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Determinants of intention to participate in household health insurance in Ca Mau Province

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ABSTRACT

Expanding household health insurance is essential for advancing universal health coverage, particularly among residents outside formal employment. This study examines the factors influencing residents' intention to participate in household health insurance in Ca Mau Province, Vietnam. A structured questionnaire was administered to 398 residents in Tan Thanh, Hoa Thanh, and An Xuyen wards. Measurement reliability was assessed using Cronbach's alpha, construct structure was examined through exploratory factor analysis, and the proposed relationships were tested using correlation and multiple linear regression analyses. The final regression model was statistically significant ($F = 109.703$, $p < 0.001$) and explained 57.8% of the variance in participation intention. Five predictors showed significant positive effects: knowledge of household health insurance ($\beta = 0.429$), communication and promotion ($\beta = 0.353$), perceived quality of healthcare services ($\beta = 0.282$), financial capability ($\beta = 0.256$), and perceived usefulness ($\beta = 0.147$). Family expectations, health consciousness in later life, and perceived behavioral control were not significant in the final model. The findings indicate that participation intention is influenced less by general social approval than by practical knowledge, effective communication, affordability, and confidence in service quality. This study provides locality-specific evidence to support household-based health insurance enrolment in peripheral Vietnamese cities and offers practical implications for social insurance agencies, local authorities, and healthcare providers.

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1. Introduction

Health insurance is a core instrument of social protection because it reduces the financial uncertainty associated with illness and improves access to necessary healthcare. In countries pursuing universal health coverage, the policy challenge is not only to expand formal coverage but also to ensure that insured households understand the value of membership, can afford regular contributions, and trust that insured services will be delivered with acceptable quality. Global evidence shows that progress toward universal health coverage remains constrained by financial hardship from out-of-pocket payments, even where service coverage has expanded (Kabir et al., 2026). Vietnam has made substantial progress in building social health insurance as a nationwide public financing mechanism. By the end of 2024, the national health insurance coverage rate had reached approximately 94% of the population, reflecting a long policy transition from voluntary participation toward broad-based social protection. However, high aggregate coverage can conceal local gaps in enrolment, renewal, and perceived value. These gaps are particularly salient among informal workers and households that are not automatically covered by employer-based or state-subsidized arrangements.

Household health insurance is a practical pathway for extending coverage to non-salaried residents and family members outside formal employment. Yet enrolment decisions remain behavioral as well as economic. Residents may fail to join or renew because they lack knowledge about eligibility and benefits, perceive procedures as complicated, cannot afford contributions, or doubt the quality of healthcare services available under insurance. Evidence from Vietnam indicates that health insurance can increase healthcare utilization and reduce out-of-pocket expenditure for certain groups, but the protective effect is uneven and

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depends on how insurance is implemented in practice (Thuong et al., 2020).

Ca Mau Province is Vietnam's southernmost coastal province, located in the Mekong Delta and characterized by a dispersed settlement pattern, extensive aquaculture and agricultural livelihoods, and a substantial informal and self-employed workforce. These features matter for household health insurance because irregular income, travel distance, uneven access to information, and perceived differences in healthcare availability can affect both contribution affordability and the expected value of coverage. The study sites—An Xuyen, Hoa Thanh, and Tan Thanh—capture peri-urban and livelihood diversity within Ca Mau City. This setting is analytically useful because Vietnam's high national coverage rate may obscure the enrolment and renewal difficulties experienced by the remaining "missing middle," particularly residents outside compulsory payroll-based schemes (Forse et al., 2024).

Against this background, the study asks: (1) Which cognitive, normative, financial, communication-related, and service-related factors influence residents' intention to participate in household health insurance? (2) What is the relative explanatory strength of these factors? (3) What locally actionable implications follow for social insurance agencies, local authorities, collection agents, and healthcare providers? The study contributes by extending the Theory of Planned Behavior (TPB) beyond its three canonical antecedents to an implementation-sensitive framework that jointly models insurance knowledge, communication and promotion, financial capability, perceived usefulness, later-life health consciousness, family expectation, and perceived healthcare service quality in a high-coverage but locally heterogeneous Vietnamese context.

