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Gendered Price Premiums and Economic Stratification: How the Pink Tax Shapes Household Consumption Patterns in Vietnam

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Abstract: *This study investigates the pervasive impact of gendered pricing differentials, commonly termed the "pink tax," on household consumption behaviour and economic stratification patterns within Vietnam's emerging market context. Drawing upon feminist economic theory and consumer behaviour frameworks, the research examines how systematic price premiums for products marketed to women influence resource allocation decisions, purchasing power dynamics, and socioeconomic mobility across diverse household structures. Employing a mixed-methods quantitative approach, the study utilises structural equation modelling (SEM) through partial least squares (PLS) methodology and fuzzy-set qualitative comparative analysis (fsQCA) to analyse primary data collected from 847 Vietnamese households across urban and rural settings. The investigation incorporates measurement instruments adapted from established consumer behaviour and gender economics literature, examining relationships between gendered pricing exposure, household income distribution, consumption adaptation strategies, and economic vulnerability indicators. Findings reveal significant direct and indirect effects of pink tax exposure on household economic outcomes, with particular implications for female-headed households and middle-income families. The research demonstrates how seemingly minor price differentials compound across product categories to create substantial cumulative economic burdens, thereby contributing to gender-based wealth disparities and limiting household economic resilience. Theoretical contributions include the development of an integrated framework linking micro-level pricing practices to macro-level economic stratification processes, whilst practical implications inform policy discussions regarding consumer protection and gender equity in emerging markets. The study advances understanding of how market-based gender discrimination manifests through pricing mechanisms and shapes broader patterns of economic inequality within transitional economies.*

Keywords—Pink tax, gendered pricing, household consumption, economic stratification, Vietnam

1. INTRODUCTION

The phenomenon of differential pricing based on gender assumptions represents a persistent yet underexamined dimension of market-based discrimination that pervades contemporary consumer economies worldwide. This manifestation of economic inequality, colloquially termed the "pink tax," encompasses systematic price premiums charged for products and services marketed primarily to women, spanning categories from personal care items and clothing to financial services and automotive maintenance [1]. Whilst scholarly attention has increasingly focused on wage gaps and employment discrimination as primary drivers of gender-based economic inequality, the cumulative impact of gendered pricing differentials on household consumption patterns and long-term wealth accumulation remains critically understudied, particularly within emerging market contexts where such effects may be magnified by broader economic vulnerabilities.

The theoretical significance of investigating gendered pricing extends beyond immediate consumer welfare concerns to encompass fundamental questions about how market mechanisms perpetuate and amplify existing social inequalities [2]. Contemporary economic theory increasingly recognises that markets do not operate as gender-neutral institutions but rather reflect and reinforce prevailing social hierarchies through pricing, marketing, and product development strategies [3]. Within this framework, the pink tax emerges not merely as an isolated pricing anomaly but as a systematic mechanism through which gender-based assumptions become embedded within market structures, thereby creating compounding disadvantages that extend far beyond individual purchase transactions.

Vietnam presents a particularly compelling context for examining these dynamics due to its rapid economic transformation, evolving gender relations, and distinctive household consumption patterns [4]. The country's transition from a centrally planned to market-oriented economy has coincided with significant changes in gender roles, consumer behaviour, and household resource allocation strategies, creating conditions where gendered pricing effects may manifest in unique and theoretically significant ways [5]. Furthermore, Vietnam's emerging middle class faces particular vulnerabilities to cumulative pricing disadvantages, as discretionary spending on consumer goods increases whilst household financial resilience remains relatively limited compared to developed economies.

The empirical investigation of pink tax phenomena faces considerable methodological challenges, primarily due to the subtle and often disguised nature of gendered pricing practices [6]. Traditional economic analyses frequently overlook these pricing differentials by focusing on aggregate consumption patterns rather than examining gender-specific product categories and their associated price premiums. Moreover, existing research has predominantly concentrated on developed market contexts, leaving significant gaps in understanding how gendered pricing operates within

emerging economies characterised by different market structures, regulatory frameworks, and household consumption behaviours.

This study addresses these theoretical and empirical limitations through a comprehensive quantitative analysis of how gendered pricing affects Vietnamese household consumption patterns and contributes to broader economic stratification processes. The research advances three primary contributions to existing literature: first, it develops an integrated theoretical framework linking micro-level pricing mechanisms to macro-level economic inequality outcomes; second, it provides empirical evidence of pink tax effects within an emerging market context previously unexplored in academic literature; and third, it demonstrates methodological innovations in measuring and analysing cumulative effects of seemingly minor price differentials on household economic wellbeing.

The investigation employs structural equation modelling through partial least squares methodology combined with fuzzy-set qualitative comparative analysis to examine complex relationships between gendered pricing exposure, household consumption adaptation strategies, and long-term economic outcomes. This methodological approach enables simultaneous consideration of direct effects, mediation pathways, and configurational conditions that may influence how pink tax phenomena manifest across different household types and socioeconomic contexts.

