

The Influence of Assisted Digital Trust on Elderly Purchasing: The Case of Thai Digital Financial Services

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Abstract

Aim/Purpose: Despite 84.3% smartphone ownership and 62.1% Internet usage among elderly Thais aged 60 or over, only 17% shopped online in 2024 (NSO, 2024). This striking disconnect between technological access and transactional behavior warrants systematic investigation. This study examined whether digital financial experience, particularly helper-mediated e-banking and e-payment usage, catalyzed shifts from digital hesitation to confident online purchasing among Thailand's elderly population. Understanding this progression matters critically as Thailand's Silver Digital Economy expands and aging populations worldwide face similar digital inclusion challenges.

Introduction/Background: Thailand's aging population represents growing economic importance yet has demonstrated minimal e-commerce participation despite high digital connectivity. Traditional technology acceptance models emphasize cognitive factors but have proved inadequate for explaining elderly adoption patterns where emotional barriers dominate rational assessment. Digital financial confidence among elderly Thais is substantially below that of younger cohorts even after controlling for education, income, and urban residence (NSO, 2024). Fear of irreversible financial mistakes have emerged as the primary psychological obstacle, intensified by a dramatic increase in online fraud complaints in recent years (ETDA, 2023). Trust formation occurs through interpersonal channels rather than direct system evaluation. While the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) focus on cognitive evaluations such as perceived usefulness and ease of use, they failed to adequately address emotional vulnerability, relational trust transfer, or experiential learning requirements characteristic of elderly digital adoption. These gaps have necessitated new theoretical frameworks capable of explaining how vulnerable populations overcome fear-based barriers through assisted experiences.

Methodology: In this study, a sequential explanatory mixed-methods design was employed. The quantitative phase analyzed Thailand's Information and Communication Technology (ICT) Household Survey 2024 Q2 microdata (NSO, 2024), with elderly respondents representing a weighted population of approximately 14 million (response rate 87.3%). Weighted binary logistic regression using Stata 17 tested whether digital financial experience predicted online purchasing probability while controlling for demographic, socioeconomic, geographic, and digital engagement factors across four nested models, examining the moderating influences of social media engagement frequency, educational attainment, and urban-rural residence. For the qualitative investigation, 24 semi-structured interviews were conducted across six Thai regions using purposeful maximum variation sampling. Trained research assistants conducted 50 to 70-minute Thai language interviews exploring digital platform usage, first financial technology experiences, and trust development mechanisms. Reflexive thematic analysis was employed following Braun and Clarke's (2019) six-phase approach, achieving an inter-rater reliability with Cohen's $\kappa = .82$. Integration occurred through joint displays juxtaposing statistical results with qualitative themes.

Findings: Digital financial experience dramatically dominated all other predictors. E-banking increased purchasing probability by 16.7 percent while e-payment added 12.4 percent, substantially exceeding tertiary education (+8.3%), social media frequency (+5.2%), and urban residence (+4.1%). Model performance was excellent (Area Under the Receiver Operating Characteristic Curve = .84, Hosmer-Lemeshow $\chi^2 = 12.4$, $p = .13$). All four hypotheses received empirical support. H_1 was strongly supported: e-banking (OR = 2.76), and e-payment (OR = 2.41) significantly predicted purchasing. H_2 was supported: social media moderated e-banking effects (+5.0% among frequent users). H_3 received the strongest moderation support: tertiary education amplified e-banking effects by 7.2 percent. H_4 received partial support: urban residence moderated effects modestly (+4.3%). Qualitative analysis revealed four interconnected mechanisms: a) fear of irreversible financial errors, b) primacy of relational trust through human intermediaries, c) experiential proof through assisted first transactions, and d) self-reinforcing confidence loops through repeated successes. These findings revealed that experiential trust formation through assisted digital finance, rather than demographic advantage or technology access, was the primary driver of elderly online purchasing behavior, with the effects of digital finance nearly double those of tertiary education.

Contribution: This research proposes the Assisted Digital Trust Mechanism (ADTM), a four-stage theoretical model that integrates emotional vulnerability barriers, relational trust transfer processes, and experiential learning as fundamental mechanisms for adoption. ADTM stages comprise: (a) Digital Exposure where transaction barriers feel insurmountable; (b) Assisted Digital Finance Experience where trusted figures guide high-stakes financial transactions; (c) Trust Transfer where confidence shifts from helpers toward technological systems; and (d) Confidence Reinforcement where repeated successes enable autonomous e-commerce participation. ADTM extends the TAM and UTAUT by foregrounding emotional vulnerability, relational trust transfer, and experiential learning as dimensions that cognitive-focused models largely neglect. The findings challenge assumptions that socioeconomic uplift or classroom training alone closes digital divides, enabling more effective intervention design prioritizing guided transactional experience.

Recommendations: Platform providers should implement elder-safe design features that include prominent security assurances, confirmation dialogs, and accessible human support. Financial institutions should offer systematically assisted onboarding programs where trained staff guide elderly customers through initial digital transactions using real money, recognizing that experiential mediation proves more effective than classroom instruction. Policymakers should prioritize community-embedded programs in culturally familiar settings, providing one-on-one guidance with actual financial transactions. Core ADTM mechanisms operate universally across demographic groups, though oldest-old and least-educated segments require longer support timelines.

Research Limitations: Several limitations warrant consideration. Cross-sectional design prevented definitive causal inference regarding temporal sequences. The survey lacked direct measures of helper presence or emotional states during adoption. Qualitative sampling ($n = 24$) may have missed experiences of marginalized subgroups. Thai cultural traditions emphasizing family interdependence may have amplified trust transfer mechanisms relative to individualistic societies, limiting direct transferability to Western contexts.