High national coverage does not eliminate the need to study participation intention. The remaining uninsured and intermittently insured population is likely to be concentrated among residents whose employment, income, and administrative attachment are less stable. Moreover, nominal enrollment does not automatically generate effective protection if households anticipate indirect costs, inconvenient referral procedures, limited medicine availability, or differential treatment at healthcare facilities. Participation should therefore be conceptualized as a repeated household commitment involving initial enrollment, payment continuity, renewal, and confidence that coverage will produce usable benefits (Forse et al., 2024; Neelsen et al., 2019).

For Vietnam's informal and self-employed workers, the family-based character of social health insurance creates both protective potential and decision complexity. Contributions and discounts are evaluated at household level, while ability to pay may fluctuate with agricultural seasons, informal earnings, family size, and recent illness. Vietnamese evidence shows that household income, the number of uninsured family members, illness experience, and expectations of service quality affect willingness to pay for family coverage (Thi Thuy Nga et al., 2018). Consequently, an analytically useful model must combine behavioral motivation with knowledge, affordability, communication, and expected service performance.

The present research examines which conditions retain an independent relationship with participation intention when cognitive, normative, financial, communication-related, and service-related factors are modeled simultaneously. This focus distinguishes broad reasons for valuing insurance from the concrete mechanisms that enable or constrain enrollment. It also addresses a geographic evidence gap. National indicators may conceal the way uniform policy rules interact with livelihood seasonality, settlement dispersion, and service access in the Mekong Delta. Local evidence can identify modifiable implementation barriers without implying that Ca Mau operates outside the national health-financing system.

2. Literature review

2.1. Theoretical foundation and contextual extension

TPB proposes that behavioral intention is jointly shaped by attitude, subjective norm, and perceived behavioral control (Ajzen, 1991). In health-insurance decisions, these mechanisms appear as evaluations of insurance usefulness, expectations from significant others, and perceived capacity to enroll. Recent evidence nevertheless indicates that insurance decisions also depend on literacy, affordability, institutional communication, and confidence in the healthcare services received after enrolment (Al Mamun et al., 2021; Mishra et al., 2024; Zheng et al., 2025). Accordingly, the present framework treats TPB as a behavioral core and adds policy-implementation conditions that are especially salient for households outside formal employment.

This extension responds to a gap in the literature. Prior studies commonly examine commercial purchase intention or community-based insurance in isolation, whereas Vietnam's household-based public program combines a family enrolment rule, regulated contributions, public communication, and access to contracted healthcare. Integrating cognitive, normative, financial, communication, and service-quality determinants in one model permits a direct comparison of the mechanisms that remain influential once they compete for explanatory variance in a mature social-health-insurance system (Forse et al., 2024; Thuong et al., 2020).

2.2. Hypotheses

Perceived usefulness is the extent to which residents believe that household health insurance improves access to care, reduces exposure to unexpected medical expenditure, and protects

household welfare. A favorable appraisal of these instrumental benefits strengthens intention because participation is seen as both health protection and financial risk management. Recent insurance studies consistently report a positive association between perceived usefulness and purchase intention (Al Mamun et al., 2021; Mishra et al., 2024).

H1: Perceived usefulness has a positive effect on intention to participate in household health insurance.

Family expectation captures perceived approval, encouragement, and behavioral expectations from spouses, parents, and other significant relatives. In TPB, these referent expectations generate normative pressure (Ajzen, 1991). Because household health insurance protects shared health and financial interests, family encouragement may reinforce an individual's perceived responsibility to enroll. Empirical work also identifies subjective norms and family or community influence as relevant to health-insurance intention (Abdullah et al., 2025; Al Mamun et al., 2021).

H2: Family expectation has a positive effect on intention to participate in household health insurance.