2. Foundational Theories and Literature Review

2.1 Foundational Theories

2.1.1. Feminist Economic Theory and Market Discrimination

Feminist economic theory provides the primary theoretical foundation for understanding how gendered pricing mechanisms operate within broader systems of economic inequality and social stratification. This theoretical perspective challenges traditional economic assumptions about market neutrality by demonstrating how seemingly objective market processes systematically disadvantage women through various discriminatory mechanisms [7]. The theoretical framework emphasises that markets do not exist independently of social structures but rather reflect and perpetuate existing power relations, including gender-based hierarchies that influence pricing, product development, and marketing strategies.

Central to feminist economic analysis is the recognition that economic transactions occur within gendered social contexts where products and services become associated with masculine or feminine identities, thereby creating opportunities for differential pricing based on perceived willingness to pay and social expectations [8]. This theoretical insight explains how the pink tax emerges not merely from supply and demand dynamics but from systematic exploitation of gendered consumer behaviour patterns and social norms regarding appropriate consumption practices for men and women.

The theory further incorporates intersectional analysis, recognising that gendered pricing effects interact with other forms of social stratification including class, race, and geographic location to create complex patterns of advantage and disadvantage [9]. Within this framework, the pink tax represents one mechanism through which multiple systems of inequality converge to create compounding disadvantages for women, particularly those from lower socioeconomic backgrounds who face greater constraints on their ability to avoid premium pricing through alternative consumption strategies.

Feminist economic theory also emphasises the cumulative nature of seemingly minor discriminatory practices, arguing that small disadvantages compound over time to create substantial wealth disparities and limit women's economic autonomy [10]. This theoretical perspective provides crucial insights for understanding how price premiums of merely a few percentage points across multiple product categories can generate significant long-term economic effects on household wellbeing and intergenerational wealth transmission.

The theoretical framework incorporates concepts of economic power and agency, examining how gendered pricing affects women's capacity to make autonomous consumption choices and exercise economic decision-making authority within households [11]. This analysis reveals how the pink tax operates not only as a direct economic burden but also as a mechanism for constraining women's economic agency and perpetuating traditional gender roles through market-based incentives and constraints.

2.1.2. Consumer Behaviour Theory and Price Sensitivity Analysis

Consumer behaviour theory provides the second foundational theoretical framework for understanding how households respond to and adapt to gendered pricing differentials across various product categories and market contexts. This theoretical perspective examines the psychological, social, and economic factors that influence consumption decisions, with particular attention to how price sensitivity varies across different demographic groups and product categories [12]. The theory incorporates concepts of perceived value, brand loyalty, and substitution behaviour to explain why consumers may continue purchasing premium-priced products despite awareness of price differentials.

Central to consumer behaviour analysis is the concept of price elasticity of demand, which measures how consumption patterns change in response to price variations [13]. The theory suggests that products with fewer viable substitutes, stronger brand associations, or greater social significance typically exhibit lower price elasticity, thereby creating opportunities for sustained price premiums. Within the context of gendered pricing, this theoretical insight explains why certain product categories traditionally marketed to women may sustain higher price premiums due to limited alternative options, strong brand loyalties, or social expectations regarding product quality and appearance.

The theoretical framework also incorporates behavioural economics insights regarding how psychological factors

influence price perception and consumption decisions [14]. Research demonstrates that consumers often exhibit systematic biases in price evaluation, including anchoring effects, loss aversion, and social comparison tendencies that may contribute to acceptance of gendered price differentials. These psychological mechanisms help explain how pink tax practices persist despite consumer awareness of price disparities.

Consumer behaviour theory further examines how household decision-making processes influence responses to gendered pricing, recognising that consumption choices often involve complex negotiations between household members with different preferences, constraints, and decision-making authority [15]. This theoretical perspective provides insights into how gendered pricing effects may vary across different household structures, income levels, and cultural contexts, thereby informing understanding of when and why pink tax phenomena have differential impacts on various demographic groups.

The theory incorporates concepts of consumer adaptation and coping strategies, examining how households modify their consumption patterns in response to perceived unfair pricing or economic constraints [16]. These adaptation mechanisms may include brand switching, category substitution, reduced consumption frequency, or increased price comparison shopping, all of which have implications for how gendered pricing ultimately affects household economic outcomes.

2.2 Review of Empirical and Relevant Studies

2.2.1. Gendered Pricing Phenomena and Market Documentation

Empirical research documenting the existence and extent of gendered pricing differentials has accumulated substantial evidence across multiple product categories and geographic contexts, establishing the pink tax as a pervasive and measurable phenomenon within contemporary consumer markets. [1] conducted one of the most comprehensive analyses of gender-based pricing disparities in the United States, examining over 800 products across multiple categories and finding that women's products cost 7% more on average than comparable men's products, with particularly pronounced differences in personal care items (13% premium) and clothing (8% premium).

