, and learning to explain patterned pathways. Early cases dominated by overwork and disordered routines give way, with training and peer support, to stabilized operations that incorporate rest and preventive care, consistent with P8 and P10. Sectoral contrasts in visibility pressure and harassment risk align with P9.

Finally, we analyzed the network of relations among themes to test the system-level propositions. The joint presence of digital skills and connectivity (Theme 1), credible platform affordances (Theme 2), and care and infrastructural support (Theme 3) was associated with stabilized, health-enhancing trajectories (Theme 4), thereby validating P11 on system alignment. Cases showing higher income without temporal flexibility or psychological safety failed to institutionalize health routines, corroborating P12. In this design, the table constitutes the primary evidentiary device for validation linking open codes to axial categories and themes that correspond to the propositions,

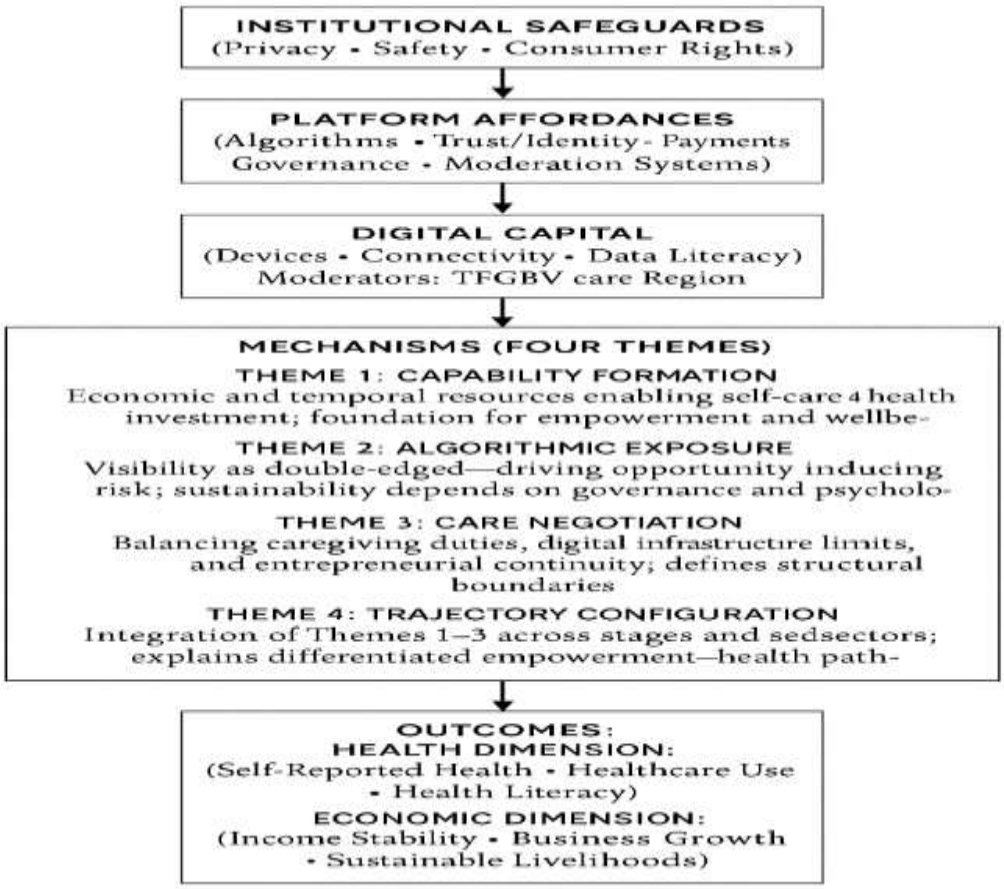

Figure 1: Thematic integration model of ITEE mechanisms and health outcomes

while Figure 1 serves as a visual aid that summarizes the same networked relations among foundations, mechanisms, and outcome domains.