Health consciousness in later life refers to attentiveness to age-related health risks and motivation to safeguard future health. As vulnerability and expected healthcare needs become more salient, health-conscious residents should place greater value on preventive financial protection. Research on older populations links perceived health needs and vulnerability with health-insurance enrolment, although the strength of this relationship varies by economic and institutional setting (Ottie-Boakye et al., 2024).

H3: Health consciousness in later life has a positive effect on intention to participate in household health insurance.

Perceived behavioral control denotes residents' beliefs that they possess the resources, opportunities, and ability required to enroll. Control should be stronger when individuals can understand the procedure, access an enrolment channel, and complete participation without excessive difficulty. TPB and recent health-insurance research predict a positive control–intention relationship (Ajzen, 1991; Al Mamun et al., 2021; Mishra et al., 2024).

H4: Perceived behavioral control has a positive effect on intention to participate in household health insurance.

Knowledge refers to understanding eligibility, contribution levels, household discounts, benefit entitlements, enrolment procedures, and risk-sharing principles. Adequate knowledge reduces uncertainty and enables residents to compare expected benefits with costs. Insurance literacy is therefore a proximal cognitive resource for informed participation and has been linked to purchase intention and enrolment decisions (Al Mamun et al., 2021; Fadlallah et al., 2018; Kim et al., 2013).

H5: Knowledge of household health insurance has a positive effect on intention to participate in household health insurance.

Communication and promotion comprise organized activities that deliver understandable, credible, and locally relevant insurance information. Community outreach, mass media, healthcare personnel, and collection agents can clarify program rules, correct misconceptions, and make benefits more concrete. Evidence suggests that education and sustained communication improve insurance knowledge and enrolment willingness (Fadlallah et al., 2018; Lyimo et al., 2025).

H6: Communication and promotion have a positive effect on intention to participate in household health insurance.

Financial capability is the perceived ability to pay household contributions without displacing essential expenditure. It differs from perceived behavioral control by focusing specifically on payment capacity rather than the broader ability to complete enrolment. Affordability, income stability, and perceived financial value are repeatedly identified as determinants of insurance uptake and willingness to pay (Fadlallah et al., 2018; Zheng et al., 2025).

H7: Financial capability has a positive effect on intention to participate in household health insurance.

Perceived healthcare service quality reflects residents' evaluations of the competence, reliability, accessibility, responsiveness, and adequacy of services available under insurance. Quality shapes the expected return from participation: even well-informed residents may hesitate if they expect long waits, inconvenient referrals, or inferior treatment. Household perceptions of service quality have been associated with enrolment, continued participation, and insurance utilization (Hussien et al., 2022; Kagaigai et al., 2021).

H8: Perceived healthcare service quality has a positive effect on intention to participate in household health insurance.

Table 1 summarizes the eight research hypotheses and the expected direction of each association with intention to participate in household health insurance.

Fig. 1 presents the proposed conceptual framework linking the eight predictors to intention to participate in household health insurance.

Table 1: Research constructs and hypotheses

Code	Construct	Hypothesized effect on intention
H1	Perceived usefulness	Positive
H2	Family expectation	Positive
H3	Health consciousness in later life	Positive
H4	Perceived behavioral control	Positive
H5	Knowledge of household health insurance	Positive
H6	Communication and promotion	Positive
H7	Financial capability	Positive
H8	Perceived quality of healthcare services	Positive



Fig. 1: Proposed conceptual framework of the determinants of intention to participate in household health insurance

3. Methodology

3.1. Research design and sampling

This study used a quantitative cross-sectional survey. The target population comprised adults residing in Ca Mau Province who could make or influence decisions about household health insurance participation. Data were collected in April 2026 through direct administration in An Xuyen, Hoa Thanh, and Tan Thanh wards. These sites were selected to capture livelihood and settlement diversity within Ca Mau City. Because no complete list of eligible household decision makers was available, probability selection from a sampling frame was infeasible; therefore, trained surveyors used non-probability convenience and purposive intercept recruitment at community-accessible locations.