Future Research: Four research directions emerge. Longitudinal studies would establish causal sequences and identify trigger events precipitating trust transfer. Experimental interventions would validate whether guided practice outperforms classroom training. Cross-cultural research would establish ADTM boundaries and distinguish culture-specific from universal mechanisms. Domain extension testing ADTM for telemedicine, e-government, and fintech adoption would demonstrate generalizability beyond e-commerce contexts.

Keywords: *Assisted digital trust, elderly consumers, online purchasing*

Introduction

Thailand's aging population has unexpectedly reshaped digital commerce patterns. Citizens over 60 represented 20.8% of the population (NSO, 2024), with 84.3% owning smartphones and 62.1% using the Internet regularly (NSO, 2024). Infrastructure existed, and technology worked, yet only 17% purchased online in 2024 (NSO, 2024).

The Technology Acceptance Model (TAM; Davis, 1989) and Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh et al., 2003) emphasize perceived usefulness and ease of use, cognitive factors predicting younger users' behavior effectively. However, these frameworks overlook emotional barriers characterizing older adults' experiences. Thai elderly people do not assess platform utility rationally. Instead, they experience acute anxiety around irreversible financial mistakes, with psychological and technological barriers to digital adoption proving more decisive than infrastructural constraints (Dizon & Ebardo, 2025). Online fraud complaints in Thailand have increased dramatically in recent years, with elderly citizens particularly vulnerable due to limited digital literacy and heightened trust in authority figures (ETDA, 2023).

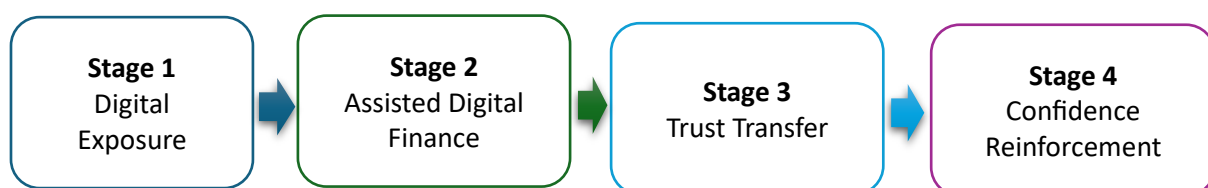
The paradox becomes striking when examining usage patterns. Many Thai elderly people use LINE or Facebook extensively, messaging relatives, sharing photos, and consuming content daily. Digital communication feels safe, yet when e-commerce transactions arose, they freeze at payment entry. This behavioral split suggests that something more fundamental than technological capability is at work. here.

Bandura's (1997) guided mastery theory offered useful explanatory power: older adults require structured support from trusted figures when developing new competencies. In Thailand, adult children or bank staff physically guide users through initial mobile banking experiences. This intergenerational support serves two functions: it distributes emotional risk between helper and user, and it generates experiential proof that systems work reliably. Ganguly et al. (2024) demonstrated that trust acts as a critical mediator between Internet self-efficacy and purchase intention among elderly citizens, confirming that experiential confidence rather than digital literacy alone drove e-commerce adoption. Research has confirmed this pattern; even controlling for education and income, elderly consumers show markedly lower digital financial confidence than younger cohorts.

Recent studies have confirmed that these gaps persist. Yang et al. (2023) extended TAM for elderly mobile payment adoption, finding trust-mediated relationships between perceived usefulness, ease of use, and behavioral intention. These mechanisms were absent in the original TAM formulations. Dizon and Ebardo (2025) confirmed through systematic review that intergenerational support reduced perceived risk in digital payment adoption more effectively than formal training, with elderly consumers consistently relying on social assistance to navigate initial digital financial experiences.

This study argues that Assisted Digital Trust drives digital adoption among the elderly. This trust is built through interpersonal support, transferred gradually from helpers to technological systems, and strengthened through accumulated successes. To formalize these dynamics, this study proposed the Assisted Digital Trust Mechanism (ADTM), a four-stage framework tracking the progression from digital exposure to autonomous e-commerce participation, as illustrated in Figure 1.

Figure 1 *The Assisted Digital Trust Mechanism (ADTM): Four Sequential Stages from Digital Exposure to Confident Online Purchasing*



ADTM extends TAM and UTAUT by integrating three dimensions that these models have underemphasized. First, when emotional vulnerability is a barrier, it requires experiential rather than purely cognitive resolution. Second, relational trust assists with the transfer of confidence from

interpersonal to technological sources. Third, experiential learning through assisted practice is a developmental pathway that is distinct from formal instruction. For elderly populations, these dimensions have proved to be fundamental rather than supplementary.

Empirical approach: In this study, a sequential explanatory mixed methods approach was employed. The quantitative phase analyzed ICT Household Survey 2024 Q2 microdata (NSO, 2024) covering 53,491 elderly respondents representing a weighted population of approximately 14 million. The study tested whether digital financial experience, specifically e-banking and e-payment use, predicted online purchasing after controlling for demographic and socioeconomic factors. The study also examined whether social media use, education level, and urban residence moderated these relationships. The qualitative phase comprised 24 in-depth interviews across six Thai regions, documenting emotional, interpersonal, and experiential mechanisms that statistical analysis alone could not capture. Together, these approaches addressed not just whether assisted digital finance experience affected online purchasing, but also how and why.

Research Objectives

Four interconnected research objectives (RO) guided this investigation.

RO1: To quantitatively analyze relationships between digital financial experience (e-banking and e-payment platform usage) and online purchasing behavior among elderly Thai consumers, controlling for demographic, socioeconomic, and geographic factors.

