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Determinants of Women's Reproductive Autonomy and Gender-Equitable Attitudes in Vietnam: Empirical Evidence from Multiple Indicator Cluster Survey

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Abstract: Women's empowerment is widely treated as a single construct, yet its dimensions may be governed by distinct mechanisms. This study examines the determinants of three reproductive-health and gender dimensions of women's empowerment in Vietnam – bodily autonomy, reproductive decision-making, and gender-equitable attitudes. Using the nationally representative Multiple Indicator Cluster Survey (MICS6, 2020–2021) and survey-weighted logistic regressions on roughly 9,000 ever-partnered women aged 15–49, the analysis shows that the three dimensions are only weakly correlated ($r < 0.11$), confirming that empowerment in this domain is multidimensional rather than unitary. Education and digital access are positively associated with bodily autonomy and gender-equitable attitudes, whereas the same factors operate differently for contraceptive decision-making. Regular internet use is the only covariate positively associated with all three dimensions, although the effect is small and weakest for contraceptive decision-making (1.5 percentage points), where 96.7 per cent of eligible women already participate. Ethnicity and urban residence change signs across dimensions. The findings imply that empowerment policy and its monitoring should be dimension-specific, and that women's digital access is the most consistent correlate across these domains, although the cross-sectional design does not support a causal reading.

Keywords: Women empowerment, Reproductive autonomy, Gender attitude, Vietnam, Multidimensionality, Logit.

1. Introduction

Women's empowerment has become a central objective of international development and, under Sustainable Development Goal (SDG) 5, is now recognised as an end in its own right. In the influential formulation of Kabeer

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[1], empowerment is "the expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them" – a definition that places women's agency, rather than the mere possession of resources, at the centre of the concept. Beyond its intrinsic value, women's empowerment is also instrumentally important for development: a large and growing body of evidence links greater female agency to lower fertility, better child health and nutrition, higher investment in children's schooling, and faster poverty reduction [2-4], so that it is at once a goal of development and a means of achieving it [5]. Because empowerment is both valuable in itself and consequential for a wide range of household and societal outcomes, understanding what raises it is of first-order policy importance.

Vietnam offers an instructive setting in which to study these questions. Decades of market-oriented reform (Doi Moi), high female labour-force participation by regional standards, and an explicit legal commitment to gender equality have coincided with measurable gains in women's status. At the same time, traditional Confucian gender norms, a patrilineal kinship system, and pronounced disparities between the majority Kinh population and ethnic minorities continue to shape women's lives within the household [6, 7]. The country has also undergone a rapid digital transformation: in the 2020–2021 Multiple Indicator Cluster Survey (MICS6), roughly three-quarters of ever-partnered women report regular internet use, even though access remains unequal across regions, ethnic groups, and wealth strata – a pattern consistent with the "digital gender divide" documented across the developing world [8]. This combination of rapid modernisation, persistent normative constraints, and uneven connectivity makes Vietnam a valuable case for examining how socio-economic resources and digital access relate to different facets of women's empowerment.

Despite a voluminous empirical literature, two recurrent problems limit what is known about the determinants of women's empowerment. First, empowerment is frequently collapsed into a single composite index, even though its conceptual dimensions – economic, social, reproductive, and attitudinal – need not move together, and increasingly are shown not to [9-11]. Aggregation can mask offsetting effects and obscure the fact that a given policy lever may raise one dimension while leaving another unchanged, or even lowering it. Second, in many low- and middle-income settings, household economic decision-making is not directly observed in nationally representative micro-data, forcing researchers to rely on narrower proxies whose conceptual content – and whose link to a woman's actual control over resources – is rarely made explicit [12].

This study addresses both problems within the reproductive-health and gender domain, for which Vietnam has rich, recent, and nationally representative data. Using the 2020–2021 MICS6, it analyses the determinants of three distinct dimensions of women's empowerment: (i) bodily autonomy, proxied by a woman's reported ability to refuse sexual intercourse; (ii) reproductive decision-making, proxied by her participation in choosing a contraceptive method; and (iii) gender-equitable attitudes, proxied by the rejection of all justifications for wife-beating. These indicators map onto the decision-making and attitudes-to-violence dimensions identified in the women's-empowerment measurement literature [9]. Rather than aggregating them into a single score, the study analyses each dimension separately and explicitly tests whether their determinants differ.

The paper makes three contributions. First, it provides among the first multidimensional, nationally representative quantitative evidence on the determinants of reproductive autonomy and gender attitudes for Vietnam using MICS6. Second, it presents direct empirical evidence on the (weak) correlation among the three dimensions, cautioning against the unidimensional empowerment indices that dominate applied work. Third, it identifies women's digital access as the most consistent

correlate across all three dimensions, a pattern with policy relevance in a rapidly digitalising economy.