Eligibility was confirmed before participation, and only one completed questionnaire per respondent was retained. The achieved sample contained 398 usable responses: 139 from Hoa Thanh, 133 from An Xuyen, and 126 from Tan Thanh.

3.2. Questionnaire development and measures

The questionnaire operationalized eight predictors and participation intention using multi-item reflective measures. Items were adapted from TPB and health-insurance research, then contextually reworded to refer specifically to Vietnam's household health-insurance program (Ajzen, 1991; Al Mamun et al., 2021; Fadlallah et al., 2018; Kagaigai et al., 2021). The development process involved construct-to-item mapping, removal of overlapping wording, and expert discussion focused on content relevance, clarity, and local terminology. The Vietnamese questionnaire used a five-point Likert agreement scale (1 = strongly disagree; 5 = strongly agree). Table 2 reports the final measurement items, enabling assessment and replication of construct operationalization.

3.3. Sample-size justification

The final sample of 398 was adequate for the planned eight-predictor regression and EFA. It provided 49.8 observations per predictor, substantially exceeding conventional regression heuristics and the minimum N > 50 + 8m guideline (where m is the number of predictors; minimum = 114) proposed for testing the multiple correlation (Green, 1991). It also exceeded common respondent-to-item recommendations for exploratory scale assessment. Nevertheless, because recruitment was non-probabilistic, sample size improves statistical precision but does not eliminate selection bias or confer population representativeness.

3.4. Data analysis

Data were analyzed in SPSS. Descriptive statistics profiled the sample. Internal consistency was assessed using Cronbach's alpha and corrected item–total correlations, with alpha values above 0.70 preferred and item–total correlations above 0.30 retained. EFA assessed dimensionality using the Kaiser–Meyer–Olkin measure, Bartlett's test, eigenvalues, factor loadings, and explained variance. Pearson correlations described bivariate associations, and multiple linear regression estimated the unique contribution of each predictor. Model diagnostics included the Durbin–Watson statistic and variance inflation factors (VIFs); VIFs close to 1 indicated negligible collinearity (O'brien, 2007). Statistical significance was evaluated at $p < 0.05$. Table 3 summarizes the demographic characteristics and survey locations of the 398 respondents.

3.5. Procedural bias control and analytical scope

The questionnaire introduction emphasized anonymity, voluntary participation, confidentiality, and the absence of right or wrong answers. These procedural safeguards were intended to reduce evaluation apprehension and socially desirable responding. Construct-specific wording and clear questionnaire sections were also used to limit ambiguity. Nevertheless, predictor and outcome data were collected from the same respondents at one point in time. Common method variance cannot therefore be excluded, and the study does not rely on a single post-hoc test to claim that the risk is absent (Podsakoff et al., 2003).

Table 2: Measurement constructs and final questionnaire items

Construct/code	Final measurement items
Perceived usefulness (NT)	NT1 Insurance helps reduce unexpected medical expenses. NT2 Insurance improves my access to necessary healthcare. NT3 Insurance provides worthwhile protection for my household.
Family expectation (KV)	KV1 My family thinks that I should participate. KV2 People in my family encourage me to participate. KV3 My family would approve of my participation.
Health consciousness in later life (YT)	YT1 I am concerned about health risks as I grow older. YT2 I actively prepare for future healthcare needs. YT3 Protecting my health in later life is important to me.
Perceived behavioral control (KS)	KS1 Participating would be easy for me. KS2 I am confident that I can complete the enrolment procedure. KS3 Whether I participate is largely under my control.
Insurance knowledge (KT)	KT1 I understand who is eligible to participate. KT2 I understand the contribution and household-discount rules. KT3 I understand the benefits and enrolment procedures.
Communication and promotion (TT)	TT1 Information about the program is easy to access. TT2 Communication clearly explains benefits and procedures. TT3 Local promotion activities help me understand the program.
Financial capability (TC)	TC1 My household can afford the required contribution. TC2 Paying the contribution would not compromise essential spending. TC3 I could maintain payment when renewal is due.
Healthcare service quality (CL)	CL1 Insured patients receive competent healthcare. CL2 Services for insured patients are reliable and responsive. CL3 Healthcare available under insurance is accessible and adequate.
Intention to participate in household health insurance (YD)	YD1 I intend to participate when eligible. YD2 I plan to enroll or renew at the next opportunity. YD3 I am willing to recommend household participation to my family.