RO2: To examine the moderating effects of social media engagement frequency, educational attainment, and urban-rural residence on relationships between digital financial experience and online purchasing likelihood, identifying contextual boundary conditions under which ADTM mechanisms operate most effectively.

RO3: To qualitatively explore processes through which elderly consumers develop digital trust during initial assisted transactions, documenting emotional barriers, helper roles, breakthrough moments, and confidence-building mechanisms that quantitative analysis alone could not capture.

RO4: To integrate quantitative and qualitative findings through mixed-methods synthesis, validating the four-stage ADTM framework and establishing its theoretical contributions relative to existing technology acceptance models.

Literature Review

The striking disconnect between widespread smartphone ownership and minimal e-commerce participation among elderly Thais indicates that access to technology is a necessary, but insufficient condition for adoption. Understanding this paradox requires examining how to construct digital trust that is sufficient for transactional behavior among elderly populations.

Digital Trust Deficit and Assisted Experience

Elderly consumers face what the study termed a "confidence deficit" rather than a capability deficit. Choudrie et al. (2020) established that psychological and social barriers, particularly anxiety and limited social influence, drive behavioral discontinuity in older adults' digital adoption rather than access constraints alone. This barrier operates psychologically, not infrastructurally.

The underlying mechanism involves the perception of catastrophic error. Older adults perceive digital financial errors as irreversible rather than correctable, which leads to paralyzing anxiety that prevents them from engaging in transactional behavior regardless of platform usability. Chen and Chan (2014) demonstrated that gerontechnology anxiety significantly predicted non-adoption among older adults, confirming that emotional barriers operated independently of cognitive capacity. Dizon and Ebardo (2025) confirmed through systematic review that this pattern persists across multiple national contexts, with elderly consumers consistently facing psychological and technological barriers—rather than access constraints—as the primary impediments to digital banking adoption.

The Thai context amplifies these barriers. Online fraud complaints in Thailand have increased dramatically in recent years, with elderly citizens particularly vulnerable due to limited digital literacy

and heightened trust in authority figures (ETDA, 2023), creating ambient fear. Digital financial confidence among elderly Thais is substantially below that of younger cohorts, with this gap persisting across educational, income, and urban-rural divides (NSO, 2024). This indicates that access to equipment is insufficient when users distrust their competence (Hunsaker & Hargittai, 2018).

Elderly Thai users exhibit "relational trust primacy," trusting human intermediaries over technological systems; this diverges from institution-based trust frameworks in Western research. McKnight and Chervany (2001) emphasized technical assurances such as security certificates, encryption, and verified badges, which predicted adoption among younger Western users, but fail to explain patterns among elderly Thai users, where trust is formed through social rather than technological channels. The NSO (2024) found that elderly Thai people rely heavily on family members during initial digital interactions, reflecting emotional insecurity rather than technical incapacity. Cross-cultural research has confirmed that trust operates as a primary determinant of mobile banking adoption across diverse national contexts, extending beyond Thai cultural boundaries (Merhi et al., 2019). Han and Ko (2025) further demonstrated that psychological barriers, specifically technology anxiety rather than age alone, drove differences in mobile financial service adoption among elderly consumers, reinforcing the centrality of emotional readiness rather than demographic characteristics in digital adoption mechanisms. Progression proved critical; elderly users began with offline trust in children, relatives, or bank officers. Through successful assisted experiences, this interpersonal trust underwent "cognitive transfer," migrating from helper to platform. Interpersonal relationships functioned as psychological bridges; without such mediation, most elderly people avoided transactions entirely.

Bandura's (1997) guided mastery framework provides a theoretical foundation: confidence is developed through supervised successful performance rather than abstract instruction. Applied digitally, assisted transactions generate psychological momentum by transforming platforms from theoretical threats into validated tools. Baabdullah et al. (2019) demonstrated that performance expectancy, effort expectancy, and social influence significantly predicted mobile banking use, confirming that positive usage experiences drove continued adoption. Thai data revealed substantial shifts among elderly digital finance adopters: e-banking users increased purchasing from 47.8% to 64.5% (+16.7%), and e-payment users from 49.2% to 61.6% (+12.4%) (NSO, 2024). This mechanism operated through perceived risk reduction. When elderly users successfully completed digital payments, abstract distrust of the platform was confronted by empirical evidence grounded in personal achievement, precipitating belief revision.

The Assisted Digital Trust Mechanism (ADTM)

Three theoretical streams converge: trust transfer theory (McKnight & Chervany, 2001), guided mastery (Bandura, 1997), and digital finance adoption research (Baabdullah et al., 2019). Their synthesis explains the progression of elderly users through four sequential stages.

Stage 1: Digital Exposure. Elderly consumers encounter digital content through low-stakes social platforms. Product awareness existed, but transactional confidence did not; thus, perceived risks overwhelmed curiosity.

Stage 2: Assisted Digital Finance Experience. Trusted intermediaries guide users through initial high-stakes digital financial transactions. Assistance reduces emotional burdens by distributing responsibility while generating experiential proof: systems function reliably, and money moves safely.

Stage 3: Trust Transfer. After multiple successful assisted experiences, users transfer confidence from helpers toward technological systems. They gradually recognize that platforms function predictably and errors prove reversible.

Stage 4: Confidence Reinforcement. Users independently complete transactions, with repeated successes forming habitual patterns of digital engagement (Venkatesh et al., 2012). Eventually, behavioral repertoires expand to e-commerce.