Validation of propositions

We validate the twelve propositions with a single synthesis figure 2. For each proposition the table records the theme anchor, a compact evidence chain that combines within-case temporality and cross-case covariation, the coded qualitative indicators, the cross-theme linkage, robustness checks, and the conclusion. Within cases we reconstruct timelines from interview narratives, platform milestones, and institutional touchpoints to establish whether the hypothesised mechanism precedes the observed outcome. Across cases we assess covariation by stage, sector, region, caregiving status, and exposure to technology-facilitated gender-based violence. Indicators are coded along four dimensions: behavioural routines, affective states, physiological signals, and interactions with platform or public institutions. This design prevents inferences from resting on a single type of evidence. Findings cluster into five mechanism groups that map onto the four selective themes and their system integration. Capability Formation (P1–P3) shows that participation in ITEE strengthens economic and temporal resources and, when accompanied by health literacy and self-efficacy, is converted into routine prevention and everyday self-care. The same capabilities remain vulnerable during campaign pressure and family shocks, which temporarily compress the space for health practices. Algorithmic Exposure (P4–P5) demonstrates that visibility expands commercial reach while simultaneously heightening harassment risk; slow or opaque governance prompts self-limiting tactics

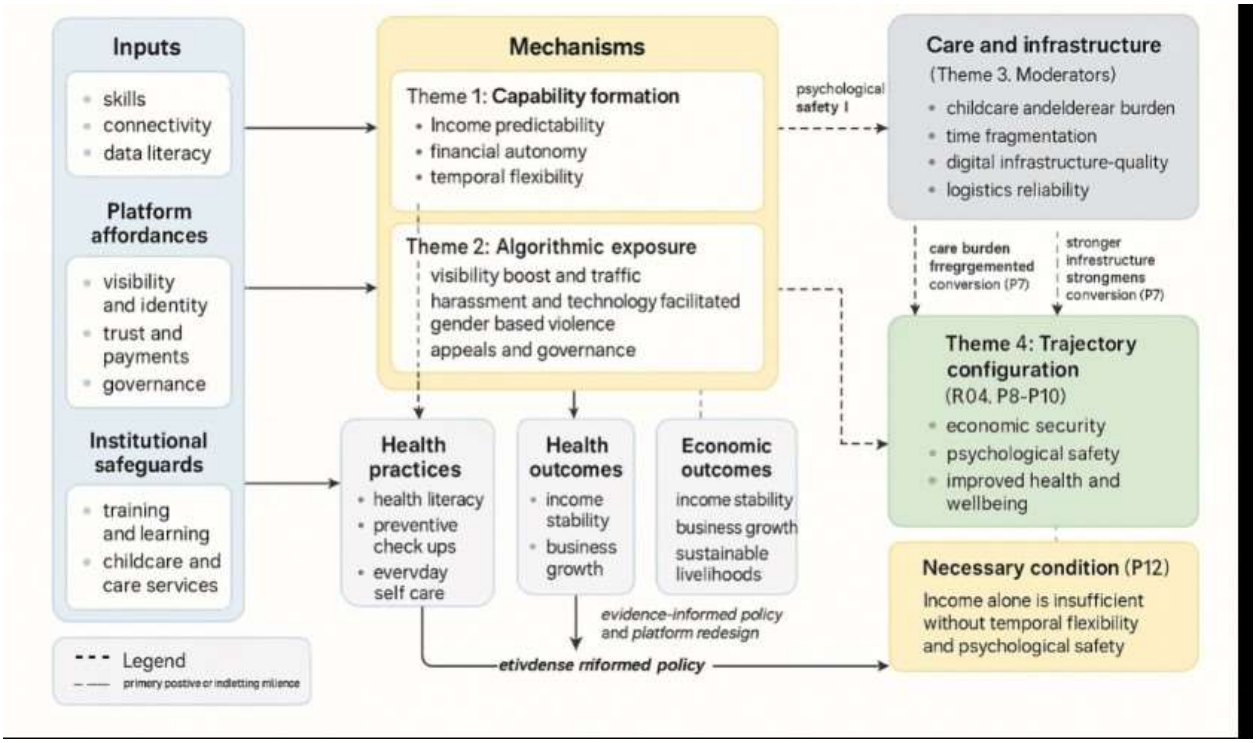

Figure 2: IT-enabled entrepreneurship advances gender equality in the digital economy

that reduce exposure but also depress reach and weaken the health routines enabled by capability gains. Care and Infrastructure (P6–P7) identify the principal moderators of conversion, with care burdens and fragmented time operating as negative moderators and robust digital or logistics infrastructure and accessible childcare operating as positive moderators.