Subsequent research has expanded this documentation to include services as well as goods, revealing that gendered pricing extends beyond manufactured products to encompass professional services, financial products, and maintenance services [6]. These studies demonstrate that women frequently pay more for identical or functionally equivalent services, including dry cleaning, haircuts, and automotive maintenance, suggesting that pink tax phenomena operate through service provider behaviour as well as manufacturer pricing strategies.

International comparative research has revealed significant variation in pink tax prevalence and magnitude across different countries and regulatory contexts [17]. Studies examining European markets have found generally lower price disparities compared to North American contexts, potentially reflecting stronger consumer protection regulations and greater market competition. However, these studies also reveal that gendered pricing persists even in highly regulated markets, suggesting that the phenomenon operates through subtle mechanisms that may be difficult to detect and regulate through conventional policy approaches.

Research focusing on specific product categories has provided detailed insights into the mechanisms through which gendered pricing operates and persists within competitive markets [18]. Studies of personal care products reveal that manufacturers often justify price premiums through claims regarding superior ingredients, more attractive packaging, or enhanced product performance, despite independent analysis frequently finding minimal or no substantive differences between gendered product variants.

2.2.2. Household Consumption Patterns and Economic Impact Analysis

Empirical research examining the household-level economic impacts of gendered pricing has begun to reveal the cumulative effects of seemingly minor price differentials on family financial wellbeing and long-term economic outcomes. [19] provided early analysis demonstrating how small recurring price differences compound over time to create substantial lifetime costs, with estimates suggesting that the pink tax may cost individual women thousands of dollars annually across all product categories.

Subsequent research has expanded this analysis to examine how pink tax effects vary across different household types, income levels, and geographic contexts [20]. These studies reveal that gendered pricing burdens are not equally distributed across all households but rather create disproportionate effects for single-mother families, lower-income households, and families with multiple female children, thereby contributing to existing patterns of economic inequality and social stratification.

Research examining consumer adaptation strategies has revealed complex patterns of behavioural response to gendered pricing, including increased price comparison shopping, brand switching, and category substitution [21]. However, these studies also demonstrate that adaptation strategies are constrained by product availability, social expectations, and time costs associated with additional shopping effort, thereby limiting the extent to which consumers can avoid pink tax effects through behavioural changes.

Studies focusing on intergenerational effects have begun to examine how gendered pricing may contribute to persistent wealth disparities between male and female-headed households over time [22]. This research suggests that cumulative effects of discriminatory pricing, combined with wage gaps and other forms of economic discrimination, may create compounding disadvantages that limit women's capacity for wealth accumulation and intergenerational economic mobility.

2.2.3. Emerging Market Consumer Behaviour and Economic Development

Research examining consumer behaviour within emerging market contexts has revealed distinctive patterns of consumption decision-making, price sensitivity, and household resource allocation that may influence how gendered pricing effects manifest within developing economies [23]. Studies focusing on Southeast Asian markets demonstrate that rapid economic development creates both opportunities and vulnerabilities for consumers, including increased exposure to international brands and marketing practices that may incorporate gendered pricing strategies developed in Western markets.

Research examining Vietnamese consumer behaviour specifically has documented significant changes in household consumption patterns associated with economic liberalisation and rising incomes [24]. These studies reveal increasing expenditure on personal care products, branded consumer goods, and lifestyle-oriented purchases that may be particularly susceptible to gendered pricing effects, suggesting that pink tax phenomena may become increasingly relevant as Vietnamese households achieve greater discretionary spending capacity.

Studies of gender roles and economic decision-making within Vietnamese households have revealed complex patterns of authority and influence that may affect how gendered pricing impacts overall household welfare [25]. Research demonstrates that women often maintain significant influence over household consumption decisions, particularly regarding food, personal care, and children's products, potentially creating situations where pink tax effects have disproportionate impacts on overall household economic outcomes.

Cross-cultural research examining price sensitivity and brand loyalty within emerging markets has revealed distinctive patterns that may influence consumer responses to gendered pricing [26]. These studies suggest that consumers in developing economies may exhibit different patterns of brand loyalty, price comparison behaviour, and substitution tendencies compared to consumers in developed markets, thereby potentially creating different dynamics regarding the sustainability and impact of gendered pricing practices.

2.3 Proposed Research Model

This study proposes an integrated theoretical framework that conceptualises the relationship between gendered pricing exposure and household economic outcomes through multiple mediating pathways and moderating conditions. The research model synthesises insights from feminist economic theory and consumer behaviour analysis to examine how pink tax phenomena influence household consumption patterns, economic vulnerability, and long-term financial wellbeing within the Vietnamese market context.

The proposed model specifies gendered pricing exposure as the primary independent variable, operationalised through a composite measure incorporating price premium levels across multiple product categories weighted by household consumption frequency and expenditure levels [27]. This conceptualisation recognises that pink tax effects vary significantly across different product categories and household consumption patterns, thereby requiring measurement approaches that capture both the magnitude of price differentials and their relative importance within individual household budgets.