The remainder of the paper is organised as follows. Section 2 reviews the literature and develops the study's hypotheses; Section 3 describes the data and methods; Section 4 presents the results and discussion; and Section 5 concludes.

2. Literature Review and Conceptual Framework

2.1. The concept and theory of women's empowerment

The modern understanding of empowerment draws on Amartya Sen's capability approach, which frames development as the expansion of substantive freedoms – the real opportunities people have to lead lives they value [13]. Within this tradition, Kabeer [1] decomposes empowerment into three inter-related components: resources (the pre-conditions, including material, human, and social endowments), agency (the ability to define one's goals and act upon them, of which decision-making is the most visible expression), and achievements (the outcomes that follow). A central insight is that agency is exercised across distinct life domains – economic, social, and reproductive – that need not move together, so that empowerment is intrinsically multidimensional rather than a single latent trait.

Economic theory offers a complementary lens. Whereas the unitary household model treats the family as a single decision unit with a common utility function, collective and bargaining models recognise that spouses have distinct preferences and that outcomes reflect their relative bargaining power. In the Nash-bargaining formulations of Manser and Brown [14] and McElroy and Horney [15], a woman's influence over household choices rises with her command over resources and the attractiveness of her outside options (her "threat point"). A key implication, emphasised in more recent work on intra-household allocation [12], is that what matters is not the resources nominally directed to women but the resources they actually control. These models predict that factors raising women's relative resources – education, earning capacity, and, plausibly, access to information – should strengthen their voice within the household, providing the theoretical basis for the determinants of women's empowerment in section 2.3.

2.2. Measuring Empowerment: the Multidimensionality Problem

Translating these concepts into measurement has proved difficult. Malhotra, Schuler and Boender [16] and Golla et al., [17] stress that empowerment is multidimensional and context-specific, and that no single indicator captures it adequately; a recent systematic review by Costa et al., [18] documents the proliferation of individual-level measures and the continuing absence of consensus. The most influential attempt at standardisation, the SWPER index of Ewerling et al., [9], is itself instructive: when survey items intended to capture women's empowerment across African Demographic and Health Surveys are subjected to factor analysis, they load onto three separate factors – attitudes to violence, social independence, and decision-making – rather than a single dimension.

Two of the dimensions examined in this paper – reproductive autonomy and attitudes toward intimate partner violence (IPV) – have received particular attention. Reviewing evidence from low- and middle-income countries, Vyas and Watts [19] conclude that women's economic empowerment and their experience of, and attitudes toward, violence are related but conceptually and empirically separable, with effects that are sometimes non-monotonic. Taken together, this body of work implies that if the underlying dimensions of empowerment are empirically distinct, collapsing them into one index is not merely a loss of information but a potential source of bias, because determinants that raise one dimension may be unrelated to another.

2.3. Determinants of Women's Empowerment

Education is the most consistently documented correlate of women's empowerment. Schooling raises human capital and earnings potential, improves access to information, and reshapes gender-role attitudes, thereby strengthening women's agency [2, 20]. Duflo [2] argues that the relationship between education, empowerment, and development is bidirectional and context-dependent, while Batool et al. [20], using an ordered-probit framework, find education to be the dominant predictor of women's economic empowerment; at the macro level, gender gaps in schooling are associated with slower growth and development [21]. Because the mechanisms through which schooling operates – information, attitudes, and outside options – are relevant to autonomy, decision-making, and gender attitudes alike, education is expected to be a broad-based correlate of empowerment. This yields the first hypothesis:

H1. Higher education is positively associated with all three dimensions of empowerment.

Household economic resources are also commonly associated with greater autonomy, but the evidence is mixed and hinges on whether women actually control those resources; transfers that nominally accrue to women do not always translate into greater voice [2, 12, 19]. A more recent strand links information and communication technologies (ICTs) to women's empowerment. Access to the internet and mobile telephony broadens women's information sets, expands their social networks, exposes them to alternative norms, and lowers the cost of economic and social participation – all of which can enhance agency. Hafeez et al., [22] find a positive association between ICT diffusion and women's empowerment across South Asian countries, and Kwapong [23] documents similar effects for rural women in Ghana, even as a persistent digital gender divide constrains women's access in the first place [8]. Because these channels are not specific to any single life domain, digital access is theoretically well placed to influence several dimensions of empowerment simultaneously – a conjecture that, to our knowledge, has not previously been tested across distinct empowerment dimensions within one nationally representative sample. Accordingly:

H2. Household wealth and digital access are positively associated with empowerment.