TAM (Davis, 1989) highlighted perceived usefulness and ease of use, cognitive evaluations that matter yet are insufficient. TAM failed to address emotional vulnerability or explain action blockage

despite objective usability. UTAUT (Venkatesh et al., 2003) incorporated social influence and facilitating conditions but failed to specify mechanisms through which the elderly overcame fear via assisted experiences. In UTAUT, social influence refers merely to normative encouragement; this is fundamentally different from experiential mediation, where a trusted person physically guides the transaction and actively shares the user's emotional risk. Yang et al. (2023) validated these limitations, demonstrating that TAM must be extended with trust and multidimensional perceived risk to accurately predict mobile payment adoption among the elderly. Their findings revealed that trust exerted a stronger influence than perceived ease of use.

ADTM's Theoretical Contributions

ADTM has advanced technology acceptance theory by focusing on three dimensions that existing frameworks have neglected. First, *emotional vulnerability*: fear creates psychological barriers that technical features cannot resolve, requiring affective intervention. Second, *relational trust transfer*: trust initiated with interpersonal sources that migrates to systems through guided learning. Third, *experiential learning through assisted practice*: abstract knowledge proves insufficient; supervised performance operates as the critical mechanism.

Digital Finance as Psychological Gateway

Prior research has established that digital finance predicts e-commerce adoption (Baabdullah et al., 2019) without theorizing why. ADTM provides a specific rationale: digital finance operates as a pivotal trust-building mechanism because it combines high emotional stakes, interpersonal assistance requirements, trust transfer enablement through high-risk demonstration, and confidence generation through repeated success.

Research Hypotheses

ADTM generated four testable hypotheses:

H₁: Digital Financial Experience Predicts Online Purchasing. Elderly people using e-banking and e-payments were expected to demonstrate higher purchasing probabilities than non-users, controlling for education, income, and urban residence.

H₂: Social Media Moderates Digital Finance Effects. Social media use **increases** product exposure. Combined with digital finance experience, it **might** amplify adoption through peer influence, reinforcing personally developed capability.

H₃: Education Moderates Digital Finance Effects. Higher education enhances the capacity for instruction, interpretation, and problem troubleshooting. Educated seniors were expected to translate assisted experiences more effectively into autonomous capability.

H₄: Urban Residence Moderates Digital Finance Effects. Urban environments offer proximate support networks, elevate ambient digital trust, and concentrate institutional resources—advantages that strengthen relationships between digital finance and online purchasing.

These hypotheses **enabled** rigorous ADTM validation. *H₁* **tested** the core mechanism; *H₂* to *H₄* **tested** contextual boundary conditions.

Research Methodology

A sequential explanatory mixed-methods design was employed in this study, beginning with quantitative analysis to identify statistical patterns, and then conducting qualitative inquiry to illuminate underlying mechanisms.

Research Design

The study proceeded through two phases (Creswell & Plano Clark, 2018). Phase 1 quantified relationships through nationally representative data analysis. Phase 2 explored psychological and interpersonal mechanisms through in-depth interviews. Quantitative results guided qualitative inquiry, enabling ADTM validation through methodological triangulation.

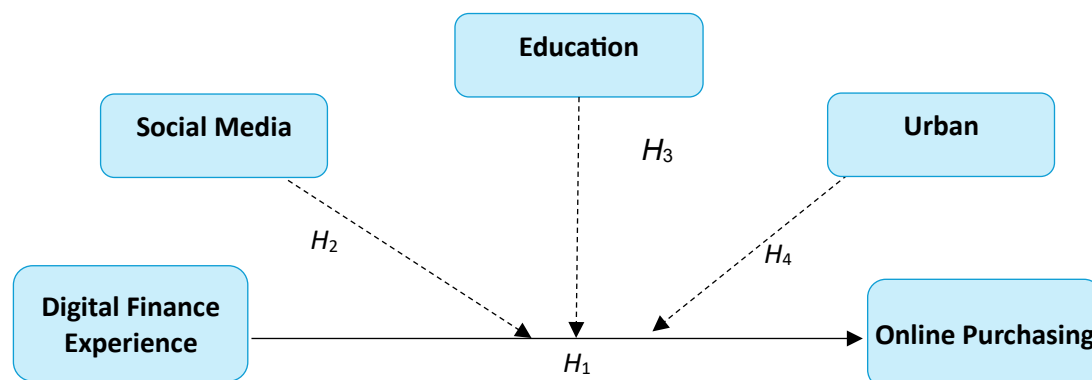
Quantitative Phase

Data Source and Sample: Analysis used Thailand's ICT Household Survey 2024 Q2 microdata (NSO, 2024), conducted by the National Statistical Office between April and June 2024 (NSO, 2024). The survey employed stratified three-stage cluster sampling. The study analyzed respondents aged 60+, yielding 53,491 elderly respondents, representing a weighted population of approximately 14.0 million (response rate = 87.3%).

Variable Measurement: The dependent variable **measured** online purchasing as a binary outcome: purchased within 12 months = 1; did not purchase = 0. Key independent variables **captured** digital finance experience through e-banking use and e-payment use (both binary). Moderating variables **included** social media frequency (ordinal scale of 1 to 3), education level (four categories), and urban residence (binary). Controls **included** age, gender, household income, region, smartphone ownership, and Internet use.

Analytical Strategy: The study estimated weighted logistic regression using Stata 17 commands to account for complex survey design (StataCorp, 2021). Analysis proceeded through four nested models: Model A (demographics only), Model B (plus digital access), Model C (plus digital finance to test H_1), and Model D (plus interactions to test H_2 to H_4). Model quality was assessed through Hosmer-Lemeshow tests, Area Under the Operating Characteristic Curve (AUC-ROC) statistics, and pseudo- R^2 values. Average marginal effects translated coefficients into percentage-point changes in purchasing probability (Long & Mustillo, 2021). Figure 2 shows a conceptual path diagram of the analytical model.