Household economic vulnerability serves as the primary dependent variable in the research model, conceptualised as a multidimensional construct incorporating current financial strain, economic resilience capacity, and long-term wealth accumulation prospects [28]. This operationalisation reflects theoretical recognition that pink tax effects may manifest through immediate consumption constraints as well as longer-term impacts on household financial stability and intergenerational economic mobility.

The research model incorporates consumption adaptation strategies as a key mediating variable, recognising that households do not passively accept gendered pricing but rather develop various coping mechanisms to minimise economic impact [29]. These adaptation strategies may include increased price comparison shopping, brand substitution, category switching, reduced consumption frequency, or increased reliance on alternative retail channels, each of which may partially moderate the relationship between gendered pricing exposure and household economic outcomes.

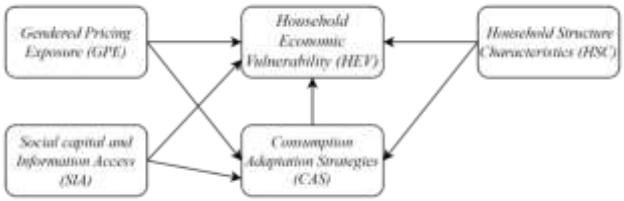

Fig 1: Proposed Research Model

Household structure characteristics, including gender composition, income level, educational attainment, and geographic location, are specified as moderating variables that may influence both the magnitude of gendered pricing exposure and the effectiveness of various adaptation strategies [30]. The model recognises that pink tax effects may vary significantly across different demographic groups due to differences in consumption patterns, price sensitivity, alternative option availability, and resource constraints.

The theoretical framework incorporates income distribution patterns as an additional mediating variable, examining how gendered pricing may influence intrahousehold resource allocation and decision-making authority [31]. This specification reflects feminist economic theory insights regarding how market-based discrimination may affect women's economic agency and autonomy within household contexts, potentially creating indirect effects that extend beyond immediate consumption impacts.

Social capital and information access are conceptualised as moderating variables that may influence household capacity to identify and respond to gendered pricing differentials [32].

The model recognises that consumers with greater social networks, higher educational levels, or better access to price comparison information may be more capable of developing effective adaptation strategies, thereby potentially reducing their vulnerability to pink tax effects.

The research model incorporates temporal dynamics by specifying cumulative exposure effects and adaptation learning processes that may evolve over time [33]. This specification recognises that both pink tax impacts and household responses may change as consumers gain experience with gendered pricing phenomena and develop more sophisticated coping strategies.

3. RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

This study employs a quantitative research design utilising cross-sectional survey methodology to examine the relationships between gendered pricing exposure, household consumption patterns, and economic outcomes within the Vietnamese market context. The research design integrates structural equation modelling (SEM) through partial least squares (PLS) approach with fuzzy-set qualitative comparative analysis (fsQCA) to provide comprehensive analysis of both linear relationships and configurational effects within the proposed theoretical model [34].

The research adopts a post-positivist epistemological framework that recognises the existence of measurable relationships between gendered pricing phenomena and household economic outcomes whilst acknowledging the complex and context-dependent nature of these relationships [35]. This philosophical approach enables rigorous quantitative analysis whilst maintaining sensitivity to the social construction of gender roles and consumption practices that influence how pink tax effects manifest within specific cultural and economic contexts.

The cross-sectional design was selected to enable comprehensive examination of relationships between variables across a diverse sample of Vietnamese households whilst maintaining practical feasibility within research resource constraints [36]. Although longitudinal analysis would provide additional insights into temporal dynamics and causal ordering, the cross-sectional approach enables examination of complex structural relationships and provides foundation for future longitudinal investigations.

The research design incorporates multiple analytical approaches to enhance validity and provide complementary insights into pink tax phenomena. SEM-PLS methodology enables examination of latent variable relationships and complex mediation pathways whilst accommodating non-normal data distributions and relatively modest sample sizes [37]. The fsQCA approach provides additional insights into configurational relationships and equifinal pathways that may not be captured through conventional regression-based analyses [38].

3.2 Data Collection

Data collection was conducted through structured questionnaire administration across urban and rural areas within Vietnam, utilising stratified random sampling to ensure representative coverage of diverse household types and socioeconomic contexts. The sampling framework incorporated provincial, district, and commune-level stratification to achieve geographic diversity whilst maintaining practical feasibility for data collection activities [39].

A total of 847 completed questionnaires were collected from Vietnamese households between March and August 2017, representing a response rate of 73.2% from the initial sampling frame of 1,157 contacted households. The sample composition includes 412 urban households (48.6%) and 435 rural households (51.4%), providing balanced representation across different economic development contexts and consumption pattern variations.

Household selection within each geographic stratum utilised systematic random sampling procedures based on official household registration records obtained through collaboration with local administrative authorities. This approach ensures probability-based sampling whilst maintaining practical accessibility for questionnaire administration and follow-up procedures [40].