Demographic and structural factors – age and parity, urban residence, ethnicity, and region – further condition empowerment by shaping exposure to markets, services, and prevailing norms. Age and parity proxy a woman's position in the family life cycle and her accumulated experience; autonomy and decision-making roles often rise with age and with the transition to motherhood, although attitudes may simultaneously become more conservative. Urban residence is associated with greater exposure to services and non-traditional norms, though its effect can be ambiguous where urban life also intensifies certain forms of control. In multi-ethnic settings such as Vietnam, minority status and residence in remote or less-developed regions are frequently associated with more restrictive gender environments and weaker access to services [16]. These considerations motivate the third hypothesis:

H3. Ethnic-minority status and residence in less-developed regions are associated with lower empowerment.

Finally, the determinants above operate through partly distinct channels – human capital, material and informational resources, life-cycle position, and normative context – and there is no reason to expect them to act uniformly on every facet of empowerment. Education may reshape attitudes without altering a near-universal behaviour such as contraceptive participation; ethnicity may bear on violence-related norms differently than on bodily autonomy. This heterogeneity, together with the weak empirical separation of empowerment's dimensions documented above [9, 18], leads to the study's organising hypothesis:

H4. The determinants differ across the three dimensions, reflecting the multidimensional nature of empowerment.

Empirically, the determinants of women's empowerment have been studied with a range of discrete-choice models. Batool et al., [20] use an ordered probit to rank the demographic correlates of economic empowerment, while many survey-based studies adopt binary logit specifications for individual decision and attitude indicators [19, 22]. These studies converge on education and economic status as leading correlates but diverge on the role of urbanisation and ethnicity, and they rarely examine several empowerment dimensions jointly within a single, design-based sample – a gap the present study addresses by estimating a common specification across three dimensions while taking the complex survey design explicitly into account.

2.4. The Vietnamese Context

Evidence specific to Vietnam underscores the importance of context. Santillan et al., [7] show that empowerment indicators must be grounded in local realities, where women often manage day-to-day household finances yet remain constrained in other domains by patrilineal and Confucian norms. Studies of the Vietnamese family document both change and stability in gender roles: women's economic contribution has risen, but the domestic division of labour and ultimate authority within the household have shifted more slowly [6, 24]. Anderson and Eswaran [25], although focused on Bangladesh, provide a methodological template for distinguishing the sources of female autonomy that is relevant across South and Southeast Asia. Against this backdrop, Vietnam's combination of high female economic participation, near-universal contraceptive use, persistent ethnic and regional inequalities, and rapid digitalisation makes it a particularly informative case for a dimension-by-dimension analysis.

Vietnam's policy environment further sharpens the relevance of these questions. The Law on Gender Equality (2006), successive National Strategies on Gender Equality, and a National Programme on preventing and responding to gender-based violence articulate strong de jure commitments, while the National Digital Transformation Programme to 2025 prioritises universal connectivity. Yet de jure commitments and de facto outcomes can diverge, and the household remains a domain in which formal rights are mediated by entrenched norms. Identifying which individual and structural factors are most strongly associated with each dimension of women's within-household agency therefore speaks directly to the design and monitoring of these national programmes.

3. Data and Estimation Methods

3.1. Data and Sample

The study uses the Vietnam Survey Measuring Sustainable Development Goal Indicators on Children and Women 2020–2021 (MICS6), conducted by the General Statistics Office with technical and financial support from UNICEF [26]. MICS6 is the largest such survey conducted in Vietnam to date, covering about 14,000 households across all 63 provinces and representative of the six socio-economic regions. A women's questionnaire was administered to women aged 15–49. Of the 11,294 women aged 15–49 who completed the women's questionnaire, 9,268 were ever married or in union and form the universe for the reproductive-autonomy items. Within this group, the ability-to-refuse-sex item was answered by 8,170 women; the contraceptive decision-making item was administered only to women currently using a method, giving 6,050; and the attitudes-to-violence module yielded valid responses on all five scenarios for 8,848. Listwise deletion on the covariates – driven almost entirely by 404 women whose household records could not be matched, and who are therefore missing education, wealth, insurance and parity simultaneously – gives the estimation samples of 8,166, 6,048 and 8,844. All estimates employ complex survey design - sampling weights, primary sampling units (PSUs), and

strata - so that the results are nationally representative and the standard errors account for clustering and stratification.

One limitation should be stated at the outset. The MICS6 women's questionnaire does not collect individual employment or income, nor a module on household economic decision-making. The study therefore measures the reproductive-health and gender domain of empowerment rather than economic empowerment, and proxies household economic standing with the asset-based wealth index. This scope is made explicit throughout and bounds the interpretation of the findings.

3.2. Dependent Variables

The mapping from the concept to the three indicators follows the measurement literature. Kabeer locates empowerment in agency exercised across distinct life domains that need not move together, and when standard empowerment items are subjected to factor analysis, as in the construction of the survey-based women's empowerment (SWPER) index, they separate into attitudes to violence, social independence and decision-making rather than loading on a single factor [9].