Figure 2 Conceptual Path Diagram of the Analytical Model



Note. Independent variables (e-banking, e-payment) predicted online purchasing behavior (H_1), moderated by social media frequency (H_2), education level (H_3), and urban residence (H_4), controlling for age, gender, income, region, smartphone ownership, and Internet use.

Qualitative Phase

Sampling Strategy: The study employed purposive maximum variation sampling to capture diverse experiences (Creswell & Plano Clark, 2018). The sample comprised 24 elderly participants across six Thai regions: 12 men and 12 women; 13 urban and 11 rural; eight regular purchasers and 16 non-purchasers; varied income, digital skills, and ADTM stages. Recruitment occurred through community centers and snowball referrals.

Data Collection: Trained assistants conducted semi-structured interviews in Thai in 2025 (McGrath et al., 2019). Interviews lasted 50–70 minutes and explored daily digital use, initial financial technology experiences, helper roles, confidence evolution, and trust development. All interviews were audio recorded with informed consent, transcribed verbatim in Thai, and then translated into English.

Analytical Approach: Reflexive thematic analysis was employed following Braun and Clarke's (2019) six-phase approach: familiarization through repeated reading; inductive generation of 127 initial codes; theme development aligned with ADTM stages; iterative review against transcripts; precise theme definition; integration with quantitative findings. Two researchers independently coded

25% of transcripts (Cohen's $\kappa = .82$); member checking with eight participants confirmed thematic accuracy.

Mixed-Methods Integration

Integration occurred at three levels (Fetters et al., 2013). Data integration created joint displays juxtaposing statistical results with qualitative themes and quotes. Methodological integration used quantitative patterns to guide qualitative inquiry. When regression showed that education moderated the effects of digital finance, interviews explored why educated seniors translated assisted experiences into autonomous capability more effectively. Interpretation integration synthesized both streams to produce meta-inferences that validated ADTM as a behavioral framework explaining the progression from fear to confidence.

Ethical Considerations

The Institutional Review Board approved this study (Protocol COA 037-2025) in accordance with the Helsinki Declaration (World Medical Association, 2013). Participants provided informed consent after receiving an explanation in Thai of the study's purposes, voluntary participation, and withdrawal rights. Interview participants received pseudonymous identifiers; audio recordings were encrypted and stored securely. NSO survey data were accessed under a formal data use agreement.

Results

This section presented quantitative results, qualitative themes, and their integration. Findings revealed that elderly online purchasing stemmed primarily from confidence developed through guided digital financial experiences rather than from access to technology alone.

The Access-Action Paradox

Thai seniors had extensive access to technology; 84.3% possessed smartphones and 62.1% used the Internet regularly, yet only 17% had made online purchases. This gap persisted even among highly connected users: 92% checked messages daily, 78% watched videos regularly, and yet purchasing remained notably uncommon.

Interview data revealed consistent patterns. Participant #14 (female, 67, rural) browsed Facebook but froze at payment screens: "When paying, I freeze. What if I press wrong and money disappears?" Participant #08 (male, 65, urban) used his phone extensively but avoided transactions: "Do not dare make payments." The barrier operated emotionally, specifically fear of irreversible financial mistakes.

Quantitative Results

Hypothesis Testing. Four nested logistic regression models tested the hypotheses (Table 1). Model C, which added digital finance variables, outperformed Model B significantly ($\chi^2 = 2,689$, $df = 2$, $p < .001$). Model D's interaction terms further improved the fit ($\chi^2 = 205$, $df = 3$, $p < .001$). Overall fit proved excellent: Hosmer-Lemeshow $\chi^2 = 12.4$ ($p = .13$), AUC-ROC = .84.

H_1 : Digital Financial Experience and Online Purchasing. Both e-banking (OR=2.76, 95% CI [2.52, 3.03], $p < .001$) and e-payment (OR=2.41, 95% CI [2.19, 2.65], $p < .001$) significantly predicted the likelihood of purchasing. Average marginal effects revealed that e-banking increased the probability of purchasing by 16.7 percentage points and e-payment use by 12.4 percentage points, substantially exceeding tertiary education (+8.3%), urban residence (+4.1%), and social media use (+5.2%). Thus, H_1 received strong support.

H_2 : Social Media Amplification. The e-banking $\times$ social media interaction reached significance ($\beta = .32$, $SE = .11$, $p = .002$). Among frequent social media users, the effect of e-banking increased by approximately 5 percentage points, so H_2 was supported.

H_3 : Education Enhancement. The e-banking $\times$ tertiary education interaction proved highly significant ($\beta = .47$, $SE = .09$, $p < .001$). University-educated users gained an additional 7.2 percentage points from e-banking; H_3 received strong support.

H₄: Urban Context Effects. The e-banking × urban interaction showed marginal significance ($\beta = .31$, $SE = .13$, $p = .018$) with modest effect size (+4.3%), so H_4 received partial support. Digital finance mechanisms operated similarly across locations, though urban contexts provided slight amplification.

Table 1 demonstrated that digital finance experience exerted a substantially larger influence than demographic or environmental factors, reinforcing ADTM Stage 2 as a pivotal trust-building mechanism.