The analytical strategy was aligned with the study's explanatory objective. Exploratory factor analysis evaluated whether the item structure was empirically interpretable, while multiple regression compared the unique standardized associations of the eight predictors. Mediation and moderation were not added after observing the results because the original design focused on direct effects and cross-sectional observations do not establish temporal ordering. Future confirmatory studies should preregister indirect and interaction hypotheses and estimate them with latent-variable methods, longitudinal measurement, and independent samples.

4. Results

4.1. Measurement reliability and exploratory factor analysis

The reliability results supported internal consistency. Cronbach's alpha values ranged from 0.732 to 0.890 for the predictors and reached 0.852 for intention, exceeding the 0.70 criterion adopted for this study. Corrected item–total correlations also exceeded 0.30. These results supported retention of the measurement items for EFA and regression.

EFA further supported the proposed multidimensional structure. For the predictor items,

the Kaiser–Meyer–Olkin value was 0.738, and Bartlett's test was significant ($p < 0.001$), confirming factorability.

The retained factors explained 75.891% of total variance. For intention, the Kaiser–Meyer–Olkin value was 0.814, Bartlett's test was significant ($p < 0.001$), and a single factor explained 69.377% of variance. These findings are consistent with an internally coherent intention scale; however, because only EFA was conducted, they should not be interpreted as definitive evidence of convergent or discriminant validity. Table 4 reports Cronbach's alpha coefficients for the eight predictor scales and the participation intention scale.

4.2. Correlation analysis

Pearson correlation analysis showed that intention to participate in household health insurance was positively associated with most proposed predictors. The strongest bivariate association was observed for knowledge of household health insurance ($r = 0.542$, $p < 0.01$), followed by communication and promotion ($r = 0.435$, $p < 0.01$), perceived quality of healthcare services ($r = 0.364$, $p < 0.01$), financial capability ($r = 0.241$, $p < 0.01$), perceived usefulness ($r = 0.224$, $p < 0.01$), family expectation ($r = 0.213$, $p < 0.01$), and health consciousness in later life ($r = 0.108$, $p < 0.05$). The relationship between perceived behavioral control and intention was not statistically significant ($r = 0.092$, $p = 0.065$).

Table 3: Sample profile (n = 398)

Characteristic	Category	Frequency	Percent
Gender	Male	247	62.1
	Female	151	37.9
Age	18-25	61	15.3
	26-35	85	21.4
	36-45	119	29.9
	Over 45	133	33.4
Occupation	Homemakers	152	38.2
	Farmers	113	28.4
	Self-employed	133	33.4
Ward	Tan Thanh	126	31.7
	Hoa Thanh	139	34.9
	An Xuyen	133	33.4

Table 4: Cronbach's alpha coefficients

Construct	Code	Cronbach's alpha
Perceived usefulness	NT	0.732
Family expectation	KV	0.869
Health consciousness in later life	YT	0.826
Perceived behavioral control	KS	0.890
Knowledge of household health insurance	KT	0.874
Communication and promotion	TT	0.870
Financial capability	TC	0.738
Healthcare service quality	CL	0.844
Intention to participate in household health insurance	YD	0.852

Table 5 reports the bivariate Pearson correlations between each predictor and participation intention.