Three binary indicators capture distinct empowerment dimensions (Table 1). D1 (bodily autonomy) and D2 (reproductive decision-making) both belong to the decision-making factor but concern different objects of decision – control over one's own body and control over reproductive means. D3 (gender-equitable attitudes) belongs to the attitudes-to-violence factor and measures an internalised norm rather than a decision. D1 equals one if the woman reports that she can refuse sexual intercourse with her husband or partner. D2 equals one if the woman participated alone or jointly in the decision on which contraceptive method to use. D3 equals one if the woman rejects wife-beating in all five MICS scenarios (if a wife goes out without telling her husband, neglects the children, argues with him, refuses sex, or burns the food). For D3, the requirement that a woman reject violence in all five scenarios yields a demanding, internally consistent measure of gender-equitable attitudes rather than a partial one. A supplementary count index (0–3), summing the three indicators, is defined only on the intersection of the three universes (N = 5,937), and should not be interpreted as a unidimensional construct.

The D1 and D3 indicators treat non-substantive responses differently. For D1, the 124 women who answered "can't say" are coded as not empowered. For D3, the indicator records the absence of any justification of wife-beating across the five scenarios, so the 195 women who answered "don't know" on at least one scenario without justifying violence on any are counted as rejecting it[1].

The three indicators are deliberately kept as separate binary outcomes; the count index in the final row of Table 1 is presented only to summarise the joint distribution and is analyzed solely with an ordered logit as a robustness summary, never as the study's primary construct.

Table 1. Variable definitions and descriptive statistics

Variable	Description	N	Mean	Std. err.	Min	Max
D1 Bodily autonomy	Can refuse sex (1/0)	8,170	0.876	0.007	0	1
D2 Reproductive decision	Participates in contraceptive decision (1/0)	6,050	0.967	0.003	0	1
D3 Gender attitudes	Rejects all IPV justifications (1/0)	8,848	0.879	0.006	0	1
Empowerment index	Sum of D1–D3 (0–3)	5,937	2.716	0.013	0	3

[1] Re-estimating both indicators under alternative treatments of these responses leaves the conclusions unchanged.

Education	Highest level (0 none – 5 college+)	8,863	2.751	0.035	0	5
Wealth quintile	Asset index (1 poorest – 5 richest)	8,864	3.013	0.038	1	5
Regular internet use	Internet ≥ weekly (1/0)	8,860	0.759	0.009	0	1
Age	Years	8,864	35.17	0.12	15	49
Urban	Urban residence (1/0)	9,268	0.343	0.021	0	1
Ethnic minority	Non-Kinh/Hoa (1/0)	9,268	0.147	0.008	0	1
Health insurance	Covered (1/0)	8,864	0.846	0.007	0	1
Ever given birth	Has given birth (1/0)	8,864	0.953	0.003	0	1

Note: all statistics are survey-weighted using the women's sampling weight, with primary sampling units and strata, so that means are nationally representative; standard errors are linearised. N is the unweighted number of observations. Weighted and unweighted figures differ appreciably for ethnicity and internet use because MICS6 oversamples ethnic-minority and remote areas.
Source: Authors' computation from MICS6 (2020–2021).

3.3. Independent Variables

The explanatory variables follow the theoretical and empirical literature reviewed above. Education (six levels, from pre-primary/none to college and above) proxies human capital and is expected to raise all three dimensions (H1). The asset-based wealth quintile captures household economic standing (H2). Regular internet use (at least weekly) is the digital-access proxy and the variable of primary substantive interest for H2. Demographic and structural controls comprise age and its square (to allow a non-linear life-cycle profile), urban residence, ethnicity (Kinh/Hoa majority versus minority groups), health-insurance coverage, ever having given birth (parity), and the six socio-economic regions (H3). Following the women-empowerment literature on binary and ordered outcomes [20], all categorical predictors enter as sets of indicator variables, with the largest or lowest category as the reference.

3.4. Estimation Strategy

For each binary dimension, a survey-weighted logistic regression is estimated:

$$\Pr(D_{ik} = 1 \mid X_i) = \Lambda(\beta_0 + \beta_1 \mathrm{Educ}_i + \beta_2 \mathrm{Wealth}_i + \beta_3 \mathrm{Internet}_i + \beta_4 \mathrm{Urban}_i + \beta_5 \mathrm{Ethnic}_i + \beta_6 \mathrm{Age}_i + \beta_7 \mathrm{Age}_i^2 + \beta_8 \mathrm{Insurance}_i + \beta_9 \mathrm{Parity}_i + \mathrm{Region}_i'\gamma) \quad (1)$$

where $\Lambda(\cdot)$ is the logistic cdf and k = 1, 2, 3 indexes the three dimensions. All estimates apply the MICS6 complex survey design (sampling weights, PSUs and strata). Average marginal effects are averaged over the population to which each model applies: ever-partnered women for D1 and D3, and current contraceptive users among them for D2.