Table 1 Significant Predictors of Online Purchasing Among Elderly Thais (ICT 2024 Q2)

Variable	OR	95% CI	AME (pp)	<i>p</i>	ADTM Interpretation
E-banking use	2.76	[2.52, 3.03]	+16.7	< .001	Experiential proof reduces fear
E-payment use	2.41	[2.19, 2.65]	+12.4	< .001	Repeated low-stakes success
Tertiary education	1.60	[1.42, 1.81]	+8.3	< .001	Enhanced risk assessment ability
Social media (freq.)	1.38	[1.23, 1.55]	+5.2	.002	Product exposure amplification
Urban residence	1.37	[1.18, 1.59]	+4.1	.006	Greater support network access
Age 75+	.79	[.68, .92]	-2.8	.018	Heightened financial risk aversion

Note. $N=53,491$; weighted regression controlling for gender, income, region, smartphone, Internet. Hosmer-Lemeshow $\chi^2=12.4$, $p = .13$; AUC-ROC = .84. OR = odds ratio; CI = confidence interval; AME = average marginal effects; pp = percentage points.

Qualitative Themes

Twenty-four semi-structured interviews revealed mechanisms operating behind statistical patterns. Four major themes emerged.

Theme 1: Fear of Irreversible Mistakes. The dominant barrier involved fear of permanent consequences. Participant #07 (male, 72, urban): "If I press the wrong button, that money is gone." Language revealed emotional intensity. Participants used terms such as "gone," "disappeared," and "can't get it back," reflecting perceived irreversibility.

Theme 2: Relational Trust Primacy. Elderly users trusted people first, technological systems second. Participant #11 (female, 65, urban): "I don't trust apps. I trust my daughter. If she says it's safe, I believe it." Trust flowed unidirectionally from daughter to app. Helpers (adult children, bank officers, relatives) provided emotional insurance. Participant #09 (female, 63, rural): "If something goes wrong, she can fix it."

Theme 3: Assisted First Experience as Gateway. Nearly every elderly purchaser described an assisted first digital finance transaction, actual transactions involving real money, guided by a trusted helper. Participant #18 (female, 69, rural): "My son had to sit with me. When the money went through correctly, I felt relieved." The emotional response merited attention: "relieved" rather than proud. Her expectation was anxiety; successful completion brought relief.

Theme 4: Micro-Validation Loops. After multiple successful assisted experiences, fear diminished while confidence grew. Participant #02 (male, 68, urban): "The more I tried, the less afraid I became. Now I [have] even bought shoes online." "Even bought shoes" signaled progression from necessity to discretion. Each small success validated emerging capability, creating self-reinforcing loops.

Mixed-Methods Integration

Integrating quantitative and qualitative findings (Table 2) **revealed** four meta-inferences validating ADTM.

Meta-Inference 1: Access Did Not Equal Action. Despite 84.3% smartphone ownership, only 17% purchased online. Interview data confirmed that digital exposure and low-stakes communication did not automatically translate into high-stakes transactional behavior without experiential proof.

Meta-Inference 2: Digital Finance as a Critical Catalyst. E-banking (+16.7%) and e-payment use (+12.4%) substantially increased purchasing probability. Interview narratives explained the mechanism: first successful financial transactions provided experiential proof, reducing perceived risk.

Table 2 Joint Display: Integrating Evidence Within ADTM

ADTM Stage	Quantitative Evidence	Qualitative Evidence	Integrated Interpretation
Stage 1: Digital Exposure	84.3% phone; 62.1% Internet; only 17% purchase	"I use it every day but do not dare to pay" (P#14, F, 67, Rural)	Exposure increased awareness but did not eliminate fear.
Stage 2: Assisted Digital Finance	E-banking +16.7%***; E-payment +12.4%***	"Someone helped me do it the first time. When it worked, I felt relieved" (P#18, F, 69, Rural)	Assisted transactions provided experiential proof (the pivotal mechanism).
Stage 3: Trust Transfer	Social media × e-banking +5.0%**	"If my son trusts it, I trust it. The app became familiar" (P#11, F, 65, Urban)	Trust flowed from helper to system through repeated successes.
Stage 4: Confidence Reinforcement	Multiple uses predicted adoption (OR=2.76***)	"After a few tries, I became confident. Now I do it myself" (P#02, M, 68, Urban)	Confidence developed iteratively through micro-validation loops.
Moderator: Education	Tertiary education +8.3%***; interaction +7.2%***	"If you can read the menus, it's easier" (P#23, F, 64, Urban)	Education enhanced risk interpretation, accelerating trust transfer.
Barrier: Age	Age 75+ -2.8%*	"At my age, I can't afford mistakes" (P#07, M, 72, Urban)	Advanced age increased perceived vulnerability.

Note. Quantitative from ICT 2024 Q2 ($n=53,491$); Qualitative from 24 interviews. *** $p < .001$; ** $p < .01$; * $p < .05$.

Meta-Inference 3: Trust Developed Through Interpersonal Transfer. Statistical interaction effects were aligned with interview narratives. Seniors relied on trusted helpers to mediate first attempts. Confidence transferred gradually from people to platforms through repeated positive experiences.

Meta-Inference 4: Repeated Success Reinforced Autonomy. Multiple digital finance experiences were correlated with higher quantitative purchasing rates. Qualitatively, participants described progressively diminishing fear. The micro-validation loop operated through accumulated positive experiences rather than single breakthrough moments.

A summary of hypothesis testing results is shown in Table 3.

Table 3 Summary of Hypothesis Testing Results

H	Hypothesis	Key Statistic	AME (%)	p-value	Result
H_1	Digital financial experience predicts online purchasing	OR=2.76 (e-banking)	+16.7	<.001	Supported
H_2	Social media moderates digital finance effects	$\beta=.32$	+5.0	.002	Supported
H_3	Education moderates digital finance effects	$\beta=.47$	+7.2	<.001	Supported
H_4	Urban residence moderates digital finance effects	$\beta=.31$	+4.3	.018	Partially Supported

Note. AME = average marginal effects. H_4 received partial support as urban-rural differences were modest.