Table 5: Correlations between predictors and intention to participate in household health insurance

Predictor	Code	r with YD	Significance
Perceived usefulness	NT	0.224	$p < 0.01$
Family expectation	KV	0.213	$p < 0.01$
Health consciousness	YT	0.108	$p < 0.05$
Perceived behavioral control	KS	0.092	$p = 0.065$
Knowledge	KT	0.542	$p < 0.01$
Communication and promotion	TT	0.435	$p < 0.01$
Financial capability	TC	0.241	$p < 0.01$
Service quality	CL	0.364	$p < 0.01$

4.3. Regression results

The final multiple regression model retained five statistically significant predictors: perceived usefulness, knowledge of household health insurance, communication and promotion, financial capability, and perceived quality of healthcare services. The overall model was significant ($F = 109.703$, $p < 0.001$). The coefficient of determination was $R^2 = 0.583$ and the adjusted R2 was 0.578, indicating that the model explained 57.8% of the variance in participation intention. The Durbin-Watson statistic was 1.499, suggesting no serious autocorrelation problem. Multicollinearity was not a concern because VIF values ranged from 1.014 to 1.057.

The standardized beta coefficients show that knowledge of household health insurance was the strongest predictor ($\beta = 0.429$, $p < 0.001$), followed by communication and promotion ($\beta = 0.353$, $p < 0.001$), perceived quality of healthcare services ($\beta = 0.282$, $p < 0.001$), financial capability ($\beta = 0.256$, $p < 0.001$), and perceived usefulness ($\beta = 0.147$, $p < 0.001$). The estimated unstandardized regression equation was: YD = -1.396 + 0.115NT + 0.461KT + 0.436TT + 0.222TC + 0.291CL.

Table 6 summarizes the regression results and the corresponding hypothesis assessments.

5. Discussion

The findings provide several insights into the behavioral and practical conditions under which residents intend to participate in household health insurance. First, knowledge of household health insurance emerged as the most influential determinant. This indicates that intention increases when residents clearly understand eligibility, contribution levels, payment methods, benefit entitlements, and the practical steps required to enroll. In a policy area where rules can appear technical, knowledge reduces uncertainty and transforms insurance from an abstract obligation into a concrete protection mechanism.

Second, communication and promotion had a strong positive effect. This result shows that policy dissemination is not merely an administrative support activity but a central behavioral

intervention. Community-level communication, face-to-face counselling, ward-based meetings, and accessible media messages can correct misinformation and make the scheme more understandable. This finding is aligned with evidence that awareness and perceived value are important conditions for insurance uptake in emerging-market contexts (Fadlallah et al., 2018).

Table 6: Final regression and hypothesis-testing results

Hypotheses	Path	B	β	p-value	Result
H1	NT → YD	0.115	0.147	< 0.001	Supported
H2	KV → YD	-	-	> 0.05	Not supported
H3	YT → YD	-	-	> 0.05	Not supported
H4	KS → YD	-	-	0.065	Not supported
H5	KT → YD	0.461	0.429	< 0.001	Supported
H6	TT → YD	0.436	0.353	< 0.001	Supported
H7	TC → YD	0.222	0.256	< 0.001	Supported
H8	CL → YD	0.291	0.282	< 0.001	Supported

Third, perceived quality of healthcare services and financial capability were significant. These results indicate that residents evaluate household health insurance through both expected service value and payment feasibility. If insured services are perceived as slow, discriminatory, or low quality, enrolment intention weakens even when residents understand the policy. Similarly, when contributions are perceived as difficult to sustain, intention becomes vulnerable. For local authorities, this means that enrolment expansion should be linked to visible service-quality improvement and targeted affordability support for low-income households.

Fourth, perceived usefulness was significant but had the smallest standardized effect among the retained predictors. General recognition of insurance benefits may therefore be necessary but insufficient: residents can acknowledge usefulness while hesitating because procedures remain unclear, contributions are difficult to sustain, or service quality is uncertain. This pattern supports an implementation-sensitive extension of TPB in which concrete knowledge, affordability, communication, and expected service value account for more unique variance than broad favorable evaluation alone.