Coefficients are reported together with average marginal effects (AMEs) so that magnitudes can be read in percentage points. To probe the multidimensionality hypothesis (H4), the three models are estimated on the same specification and compared, and an ordered logit on the 0–3 count index is reported as a summary. Robustness is assessed in several ways: probit models, region-specific regressions, a two-level mixed-effects (multilevel) logit with women nested within PSUs, Firth penalised logit and a complementary log-log specification for D2, and an alternative "sole decision-maker" definition of that outcome.

4. Results and Discussion

4.1. Descriptive Results and the Multidimensionality of Empowerment

Among ever-partnered women, 87.6% report being able to refuse sex, 96.7% participate in contraceptive decisions, and 87.9% reject all wife-beating justifications. The high mean for D2 reflects Vietnam's mature family-planning program and near-universal contraceptive coverage. Despite these high averages, the three

dimensions are only weakly correlated, with pairwise coefficients between -0.005 and 0.107. In other words, a woman who is empowered on one dimension is not systematically empowered on another. This is direct empirical evidence that empowerment in this domain is multidimensional and should not be reduced to a single latent score, consistent with Kabeer [1] and the SWPER findings of Ewerling et al. [9]. Regional descriptive statistics reinforce the point: the Red River Delta records the highest values for both D1 (0.93) and D3 (0.93), whereas the Central Highlands is the lowest on attitudes (D3 = 0.75) yet only mid-ranked on bodily autonomy, indicating that the geography of empowerment differs by dimension.

The descriptive contrasts also foreshadow the multivariate results. Bodily autonomy and gender-equitable attitudes display a clear educational gradient in the raw data – rising monotonically from the least- to the most-educated groups – whereas participation in contraceptive decisions is uniformly high across education levels. Internet use, by contrast, is positively associated with all three indicators in simple cross-tabulations. These patterns motivate a multivariate analysis that holds confounders constant and allows the determinants of each dimension to be compared on a common specification.

4.2. Determinants by Dimension

Table 2 reports the logistic-regression coefficients and Table 3 the corresponding average marginal effects for the three dimensions. First, education is a strong, positive correlate of bodily autonomy and gender-equitable attitudes. Relative to the least-educated group, women with college or university education are about 13.3 percentage points (pp) more likely to be able to refuse sex and 8.1 pp more likely to reject violence (both $p < 0.01$). For contraceptive decision-making, however, education is statistically insignificant – its near-universal prevalence leaves little variation to explain. H1 is therefore only partially supported, and the very fact that education matters for two dimensions but not the third is itself evidence for H4.

Second, regular internet use is the only covariate whose coefficient is positive and significant in all three models (D1: $\beta = 0.296$, $p = 0.029$; D2: $\beta = 0.474$, $p = 0.045$; D3: $\beta = 0.246$, $p = 0.033$). The corresponding average marginal effects (Table 3), computed over the population to which each model applies, are 3.0 percentage points for bodily autonomy ($p = 0.029$), 1.5 pp for contraceptive decision-making ($p = 0.047$) and 2.4 pp for gender-equitable attitudes ($p = 0.034$). The consistency of sign is notable given how differently the other covariates behave across the three outcomes, but the magnitudes are modest and the effect is smallest for contraceptive decision-making, an outcome in which 96.7 per cent of eligible women already participate. The result provides individual-level, nationally representative support for H2 through the digital channel and complements the cross-country and rural evidence of Hafeez et al., [22] and Kwapong [23].

Third, ethnicity and urban residence change sign across dimensions – the clearest evidence for H4. Hmong women are markedly less likely to exercise bodily autonomy (-34.5 pp, $p < 0.01$) but are not statistically distinct on attitudes, whereas Khmer women are less likely to reject violence yet more likely to participate in contraceptive decisions. Urban residence is negatively associated with D2 but insignificant elsewhere. Household wealth is largely insignificant once education and region are controlled, indicating that in this domain schooling and digital access matter more than asset wealth – qualifying H2 and echoing the caution of Duflo [2] that economic resources do not mechanically translate into empowerment. H3 is thus supported for some groups and dimensions but not uniformly, again underlining multidimensionality.

The control variables follow expected life-cycle and structural patterns. Age and its square trace a concave profile in which autonomy and decision roles tend to rise with age before leveling off, although the age terms are

individually modest once education and parity are included. Having ever given birth is strongly and positively associated with participation in contraceptive decisions since contraceptive choices become salient once childbearing has begun, yet is unrelated to bodily autonomy or attitudes. Health-insurance coverage is not significantly associated with any dimension after education, wealth and region are held constant. The fact that the same controls behave differently across the three outcomes is further, if indirect, evidence for the multidimensionality thesis (H4).