Results confirmed that elderly online purchasing behavior was shaped primarily by experiential trust formation, driven by interpersonal assistance, emotional risk reduction, and progressive confidence reinforcement rather than access or demographic advantages alone.

Discussion

This study examines how elderly Thai consumers progressed from digital exposure to confident online purchasing. Four key contributions emerged.

Theoretical Contribution

ADTM addresses critical gaps that existing frameworks had left unresolved. While the TAM (Davis, 1989) and UTAUT (Venkatesh et al., 2003) explained adoption among digitally confident users, they proved inadequate for populations characterized by elevated fear, limited self-efficacy, and heavy interpersonal dependence.

First, Integration of Emotional Vulnerability. TAM emphasizes cognitive evaluations: perceived usefulness and ease of use. Elderly consumers face fundamentally different barriers: fear of irreversible errors, vulnerability to fraud, and loss of control. Even technologically competent seniors freeze when transactions require financial commitment, as demonstrated by the access-action gap in the results. The barrier operates emotionally rather than cognitively. Yang et al. (2023) validated this pattern, finding that perceived financial and performance risks negatively affected elderly users' trust ($\beta = -.28$ and $\beta = -.31$), reducing adoption. Dizon and Ebardo (2025) further confirmed through systematic review that psychological and technological barriers, rather than access constraints, consistently predicted non-adoption across multiple national contexts, with existing digital banking systems predominantly lacking age-friendly features essential for building older adults' confidence. ADTM positions emotional risk as the central obstacle, overcome through experiential proof rather than abstract instructions.

Second, Explication of Trust Transfer Mechanisms. Traditional models assume direct system evaluation. Elderly consumers demonstrated relational trust primacy, trusting people before technology. Participant #11 articulated: "I don't trust apps. I trust my daughter. If she says it's safe, I believe it." Trust flowed unidirectionally from daughter to app. Prior research confirms that elderly users' adoption decisions depend heavily on family endorsement and intergenerational support, which act as a "trust scaffold," a form of temporary assistance enabling independent use after confidence develops through repeated successful experiences (Ganguly et al., 2024). ADTM formalizes this as Stage 3 (Trust Transfer), where confidence undergoes cognitive migration from human helpers to technological systems. This extends UTAUT's social influence construct theoretically. Social influence in UTAUT operationalizes as normative encouragement, whereas ADTM's trust transfer involves direct experiential mediation where a trusted person physically guides transactions while distributing emotional risk.

Third, Digital Finance as a Psychological Gateway. Prior research has acknowledged that mobile banking predicts e-commerce adoption (Baabdullah et al., 2019) without theorizing mechanisms. ADTM clarifies why digital finance operates as a pivotal catalyst: it combines (a) high emotional stakes, (b) mandatory assisted support, (c) trust transfer enablement through helpers, and (d) confidence generation through iterative success. E-banking's 16.7 percentage point effect validates this theoretical specification. Han and Ko (2025) reinforced this finding, demonstrating that psychological factors, rather than age alone, determined differences in mobile financial service adoption among elderly consumers. ADTM complements existing models by extending understanding beyond digitally capable populations to those characterized by elevated risk perception, limited self-efficacy, and dependence on interpersonal validation. As illustrated in Figure 1, the model operationalizes this progression through four sequential stages.

Key Empirical Insights

Three patterns challenge conventional assumptions about digital divide closure.

Digital Finance Dominates Demographics. E-banking (+16.7%) and e-payment use (+12.4%) exceeded education (+8.3%) and urban residence (+4.1%), empirically refuting assumptions that socioeconomic uplift alone closes digital divides.

Assisted Experience Exceeds Formal Instruction. Participants require "experiential mediation," hand-over-hand guidance during authentic transactions involving real money under helper supervision. This aligns with Bandura's (1997) guided mastery principle, confirming that effective digital inclusion requires one-on-one transactional support in high-stakes contexts rather than classroom instruction.

Universal Mechanisms, Variable Speed. Age 75+ reduces purchasing probability (-2.8%) while tertiary education amplifies effects (+7.2%). Yet all elderly groups benefit; ADTM mechanisms operate universally. What varies is the velocity of trust transfer, not the fundamental process.

Practical Implications

Hypothesis-Aligned Managerial Implications

H_1 implies that financial institutions and platform providers should invest systematically in assisted onboarding programs. Since e-banking increased purchasing probability by 16.7 percentage points, exceeding all demographic factors, one-on-one guided transactions using real money represent the single most effective intervention. Bank branches should train staff specifically to guide elderly customers through their first digital transactions rather than directing them to self-service kiosks. E-commerce platforms should partner with financial institutions to create seamless pathways from mobile banking to online purchasing, recognizing that users who already use e-payments were 12.4 percentage points more likely to purchase online.

H_2 suggests that marketers should integrate social media exposure with digital finance onboarding rather than treating them as separate channels. Among elderly users who were already frequent social media users, the effects of e-banking increased by approximately 5 percentage points. Platforms should leverage LINE and Facebook, dominant channels among the Thai elderly, to display peer testimonials from users who successfully completed digital transactions. Marketing campaigns emphasizing progression narratives (from fear to confidence through assisted practice) should target elderly social media users who are already digitally engaged but are not yet transacting.

H_3 reveals that tertiary-educated elderly users gained an additional 7.2 percentage points from e-banking, the strongest moderation effect observed. Program designers should offer differentiated onboarding pathways: simplified visual step-by-step interfaces for less educated elderly users, and more detailed feature explanations for better educated users who can leverage system logic to develop autonomous capabilities faster. Policymakers should not measure program success solely by first-session completion, but by sustained adoption over 3 to 6 months.