Trajectory Configuration and System Alignment (P8–P12) explain how initial vulnerability can shift toward stability when training, financial education, incubator support, and peer networks institutionalise schedules, boundaries, and recovery practices. Sectoral context further shapes paths, as livestream and social commerce entail higher psychosocial costs, whereas wellness-related segments more often foster reflexive health practices. A configurational comparison confirms that cumulative gains materialise when digital capital, platform affordances, and institutional safeguards are jointly aligned, while misalignment constrains trajectories. Income growth alone does not stabilise health behaviour without temporal flexibility and psychological safety.

Discussion

The findings first show that information technology enabled entrepreneurship reorganises women's economic and temporal capabilities in ways that can directly support health practices, but that these gains are fragile. In line with RQ1 and Propositions P1 to P3, participation in ITEE is associated with more predictable income, greater financial autonomy and enhanced control over daily schedules. These capabilities allow women to treat health insurance, preventive checkups, improved diet and everyday self care as planned investments instead of discretionary luxuries, especially when health literacy and self efficacy are stronger. At the same time, the results for RQ2 confirm the ambivalent role of algorithmic visibility. Consistent with P4 and P5, visibility surges bring higher traffic and sales while simultaneously raising exposure to harassment, intrusive contact and technology facilitated gender based violence. When moderation is slow or opaque, women adopt self limiting tactics that protect psychological safety but reduce commercial reach and weaken the very

capability based health routines that ITEE initially made possible.

Addressing RQ3 and RQ4, the study further demonstrates that the conversion of capability gains into sustainable health and livelihood improvements depends on care ecologies, infrastructural environments and the configuration of entrepreneurial trajectories. Supporting P6 and P7, heavy childcare and eldercare burdens, combined with fragmented time and weak connectivity or logistics, compress women's discretionary time and increase fatigue, which leads to postponed appointments, irregular sleep and episodic self care even when income has risen. In contrast, more supportive care arrangements and robust digital and logistics infrastructure allow the same level of entrepreneurial effort to be integrated with rest and preventive health behaviour. The trajectory analysis clarifies that outcomes evolve through patterned pathways rather than a single linear progression. Early stages often exhibit vulnerable or restricted trajectories marked by overwork and health de prioritisation, while the accumulation of platform training, financial education, incubator participation and peer support gradually enable more reflexive and health enhancing trajectories, particularly in sectors where engagement can be organised in more asynchronous and less harassment intensive ways, as anticipated in P8 to P10.

Finally, the response to RQ5 shows that durable gains in both economic security and health require system alignment across digital capital, platform affordances and institutional safeguards. Propositions P11 and P12 emphasise that skills, connectivity and data literacy only translate into cumulative returns when they are combined with transparent and trustworthy platform governance, effective protection against abuse, accessible childcare and legal recourse. Where these elements are aligned, women report steadier cash flows, more predictable schedules and routinised preventive care, indicating mutually reinforcing improvements in economic capability and health. Where any layer is missing, trajectories remain constrained: algorithmic risks erode psychological safety, care burdens undermine temporal flexibility and infrastructural gaps reintroduce precarity, so that income growth alone does not stabilise health behaviour. Overall, the study reframes ITEE as a conditional pathway to gender equality in the digital economy and argues that only integrated interventions in digital skills, platform governance and care infrastructure can reliably convert digital opportunity into lasting gains in women's wellbeing.