Family expectation (H2) was positively correlated with intention but became nonsignificant after the practical predictors entered the regression. A plausible interpretation is shared variance: family encouragement may operate through conversations that increase program knowledge or perceived usefulness rather than exerting an independent direct effect. In addition, household participation may be viewed as an administrative and financial decision for which concrete feasibility outweighs normative approval. This explanation is consistent with the context-dependent role of subjective norms in TPB (La Barbera and Ajzen, 2020), but mediation cannot be inferred from the present design.

Health consciousness in later life (H3) also showed only a weak bivariate association and no unique regression effect. The sample included adults across age groups, and concerns about future health may be too distal to predict an immediate enrolment decision once current knowledge, affordability, and service quality are considered. Health consciousness could also matter conditionally—for example, more strongly among older residents or those with chronic conditions—suggesting theoretically specified moderation tests for future research.

Perceived behavioral control (H4) was nonsignificant even at the bivariate level ($p = 0.065$). This may reflect conceptual proximity to financial capability and knowledge: respondents' general confidence in completing enrolment may add little once the specific resources underlying control—knowing the procedure and being able to pay—are included. The result does not invalidate TPB; rather, it suggests that control in this setting may be better represented by its concrete components. Future confirmatory research should test a higher-order control structure and compare direct, mediated, and conditional effects.

6. Conclusions

This study examined the determinants of residents' intention to participate in household health insurance in Ca Mau Province, Vietnam. Based on survey data from 398 residents, the analysis confirmed five significant positive predictors: knowledge of household health insurance, communication and promotion, perceived healthcare service quality, financial capability, and perceived usefulness. The model explained 57.8% of the variance in intention, indicating satisfactory explanatory power for behavioral research.

The study makes a theoretical and applied contribution by showing that canonical TPB mechanisms do not operate in isolation in a mature public-insurance system. Once implementation-specific conditions are modelled simultaneously, practical knowledge, credible communication, payment capacity, perceived usefulness, and confidence in healthcare quality dominate broad normative and future-health considerations. The distinction between general perceived control and its concrete informational and financial foundations refines how intention formation can be conceptualized for household-based social insurance. Practically, expanding participation requires coordinated knowledge-oriented outreach, convenient collection systems, service-quality improvement, and affordability support rather than a stand-alone communication campaign. The study has several limitations.

First, its cross-sectional design precludes causal inference and measures intention rather than verified enrolment or renewal.

Second, non-probability recruitment in three wards limits representativeness; the relatively large sample improves precision but does not remove selection bias.

Third, all predictors and the outcome were self-reported in one questionnaire, creating possible common method bias through consistency motifs, social desirability, and common scale format. Anonymity and neutral wording reduced evaluation apprehension, but no marker variable or temporal separation was used; therefore, common method variance cannot be ruled out (Podsakoff et al., 2003).

Fourth, the study used EFA and observed-score regression rather than a confirmatory latent-variable model. Future research should use probability or stratified sampling across additional Ca Mau districts, longitudinally link intention with actual participation, apply CFA/SEM, and incorporate procedural and statistical controls for common method variance.

Theory-led mediation tests could examine whether knowledge transmits the effects of communication and family expectation, while preregistered moderation tests could assess whether age, chronic illness, income instability, or prior service experience condition the observed relationships.

These analyses were not added post hoc because the present study was designed to estimate direct effects and the available cross-sectional design does not establish causal temporal ordering.

List of abbreviations

CL	Healthcare service quality
EFA	Exploratory factor analysis
KS	Perceived behavioral control
KT	Insurance knowledge
KV	Family expectation
NT	Perceived usefulness
SPSS	Statistical Package for the Social Sciences
TC	Financial capability
TPB	Theory of planned behavior
TT	Communication and promotion
VIF	Variance inflation factor
YD	Intention to participate in household health insurance
YT	Health consciousness in later life

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Compliance with ethical standards

Ethical considerations

During the in-person survey, participants were informed of the study's purpose, the voluntary nature of participation, and the confidentiality of their responses. Participants indicated their consent by completing the anonymous questionnaire.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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