H_4 indicates that while digital finance mechanisms operate universally, the urban elderly benefit modestly from denser support networks and greater institutional access (+4.3%). For the rural elderly, access to human helpers remained the critical constraint. Mobile banking units deployed to rural communities, combined with village-level digital champions who provide ongoing peer support, would extend ADTM mechanisms to populations currently underserved by urban-centric digital literacy programs.

Marketing Strategies

Elderly users require safety signaling; features matter less. Platforms should prominently display security assurances, mandatory confirmation dialogs, and reversibility options. Design should enable family assistance through remote access modes and shared approval systems. Testimonials emphasizing progression narratives (showing elderly consumers moving from fear through assisted practice to independent confidence) resonate more authentically than enthusiasm-based appeals. Age and gender matching strengthens testimonial impact.

Policy Recommendations

Thailand requires "Elder-Safe" platform certification mandating error prevention mechanisms, proactive scam alerts, and elderly-trained support staff. Effective programs should provide one-on-one guidance using authentic financial transactions rather than simulations, along with age-friendly system

design, educational support emphasizing hands-on practice, and recognition that social influence operates differently for elderly populations. Fraud protection must balance security with confidence preservation. Cooling-off periods for large transfers provide time for consultation without blocking legitimate transactions. Policy should recognize that family assistance drives adoption, and tax incentives for parental training or employer benefits for caregiving time would support naturally occurring mechanisms.

Limitations and Future Research

Several limitations warrant acknowledgment. The ICT Household Survey 2024 Q2 microdata (NSO, 2024) lacked direct measures of helper presence, emotional states, or error experiences. Cross-sectional design prevented definitive causal inference. While quantitative findings represent Thailand's elderly population effectively ($n=53,491$), qualitative findings ($n=24$) may not have reflected full diversity across regions or subgroups.

Cultural context may have limited transferability. Thai culture emphasizes family interdependence (*katanyu*), potentially amplifying ADTM Stage 3 mechanisms relative to individualistic societies. Whether similar dynamics operate in independence-emphasizing cultures would require empirical verification.

Future research should pursue four directions: (a) longitudinal studies testing ADTM's sequential progression and identifying trigger events; (b) experimental interventions validating that experiential approaches outperform instruction-only methods; (c) comparative research across collectivistic and individualistic societies assessing cultural boundary conditions; and (d) domain extension testing ADTM for telemedicine, e-government, and fintech adoption to demonstrate generalizability beyond e-commerce contexts.

Conclusion

Elderly online purchasing in Thailand appears to be constrained primarily by digital trust deficits rather than by technology access limitations. The sequential explanatory mixed-methods analysis ($n=53,491$ survey respondents; $n=24$ interviews) identified digital finance experience as the strongest predictor of purchasing behavior, substantially exceeding the effects of education, income, or urban residence.

Core Findings

E-banking (+16.7%) and e-payment use (+12.4%) demonstrated effects surpassing tertiary education (+8.3%) and urban residence (+4.1%). This pattern empirically refutes assumptions that socioeconomic uplift alone closes digital divides for vulnerable populations. Experiential interventions, particularly assisted financial transactions, proved more influential than demographic advantages or general exposure to technology. Yang et al. (2025) corroborated this pattern, finding that trusting beliefs in online shopping significantly predicted purchase intention among elderly consumers, thereby confirming that trust formation, rather than technology access alone, determines digital commerce participation among older adults.

The Assisted Digital Trust Mechanism (ADTM) provides a theoretical pathway for this progression from digital awareness to confident purchasing. The model illustrates how guided financial transactions with real money serve as a pivotal catalyst, allowing borrowed interpersonal trust to systemically migrate into technological confidence and autonomous consumer behavior.

ADTM extends TAM and UTAUT by foregrounding three dimensions that cognitive-focused models largely neglect. First, emotional vulnerability is a primary barrier requiring experiential proof rather than cognitive persuasion. Second, relational trust is transferred through interpersonal mediation, where confidence initiates with helpers and migrates to platforms. Third, experiential learning through assisted practice builds psychological momentum, distinct from formal instruction.

Mixed-methods integration revealed mechanisms operating behind statistical patterns. Participants described visceral fear of irreversible mistakes, trust borrowed from helpers rather than

extended directly to systems, breakthrough moments during first assisted transactions, and progressive confidence building through micro-validation loops (Ganguly et al., 2024; Yang et al., 2023). These qualitative insights explain how quantitative predictors operate in lived experiences.

Theoretical and Practical Significance

Strengthening elderly digital confidence through assisted experiences addresses fundamental equity, dignity, and economic opportunity within Thailand's Silver Digital Economy. More broadly, ensuring that older adults may participate safely in digital commerce matters as populations age. Han and Ko (2025) demonstrated that psychological barriers, specifically technology anxiety, rather than demographic characteristics alone, determined mobile financial service adoption among elderly consumers, suggesting that ADTM mechanisms addressing emotional barriers extend beyond Thai cultural contexts to broader aging populations.

The access-focused paradigm dominating early digital inclusion efforts (providing devices, expanding infrastructure, teaching classroom skills) addresses necessary but insufficient conditions. These findings demonstrate that for vulnerable populations, emotional readiness, interpersonal mediation, and experiential proof matter more than access alone. Thus, policies and platforms must adapt accordingly.

ADTM provides both a theoretical foundation and a practical roadmap. The evidence validates the approach: digital finance experience drives adoption more powerfully than demographics or technology access, operating through interpersonal trust transfer and experiential confidence building. Implementation at scale becomes imperative for inclusive digital economies.

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Author Contributions

Piyapong Plubplueng: Conceptualization, methodology, investigation, data curation, formal analysis, visualization, writing—original draft, writing—reviewing and editing, project administration.

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