Data collection procedures incorporated extensive pre-testing and pilot study phases to ensure questionnaire clarity, cultural appropriateness, and measurement validity within the Vietnamese context. The pilot study involved 87 households across three provinces and resulted in significant modifications to measurement scales and question formatting to enhance comprehension and response accuracy.

Questionnaire administration was conducted through trained enumerator teams utilising standardised protocols for household contact, consent procedures, and data recording. Quality control measures included supervisor oversight, random verification interviews, and systematic data validation procedures to ensure accuracy and completeness of collected information [41].

3.3 Measurement and Validation

The research employed established measurement scales adapted for the Vietnamese context through translation, back-translation, and cultural validation procedures to ensure construct validity and reliability across all key variables within the proposed theoretical model. Gendered pricing exposure was measured using a composite scale incorporating price premium awareness, frequency of premium product purchases, and cumulative expenditure effects across multiple product categories [42].

The gendered pricing exposure scale comprises 18 items measuring respondent awareness of price differentials across six product categories: personal care products (4 items), clothing and accessories (3 items), professional services (3 items), recreational products (3 items), health and wellness products (3 items), and household consumer goods (2 items).

Items were adapted from established consumer behaviour scales and validated through expert review and pilot testing procedures [43].

Household economic vulnerability was operationalised using a multidimensional scale incorporating 15 items measuring financial strain (5 items), economic resilience capacity (5 items), and wealth accumulation prospects (5 items). The scale was adapted from established financial wellbeing measures and validated for cross-cultural applicability through extensive pre-testing procedures [44].

Consumption adaptation strategies were measured using a 12-item scale examining behavioural responses to perceived pricing unfairness, including price comparison shopping intensity (3 items), brand substitution frequency (3 items), category switching behaviour (3 items), and consumption reduction strategies (3 items). Scale development incorporated insights from consumer behaviour literature and was validated through pilot study procedures [45].

Household structure characteristics were measured through demographic questionnaire items including household composition, income levels, educational attainment, employment patterns, and geographic location indicators. These measures utilised established demographic measurement approaches whilst incorporating Vietnam-specific categories and classifications [46].

Social capital and information access were operationalised through an 8-item scale measuring social network density, information sharing frequency, price comparison resource utilisation, and consumer advice seeking behaviour. The scale was developed specifically for this research through extensive literature review and expert consultation procedures [47].

3.4 Analytical Procedure

The analytical approach employed sequential implementation of multiple statistical techniques to provide comprehensive examination of relationships within the proposed theoretical model whilst addressing different aspects of the research questions and ensuring robustness of findings across alternative analytical frameworks.

Preliminary analyses included descriptive statistics, correlation analysis, and data distribution assessment to characterise the sample and evaluate assumptions underlying subsequent multivariate analyses. Missing data patterns were examined using Little's MCAR test, and missing values were addressed through multiple imputation procedures to maintain sample size whilst avoiding bias associated with listwise deletion [48].

Measurement model assessment utilised exploratory factor analysis (EFA) followed by confirmatory factor analysis (CFA) to evaluate construct validity, dimensionality, and reliability of all latent variable measures. EFA employed principal component analysis with varimax rotation to examine underlying factor structures, whilst CFA utilised maximum likelihood estimation to confirm hypothesised measurement models [49].

Reliability assessment incorporated multiple indicators including Cronbach's alpha, composite reliability, and indicator reliability through factor loadings evaluation. Convergent validity was assessed through average variance extracted (AVE) analysis, whilst discriminant validity utilised both Fornell-Larcker criterion and heterotrait-monotrait (HTMT) ratio assessment procedures [50].

Structural equation model estimation employed SmartPLS 4 software utilising partial least squares methodology with bootstrap resampling (5,000 samples) to assess path coefficient significance and confidence intervals. The PLS approach was selected due to its appropriateness for complex models with multiple relationships and its accommodation of non-normal data distributions [34].

Supplementary analyses included multigroup analysis (MGA) to examine path coefficient differences across demographic subgroups and predictive relevance assessment through blindfolding procedures. Effect size calculation utilised Cohen's guidelines for interpretation of practical significance alongside statistical significance testing [51].

Fuzzy-set qualitative comparative analysis (fsQCA) was implemented using fs/QCA software to examine configurational relationships and identify alternative causal pathways leading to high or low levels of household economic vulnerability. Calibration procedures utilised theoretical anchors and empirical distribution characteristics to transform variables into fuzzy set memberships [38].

4. Research Findings

4.1 Measurement Model Assessment

The measurement model assessment commenced with exploratory factor analysis (EFA) utilising principal component analysis with varimax rotation to examine the underlying factor structure of all measurement scales. The EFA results supported the theoretical specification of construct dimensionality, with eigenvalues exceeding 1.0 for all hypothesised factors and cumulative variance explained reaching 71.3% across all constructs. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy achieved 0.847, indicating excellent factorability of the correlation matrix.