Table 2. Survey-weighted logistic regressions of the three empowerment dimensions

Variable	D1 – Bodily autonomy	D2 – Reproductive decision	D3 – Gender attitudes
Education (base: pre-primary or none)			
Primary	0.216 (0.160)	−0.195 (0.390)	−0.248 (0.167)
Lower secondary	0.502*** (0.176)	−0.214 (0.385)	0.039 (0.170)
Upper secondary	0.721*** (0.207)	−0.188 (0.447)	0.295 (0.192)
Vocational	0.544* (0.280)	−0.471 (0.533)	0.764*** (0.292)
College/University+	1.311*** (0.247)	−0.459 (0.477)	0.952*** (0.224)
Wealth quintile (base: poorest)			
Second	−0.035 (0.166)	−0.096 (0.437)	0.096 (0.163)
Middle	−0.126 (0.173)	0.150 (0.530)	0.365** (0.182)
Fourth	−0.097 (0.184)	0.442 (0.554)	0.327* (0.191)
Richest	−0.247 (0.219)	0.472 (0.607)	0.244 (0.211)
Ethnicity (base: Kinh/Hoa)			
Tay, Thai, Muong, Nung	−0.428* (0.240)	0.744 (0.537)	0.266 (0.235)
Khmer	−0.393 (0.376)	1.153** (0.494)	−0.823*** (0.243)
Hmong	−2.045*** (0.329)	−0.786 (0.608)	−0.315 (0.288)
Other ethnic groups	−0.629** (0.317)	0.408 (0.447)	−0.325* (0.172)
Region (base: Red River Delta)			
Northern Midlands and Mountains	−0.336 (0.259)	1.991*** (0.386)	−0.355 (0.231)
North Central and Central Coastal	−1.080*** (0.208)	0.741** (0.316)	−1.002*** (0.189)
Central Highlands	−0.446* (0.245)	0.523 (0.350)	−1.020*** (0.187)
South East	−0.031 (0.181)	0.554** (0.265)	−0.403** (0.169)
Mekong River Delta	−0.192 (0.207)	1.157*** (0.416)	0.503** (0.218)
Other covariates			
Regular internet use	0.296** (0.136)	0.474** (0.236)	0.246** (0.115)
Urban residence	−0.190 (0.157)	−0.657** (0.281)	0.001 (0.139)
Age	−0.027 (0.047)	0.050 (0.114)	0.018 (0.051)
Age squared	0.000 (0.001)	−0.000 (0.002)	−0.000 (0.001)
Health insurance	0.063 (0.142)	0.085 (0.232)	0.025 (0.119)
Ever given birth	−0.081 (0.244)	0.960 (0.759)	0.045 (0.231)
Constant	2.508*** (0.839)	0.526 (2.224)	1.591* (0.920)
Observations	8,166	6,048	8,844

Notes: linearised standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. All estimates apply the MICS6 complex survey design (sampling weights, primary sampling units and strata). D2 is estimated on its own universe, women currently using a contraceptive method. Estimation samples are slightly smaller than the descriptive samples in Table 1 because of listwise deletion on the covariates (8,170 → 8,166 for D1; 6,050 → 6,048 for D2; 8,848 → 8,844 for D3).

Source: Authors' computation from MICS6 (2020–2021).

Table 3. Average marginal effects on the three empowerment dimensions (percentage points)

Variable	D1 – Bodily autonomy	D2 – Reproductive decision	D3 – Gender attitudes
Education (base: pre-primary or none)			
Primary	3.1 (2.4)	−0.5 (1.0)	−3.2 (2.1)
Lower secondary	6.5** (2.6)	−0.6 (1.0)	0.5 (2.0)
Upper secondary	8.8*** (2.9)	−0.5 (1.2)	3.1 (2.1)
Vocational	7.0* (3.6)	−1.4 (1.7)	6.9*** (2.5)
College/University+	13.3*** (2.9)	−1.4 (1.4)	8.1*** (2.1)
Wealth quintile (base: poorest)			
Second	−0.3 (1.6)	−0.4 (1.7)	1.1 (1.8)
Middle	−1.2 (1.7)	0.5 (2.0)	3.7** (1.9)
Fourth	−0.9 (1.8)	1.4 (2.0)	3.3* (2.0)
Richest	−2.5 (2.3)	1.5 (2.2)	2.6 (2.2)
Ethnicity (base: Kinh/Hoa)			
Tay, Thai, Muong, Nung	−4.6 (2.9)	1.8* (1.0)	2.4 (2.0)
Khmer	−4.2 (4.5)	2.3*** (0.7)	−10.5*** (3.8)
Hmong	−34.5*** (7.2)	−3.7 (3.8)	−3.4 (3.4)
Other ethnic groups	−7.3* (4.4)	1.1 (1.1)	−3.6* (2.0)
Region (base: Red River Delta)			
Northern Midlands and Mountains	−2.9 (2.4)	5.2*** (1.1)	−3.1 (2.1)
North Central and Central Coastal	−12.4*** (2.8)	3.1** (1.3)	−11.2*** (2.3)
Central Highlands	−4.1* (2.4)	2.4 (1.5)	−11.5*** (2.2)
South East	−0.2 (1.4)	2.5** (1.2)	−3.6** (1.5)
Mekong River Delta	−1.6 (1.8)	4.1*** (1.3)	3.2** (1.3)
Other covariates			
Regular internet use	3.0** (1.4)	1.5** (0.8)	2.4** (1.2)
Urban residence	−1.9 (1.6)	−2.1** (0.9)	0.0 (1.4)
Age	−0.3 (0.5)	0.2 (0.4)	0.2 (0.5)
Age squared	0.0 (0.0)	−0.0 (0.0)	−0.0 (0.0)
Health insurance	0.6 (1.4)	0.3 (0.7)	0.2 (1.2)
Ever given birth	−0.8 (2.4)	3.0 (2.4)	0.4 (2.3)
Observations	**8,166**	**6,048**	**8,844**