Theoretical implications

This study refines capability-oriented accounts of digital empowerment by demonstrating that women's health is a central outcome of IT-enabled entrepreneurship rather than a distant by-product of income gains. Existing work on digital entrepreneurship and the capability approach has mostly emphasized how online channels expand income opportunities, temporal flexibility, and skills, while treating health impacts as indirect or residual[52- 54]. Our findings, articulated through the theme of capability formation, specify how digital resources are converted into health-related capabilities by showing that income stability and scheduling flexibility are reconfigured into routine investments in check-ups, insurance, diet improvement, and everyday self-care when mediated by health literacy and self-efficacy. Evidence on how promotional peaks and family shocks repeatedly compress the time window available for prevention further reveals the contextual fragility of health capabilities under platform rhythms and household events, thereby challenging theoretical assumptions that portray digital participation as a predominantly upward and linear trajectory.

The analysis also connects and extends two strands of research that are often treated separately: studies of platform governance and algorithmic management, and studies of online harassment and technology-facilitated gender-based violence. The former highlight how recommendation, ranking, and evaluation systems structure visibility and commercial opportunity but typically pay limited attention to their cumulative effects on women's psychological safety and long-term health[55, 56]. The latter document the prevalence of harassment, image-based abuse, and doxxing faced by women in digital spaces but rarely follow these risks

through to the configuration of entrepreneurial paths[56, 57]. By theorizing algorithmic exposure as genuinely double-edged, this study shows that the same visibility mechanisms that increase traffic and sales also intensify anxiety, sleep disturbance, and self-censorship, and trigger defensive strategies such as closing comments, shortening streams, and reducing self-disclosure. These strategies restore some psychological safety in the short term but erode the health gains that capability formation could otherwise sustain, thereby placing safety and governance gaps at the centre of models of women's digital empowerment and wellbeing[58].

Finally, the findings advance theorisation of care ecologies, socio-technical infrastructure, and entrepreneurial trajectories by integrating them into a single problem of system alignment. Recent research has acknowledged that care burdens, time poverty, and infrastructural inequalities constrain women's participation in the digital economy, yet these factors are often treated as background conditions rather than explicit moderating mechanisms[59, 8]. Through the theme of care negotiation, this study shows that childcare and eldercare responsibilities, combined with fragmented time, systematically weaken the conversion of economic and temporal gains into stable health practices, whereas reliable broadband, dependable logistics, and accessible community childcare clearly strengthen this conversion. The theme of trajectory configuration further demonstrates that ventures do not move along a single ascending curve but instead differentiate into vulnerable, restricted, and more reflexive empowering pathways depending on how digital capital, platform affordances, and institutional safeguards are combined[60-62]. The system alignment propositions show that income growth alone is insufficient to stabilise health behaviour and that only configurations that jointly secure digital skills and connectivity, trustworthy platform rails, and care and legal support generate cumulative gains in both economic security and health[63, 64]. This provides a sharper theoretical lens on when and how digital entrepreneurship in the platform economy can genuinely advance gender equality in health and livelihoods.

Practical implications

The findings yield several integrated implications for actors seeking to convert digital opportunity into durable gains in women's health and livelihoods in the platform economy. For policy makers, the model indicates that initiatives should move beyond generic "women's entrepreneurship" or "digital inclusion" programs and instead design bundled interventions that deliberately align digital capital, platform affordances, and institutional safeguards. In practice, this means coupling subsidised access to devices, connectivity and data skills with targeted health literacy and financial capability training and embedding these components within schemes that provide affordable childcare, eldercare support, and reliable digital and logistics infrastructure so that new income and time resources can stabilise as health promoting routines rather than remain fragile. For platform companies, the analysis underscores the need for safety by design in entrepreneurship critical ecosystems: discovery and ranking systems, merchant tools, and analytics should be co developed with robust anti harassment features, rapid and transparent moderation and appeal procedures, and privacy and boundary management options that allow women entrepreneurs to maintain psychological safety without sacrificing visibility and sales. For health and social sectors, the results suggest that preventive services, screening reminders, telehealth, and insurance products should be strategically integrated into the everyday touchpoints of ITEE, for example through platform based health campaigns, in app benefit navigation, and referral partnerships that recognise women entrepreneurs as a priority group for primary prevention. Finally, the trajectory analysis points to the value of stage and sector sensitive support. Early stage social and livestream commerce operators, who face high visibility pressure and concentrated TFGBV risk, require tailored mentoring, peer networks, and scheduling and boundary setting guidance so that business consolidation goes hand in hand with the institutionalisation of rest, check ups, and self care. Taken together, these implications argue that

progress toward SDG 3, SDG 5, and SDG 8 depends less on expanding the number of women online and more on whether digital, platform, care, and health systems are jointly configured to sustain women's health capabilities over time.