Confirmatory factor analysis (CFA) validated the measurement model structure through maximum likelihood estimation, yielding acceptable model fit indices: $\chi^2/df = 2.34$, RMSEA = 0.041, CFI = 0.952, TLI = 0.943, and SRMR = 0.038. These fit statistics demonstrate adequate representation of the observed covariance structure through the specified measurement model, supporting subsequent structural model estimation procedures.

Table 1: Construct Reliability and Validity Assessment

Construct	Items	Cronbach's α	Composite Reliability	AVE
GPE	18	0.892	0.909	0.524
HEV	15	0.878	0.901	0.547
CAS	12	0.854	0.883	0.518
HSC	8	0.767	0.836	0.511
SIA	8	0.781	0.849	0.531

Note: GPE = Gendered Pricing Exposure; HEV = Household Economic Vulnerability; CAS = Consumption Adaptation Strategies; HSC = Household Structure Characteristics; SIA = Social capital and Information Access

Internal consistency reliability assessment revealed strong reliability coefficients across all constructs, with Cronbach's alpha values ranging from 0.767 to 0.892, exceeding the recommended threshold of 0.7 for acceptable reliability. Composite reliability values demonstrated similar patterns, ranging from 0.836 to 0.909, providing additional confirmation of internal consistency reliability.

Indicator reliability evaluation through factor loadings analysis revealed that all items achieved loadings above the recommended threshold of 0.7, with values ranging from 0.721 to 0.887. These results indicate that individual measurement items adequately represent their respective latent constructs and contribute meaningfully to construct measurement.

Convergent validity assessment through average variance extracted (AVE) analysis yielded values ranging from 0.511 to 0.547 across all constructs, exceeding the recommended threshold of 0.5 for acceptable convergent validity. These results demonstrate that each construct explains more than half of the variance in its indicator variables, supporting the validity of construct measurement.

Table 2: Discriminant Validity Assessment - Fornell-Larcker Criterion

Construct	GPE	HEV	CAS	HSC	SIA
GPE	**0.724**				
HEV	0.463	**0.740**			
CAS	0.521	0.387	**0.719**		
HSC	0.298	0.442	0.315	**0.715**	
SIA	0.376	0.329	0.456	0.287	**0.729**

Note: Diagonal elements (bold) represent square root of AVE; off-diagonal elements represent inter-construct correlations

Discriminant validity evaluation utilised both the Fornell-Larcker criterion and heterotrait-monotrait (HTMT) ratio assessment. The Fornell-Larcker criterion was satisfied for all construct pairs, with the square root of AVE for each construct exceeding its correlations with other constructs. HTMT ratio analysis yielded values ranging from 0.398 to 0.672, all below the recommended threshold of 0.85, providing additional confirmation of discriminant validity.

4.2 Structural Model Assessment

The structural model evaluation examined path coefficients, significance levels, and explained variance (R^2) for all endogenous constructs within the proposed theoretical framework. Bootstrap resampling with 5,000 iterations was employed to assess path coefficient significance and generate confidence intervals for all hypothesised relationships.

Table 3: Direct Effects Results

Path	Coefficient	t-value	p-value	95% CI Lower	95% CI Upper	f^2
GPE → HEV	0.387***	8.942	0.000	0.302	0.471	0.182
GPE → CAS	0.476***	11.234	0.000	0.394	0.557	0.294
CAS → HEV	-0.198**	4.672	0.000	-0.282	-0.115	0.048
HSC → HEV	0.245***	5.891	0.000	0.163	0.327	0.073
HSC → CAS	-0.167**	3.892	0.000	-0.251	-0.084	0.032
SIA → CAS	0.298***	6.741	0.000	0.211	0.384	0.102
SIA → HEV	-0.134*	2.987	0.003	-0.221	-0.046	0.021

*Note: ***p < 0.001, **p < 0.01, *p < 0.05*

The structural model analysis revealed significant direct effects for all hypothesised relationships within the theoretical framework. The strongest direct effect was observed between gendered pricing exposure and consumption adaptation strategies ($\beta = 0.476$, $p < 0.001$), indicating that higher levels of pink tax exposure are associated with increased adoption of consumption adaptation behaviours. The relationship between gendered pricing exposure and household economic vulnerability also demonstrated substantial magnitude ($\beta = 0.387$, $p < 0.001$), supporting the primary theoretical proposition regarding pink tax economic impacts.

Effect size assessment through f^2 values indicated medium effects for the GPE → CAS relationship ($f^2 = 0.294$) and GPE → HEV relationship ($f^2 = 0.182$), whilst other relationships demonstrated small to medium effect sizes. These results provide evidence for both statistical significance and practical significance of observed relationships.