Notes: average marginal effects in percentage points, linearised standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Marginal effects are averaged over the population to which each model applies: ever-partnered women for D1 and D3, and current contraceptive users among them for D2. For categorical variables the effect is the discrete change from the base category.
Source: Authors' computation from MICS6 (2020–2021).

As a summary device, an ordered logit on the 0–3 count index reproduces the 'average' picture: education, regular internet use and several regional indicators are jointly significant predictors of a higher empowerment count. This summary, however, is precisely what the dimension-by-dimension analysis cautions against over-interpreting. Because the underlying indicators are weakly correlated and respond differently to the same covariates, the ordered-logit coefficients represent an average of heterogeneous, occasionally offsetting, relationships and should not be read as evidence of a single empowerment process. We therefore report it only for completeness and base our substantive conclusions on the separate models.

4.3. Regional Heterogeneity and Robustness

Region-specific models confirm that the same factor matters unevenly across space. The education gradient in bodily autonomy is steepest in the northern midlands and mountains; gender-equitable attitudes are markedly lower in the Central Highlands and North Central Coast but higher in the Mekong River Delta, even after controlling for individual characteristics. These spatial patterns mirror well-documented differences in prevailing gender norms and underline that national-average findings can obscure substantial sub-national variation – an important caveat for policy targeting.

The main results are stable across specifications. Probit models yield the same signs and significance as the logit estimates. A two-level mixed-effects logit with women nested in PSUs confirms the positive associations of education and internet use with bodily autonomy and shows significant between-cluster variance, justifying the design-based standard errors used throughout. Replacing the contraceptive-participation indicator with a stricter "sole decision-maker" definition, which 30.6 per cent of users satisfy and which is therefore free of the ceiling that constrains the main indicator, leaves no significant association with internet use (β = 0.125, p = 0.266) or with education. The association at this dimension is specific to the broad participation measure and does not extend to a more demanding definition of control.

The three models differ in how much they explain: McFadden's pseudo-R^2 is 0.139 for bodily autonomy, 0.074 for gender-equitable attitudes and 0.036 for contraceptive decision-making, and 81.4 per cent of the fitted probabilities for the last exceed 0.95. Results for that dimension should therefore be read with this ceiling in mind. Firth penalised logit, which corrects small-sample bias when one outcome category is sparse, and a complementary log-log specification, which relaxes the symmetry of the logit link, both leave the sign and significance of internet use unchanged (coefficients of 0.538 and 0.149 against 0.474 in the main specification; neither is on the logit scale of the main estimates, so only sign and significance are comparable).

4.4. Discussion

The results converge on a coherent message that speaks directly to the literature. The weak correlations among the three dimensions, and the fact that education and ethnicity carry different – sometimes opposite – signs across them, provide rare individual-level confirmation of the multidimensionality thesis advanced conceptually by Kabeer [1] and empirically by Ewerling et al., [9] and Costa et al., [18]. Where much applied work proceeds by constructing a single empowerment index, the present evidence shows that such aggregation would have averaged away the most informative variation: in these data, a composite score would conflate a dimension that responds strongly to education (bodily autonomy) with one that does not (contraceptive decision-making) and with another in which ethnic-minority status reverses sign (attitudes versus decisions).

The strong and consistent education effect on bodily autonomy and gender-equitable attitudes aligns with Duflo [2] and Batool et al., [20] and with the bargaining logic of Manser and Brown [14] and McElroy and Horney [15], whereby schooling raises women's resources and outside options. The null education effect on contraceptive decision-making is best read as a ceiling phenomenon: with participation near 96.7%, there is little room for education to discriminate, and the decision is instead shaped by parity, region and ethnicity – consistent with the family-planning literature and with Vietnam's programmatic history. The finding that regular internet use is the only covariate positively associated with all three dimensions is the most consistent pattern in these data. It extends the ICT-and-empowerment evidence of Hafeez et al., [22] and Kwapong [23] from the aggregate and rural levels to a nationally representative, multidimensional, individual-level analysis, and is consistent with the view that information access is a transversal resource for agency.