Limitations and recommendations for future research

This study has several limitations that qualify the interpretation and transferability of its findings. The design is based on constructivist grounded theory and relies on eighty qualitative interviews in the Chinese digital economy, which allows in depth mechanism tracing but does not provide statistically generalisable estimates of effect size or prevalence. Health outcomes are captured through self reported indicators such as self rated health, sleep quality, anxiety and preventive care use, rather than clinical records or biomarker data, so patterns should be read as experiential rather than biomedical evidence. The sample, while heterogeneous by stage, sector, region, care burden and exposure to technology facilitated gender based violence, still centres on women who have already achieved some degree of digital access and entrepreneurial participation; those who were excluded from ITEE due to extreme poverty, disability, or restrictive household norms are under represented. In addition, the analysis focuses on a specific platform and policy ecology in contemporary China, so the capability mechanisms identified here may manifest differently in institutional settings with weaker digital infrastructure, different labour regulation, or alternative platform governance regimes.

Future research can build on these constraints in several directions. Comparative mixed method designs that combine longitudinal qualitative work with panel surveys would allow researchers to track how capabilities, health practices and business trajectories co evolve across time and shocks, and to test the configurational model in different regions or countries. Incorporating quantitative health indicators, stress and sleep measures, and platform side administrative data on visibility, complaints and moderation outcomes would strengthen claims about the links between algorithmic exposure, psychological safety and health. Intersectional sampling that explicitly stratifies by age, marital status, migration background, disability and household income would make it possible to identify which subgroups are most likely to be locked into vulnerable or restricted trajectories even when digital tools are nominally available. Finally, participatory and co design approaches with women entrepreneurs, platform trust and safety teams, and health providers could be used to prototype and evaluate bundled interventions that simultaneously adjust platform affordances, strengthen care and infrastructure support, and embed health promotion into entrepreneurial training. Such work would not only test the robustness of the present model but also refine it into a practical design framework for advancing gender equal, health sustaining digital economies.

Conclusion

This study has developed a capability centred explanation of how information technology enabled entrepreneurship reshapes women's wellbeing and gender equality in a rapidly platformised digital economy. Drawing on eighty interviews with women entrepreneurs, platform and ecosystem actors, and institutional stakeholders in contemporary China, the analysis shows that ITEE can expand economic and temporal capabilities, allowing women to treat health insurance, preventive checkups, diet improvement, and everyday self care as planned investments rather than residual choices. At the same time, the findings reveal that these gains are structurally contingent. Algorithmic visibility functions as a double edged mechanism that simultaneously creates commercial opportunity and intensifies exposure to harassment, intrusive contact, and technology facilitated gender based violence, thereby undermining psychological safety and eroding the very health practices that new capabilities make possible. Care negotiation and infrastructural ecologies further condition conversion, since unpaid childcare and eldercare, fragmented time, and uneven digital and logistics systems often compress the space for rest, care seeking, and reflective decision making, while robust infrastructure, childcare support, and credible governance help stabilise both business routines and health behaviours. Over time, these

interacting mechanisms generate differentiated trajectories: some women remain in vulnerable or restricted pathways marked by overwork and disrupted health routines, whereas others move into more reflexive and empowering paths where digital capital, platform affordances, and institutional safeguards are better aligned. By positioning health as a core dimension of digital capability formation and by specifying how platform rules and care ecologies shape the sustainability of empowerment, the study answers the five research questions and advances debates on digital gender equality. It implies that closing digital divides is not sufficient; only when skills, safe and trustworthy platforms, and caring institutional environments are designed as an integrated system can digital entrepreneurship be converted into durable gains in women's livelihoods, bodily integrity, and substantive freedom.

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