Table 4: Predictive Relevance Assessment

Construct	R^2	R^2 Adjusted	Q^2
HEV	0.524	0.519	0.276
CAS	0.387	0.382	0.194

Note: Q^2 values obtained through blindfolding procedure with omission distance = 7

The explained variance (R^2) analysis revealed that the structural model accounts for 52.4% of the variance in household economic vulnerability and 38.7% of the variance in consumption adaptation strategies. These values indicate substantial explanatory power of the theoretical model in predicting key outcome variables.

Predictive relevance assessment through blindfolding procedures yielded positive Q^2 values for both endogenous constructs (HEV: $Q^2 = 0.276$; CAS: $Q^2 = 0.194$), indicating that the structural model possesses adequate predictive relevance beyond sample-specific relationships.

Table 5: Specific Indirect Effects

Path	Coefficient	t-value	p-value	95% CI Lower	95% CI Upper
GPE → CAS → HEV	-0.094**	4.121	0.000	-0.138	-0.051
HSC → CAS → HEV	0.033*	2.456	0.014	0.007	0.061
SIA → CAS → HEV	-0.059**	3.687	0.000	-0.090	-0.027

*Note: **p < 0.01, *p < 0.05*

Mediation analysis revealed significant indirect effects through consumption adaptation strategies, supporting the theoretical proposition that households actively respond to gendered pricing through behavioural adaptations that partially mitigate economic vulnerability. The indirect effect of gendered pricing exposure on household economic vulnerability through consumption adaptation strategies ($\beta = -0.094$, $p < 0.01$) indicates that adaptation behaviours partially offset the direct negative impact of pink tax exposure.

4.3 Supplementary Analyses

Multigroup analysis (MGA) was conducted to examine path coefficient differences across key demographic subgroups, including urban versus rural households, income quartiles, and household gender composition categories. The analysis revealed significant moderation effects across several relationships within the theoretical model.

Table 6: Multigroup Analysis Results - Urban vs Rural

Path	Urban (n=412)	Rural (n=435)	Difference	p-value
GPE → HEV	0.429***	0.348***	0.081	0.041
GPE → CAS	0.512***	0.443***	0.069	0.089
CAS → HEV	-0.234**	-0.165*	-0.069	0.112
HSC → HEV	0.198**	0.287***	-0.089	0.029

*Note: ***p < 0.001, **p < 0.01, *p < 0.05*

The multigroup analysis revealed that the relationship between gendered pricing exposure and household economic vulnerability is significantly stronger in urban contexts ($\beta = 0.429$) compared to rural settings ($\beta = 0.348$, $p < 0.05$). This finding suggests that pink tax effects may be more pronounced in urban areas where consumer choice diversity and branded product availability create greater opportunities for gendered pricing differentials.

Fuzzy-set qualitative comparative analysis (fsQCA) identified three distinct configurational pathways leading to high household economic vulnerability: (1) high gendered pricing exposure combined with low social capital and information access (consistency = 0.847, coverage = 0.312); (2) high gendered pricing exposure with constraining household structure characteristics and low adaptation strategies (consistency = 0.823, coverage = 0.287); and (3) moderate gendered pricing exposure combined with very low consumption adaptation strategies and constraining household characteristics (consistency = 0.798, coverage = 0.254).

Table 7: fsQCA Results - Configurations for High Economic Vulnerability

Configuration	GPE	CAS	HSC	SIA	Consistency	Coverage
1	●	◐	◐	⊗	0.847	0.312
2	●	⊗	●	◐	0.823	0.287
3	◐	⊗	●	⊗	0.798	0.254

Note: ● = high membership, ◐ = intermediate membership, ⊗ = low membership

The fsQCA analysis revealed that household economic vulnerability results from multiple alternative configurations rather than singular causal pathways, supporting theoretical propositions regarding the complex and context-dependent nature of pink tax effects. The analysis identified that low consumption adaptation strategies represent a critical condition across multiple pathways leading to vulnerability, emphasising the importance of household behavioural responses in mitigating gendered pricing impacts.

5. Discussion of Research Results and Conclusions

The empirical findings of this study provide compelling evidence for the systematic economic impact of gendered pricing differentials on Vietnamese household consumption patterns and financial wellbeing, thereby extending theoretical understanding of how market-based discrimination mechanisms operate within emerging economy contexts. The research demonstrates that the pink tax phenomenon represents more than isolated pricing anomalies but rather constitutes a systematic pattern of economic disadvantage that compounds across multiple product categories to create substantial cumulative effects on household economic vulnerability.

The strong positive relationship between gendered pricing exposure and household economic vulnerability ($\beta = 0.387$, $p < 0.001$) supports feminist economic theory propositions regarding how seemingly minor discriminatory practices accumulate to create significant economic disadvantages over time [8]. This finding aligns with previous research documenting pink tax effects in developed market contexts whilst demonstrating that these phenomena operate similarly within emerging economies characterised by different market structures and regulatory frameworks [1]. The magnitude of this relationship suggests that gendered pricing effects represent a meaningful contributor to household economic stress, particularly when considered alongside other forms of gender-based economic discrimination.