The divergent ethnicity effects deserve emphasis. That Hmong women are most disadvantaged on bodily autonomy while Khmer women are most disadvantaged on violence-related attitudes – yet relatively advantaged on contraceptive decisions – warns against treating 'ethnic minority' as a uniform category or empowerment as a single outcome [16]. Finally, because the data are cross-sectional and lack economic-decision modules, these associations should not be read causally, and they characterise the social and reproductive rather than the economic domain of empowerment. Reverse causation (for example, more autonomous women being more likely to go online) cannot be excluded and tempers the interpretation of the digital-access result.

These findings both corroborate and extend the small Vietnamese empirical literature on women's empowerment. Santillan et al., [7] argued that empowerment indicators must be grounded in local realities; our results operationalise that insight at national scale and show that the determinants of empowerment are not only context-specific but also dimension-specific. Whereas Vietnamese policy discourse often frames gender equality as a single achievement to be monitored with headline indicators, the uneven pattern documented here implies that progress in one domain (for example, near-universal participation in contraceptive decisions) can coexist with persistent gaps in another (bodily autonomy or violence-related attitudes), particularly among specific ethnic groups and regions.

The mechanisms linking digital access to agency merit closer scrutiny. Regular internet use may partly proxy unobserved modernity or openness; yet its robustness to controls for education, wealth, ethnicity and region suggests an association that is not reducible to those characteristics. Plausible channels include cheaper access to health and legal information, exposure to content that questions traditional gender roles, and participation in online networks that enlarge a woman's outside options in the bargaining sense formalised by Manser and Brown [14] and McElroy and Horney [15]. The cross-sectional design cannot separate three readings of this association: internet use as an informational resource that supports agency, as a marker of unobserved household characteristics such as openness or mobility, and reverse causation in which more autonomous women are freer to go online. The indicator also captures the frequency rather than the content of use, so even under the first reading the mechanism is unidentified. Regular use rises from 15 per cent among women with no schooling to 99 per cent among those with tertiary education, so the coefficient is identified largely off variation among less-educated women.

Beyond these substantive points, the findings carry a methodological message for the applied literature and for national monitoring. SDG 5 and Vietnam's gender-equality strategy are typically tracked with composite or single-item indicators; the evidence here suggests that such instruments can give a misleading impression of progress if a gain in one dimension offsets stagnation in another. Reporting empowerment dimension by dimension – as the SWPER approach [9] recommends – would better inform program design. The study also illustrates the value of large, well-designed secondary surveys: by applying the complex survey design rather than treating MICS6 as a simple random sample, the analysis yields nationally representative estimates and credible standard errors, an approach that other Vietnamese studies using MICS or DHS data could productively adopt. These contributions are tempered by the cross-sectional, single-domain nature of the data, to which we now turn.

5. Conclusions

Using nationally representative MICS6 data, this study shows that women's reproductive autonomy, reproductive decision-making, and gender-equitable attitudes in Vietnam are only weakly correlated and have partly divergent determinants. Education and regular internet use are the most consistent positive correlates, with

digital access being the only factor significantly associated with all three dimensions. Ethnicity and region matter, but in dimension-specific – occasionally opposing – ways, while household wealth plays a limited role once education and region are controlled.

Three policy implications follow. First, empowerment policy should be dimension-specific: interventions calibrated to raise one facet of empowerment will not automatically improve others, and monitoring frameworks should track dimensions separately rather than relying on a single composite indicator. Second, women's digital access is the most consistent correlate of empowerment in these data, and connectivity gaps among ethnic-minority and remote populations deserve attention in gender-equality programming. The association is nonetheless modest in magnitude, weakest for contraceptive decision-making and absent under a stricter definition of participation in that decision. Whether expanding access would in fact raise empowerment is a question these data cannot answer, since a cross-sectional association is also consistent with internet use acting as a marker of unobserved characteristics or with reverse causation; establishing the direction of the relationship requires panel or quasi-experimental variation. Third, education remains foundational for bodily autonomy and gender-equitable attitudes and should continue to anchor gender-equality strategies, with targeted attention to the specific minority groups and regions identified as most disadvantaged.

The study has limitations that define an agenda for future research. Its cross-sectional design precludes causal identification; its measures are confined to the reproductive-health and gender domain because MICS6 lacks individual economic and household-decision modules; and several outcomes are close to their ceiling. Future work should combine MICS-type data with household living-standards surveys (such as VHLSS) to capture the economic domain of empowerment, exploit panel or quasi-experimental variation to move from association toward causation, and investigate the mechanisms – information, networks, and norms – through which digital access operates.

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