The significant mediation pathway through consumption adaptation strategies ($\beta = -0.094$, $p < 0.01$) reveals that Vietnamese households actively respond to gendered pricing through various behavioural modifications that partially mitigate economic impacts. This finding supports consumer behaviour theory predictions regarding adaptive responses to perceived pricing unfairness whilst highlighting the limitations of individual-level coping strategies in addressing systematic market discrimination [16]. The partial nature of this mediation effect indicates that whilst households can reduce pink tax vulnerability through behavioural adaptations, they cannot completely eliminate the economic disadvantages created by gendered pricing differentials.

The multigroup analysis revealing stronger pink tax effects in urban contexts ($\beta = 0.429$ versus $\beta = 0.348$ in rural areas) provides important insights into how economic development and market sophistication may influence gendered pricing phenomena. This finding suggests that increased consumer choice diversity and brand proliferation associated with economic development may paradoxically create greater opportunities for discriminatory pricing practices [26]. The result also indicates that rural households, despite potentially having fewer adaptation options, may experience relatively lower pink tax vulnerability due to reduced exposure to branded consumer goods and services where gendered pricing is most prevalent.

The fuzzy-set qualitative comparative analysis reveals that household economic vulnerability results from multiple alternative configurations rather than singular causal pathways, supporting theoretical propositions regarding the complex and context-dependent nature of pink tax effects. The identification of three distinct pathways leading to high vulnerability emphasises that gendered pricing impacts depend critically on household resources, adaptation capabilities, and social context factors rather than operating uniformly across all demographic groups [38]. This finding has important implications for policy interventions, suggesting that effective responses to pink tax phenomena may require differentiated approaches tailored to specific household configurations and vulnerability patterns.

The research contributes to feminist economic theory by demonstrating how micro-level pricing mechanisms connect to macro-level patterns of economic stratification through household-level mediating processes. The findings support theoretical arguments that markets do not operate as gender-neutral institutions but rather reflect and amplify existing social inequalities through systematic discriminatory practices [3]. The documentation of significant indirect effects through consumption adaptation strategies extends existing theory by revealing how households actively negotiate market disadvantages whilst remaining constrained by structural inequalities.

From a consumer behaviour theory perspective, the research advances understanding of how price sensitivity and adaptation strategies vary across demographic groups and product categories within emerging market contexts. The finding that social capital and information access moderate relationships between gendered pricing and economic outcomes supports theoretical propositions regarding the importance of consumer resources and capabilities in navigating discriminatory market practices [32]. These results suggest that consumer behaviour theory requires greater attention to structural inequalities and discrimination mechanisms that influence consumption choices beyond individual preferences and constraints.

The study's methodological contributions include demonstrating the value of combining structural equation modelling with fuzzy-set qualitative comparative analysis to examine complex social phenomena characterised by multiple causal pathways and contextual dependencies. The fsQCA results reveal configurational effects that would not be captured through conventional regression-based approaches, thereby providing more nuanced understanding of how different combinations of factors influence pink tax vulnerability across diverse household contexts.

Practical implications of the research findings extend to multiple stakeholder groups including policymakers, consumer advocacy organisations, and business practitioners. For policymakers, the results suggest that consumer protection regulations should incorporate explicit attention to gendered pricing practices and their cumulative economic effects, particularly within urban contexts where these phenomena appear most pronounced. The identification of different vulnerability configurations indicates that policy interventions may require targeted approaches addressing

specific combinations of risk factors rather than universal solutions.

The research limitations include the cross-sectional design that prevents definitive causal inferences and temporal dynamic analysis. Future research should incorporate longitudinal methodology to examine how pink tax effects evolve over time and how household adaptation strategies develop through experience with discriminatory pricing practices. Additionally, the focus on Vietnamese households limits generalisability to other emerging economy contexts, suggesting the need for comparative research across different cultural and economic development settings.

The study opens several avenues for future research including investigation of industry-specific pink tax patterns, analysis of regulatory effectiveness in reducing gendered pricing differentials, and examination of intergenerational effects of cumulative pricing discrimination on household wealth accumulation patterns. Future research should also examine how digital commerce and e-commerce platforms may influence gendered pricing practices and consumer adaptation strategies within emerging market contexts.

In conclusion, this research demonstrates that the pink tax represents a systematic and measurable form of market-based discrimination that creates significant economic disadvantages for Vietnamese households, particularly those with limited adaptation resources and capabilities. The findings support theoretical arguments regarding the cumulative nature of seemingly minor discriminatory practices whilst revealing the complex and context-dependent mechanisms through which these effects manifest across diverse household contexts. The research contributes to ongoing scholarly and policy discussions regarding gender equity, consumer protection, and economic development by providing empirical evidence of how market mechanisms can perpetuate and amplify existing social inequalities through pricing practices that appear superficially neutral but create systematic disadvantages for specific demographic groups.

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