

Privacy-Mediated Performance Expectations and Hedonic Engagement in Virtual Digital Asset Adoption: An Institutional UTAUT Study of Regulated Finance Professionals in India

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Abstract—The Unified Theory of Acceptance and Use of Technology (UTAUT) was developed and validated predominantly with general consumer populations. This study examines whether its adoption architecture holds—or is systematically reconfigured—when the adopting cohort is a formally regulated professional population whose technology evaluation is shaped by statutory compliance obligations, fiduciary duties, and professional accountability mandates. This question is addressed for the first time in the context of Virtual Digital Asset (VDA) adoption in India, employing professional institutional embeddedness as a theoretical lens. Drawing on data from 300 currently invested regulated finance professionals—Chartered Accountants (CAs), Cost and Management Accountants (CMAs), and Company Secretaries (CSs)—analysed via PLS-SEM, the study identifies a substantially reconfigured adoption architecture. Perceived privacy significantly amplifies performance expectancy ($\beta = 0.487$, $p < 0.001$)—a privacy-to-performance amplification pathway not previously documented in the IS adoption literature at this magnitude; performance expectancy drives attitude toward VDA services ($\beta = 0.618$, $p < 0.001$); and perceived enjoyment constitutes an independent affective driver of attitude ($\beta = 0.290$, $p < 0.001$), extending hedonic adoption theory to regulated professional populations. Attitude is the dominant predictor of sustained adoption intention ($\beta = 0.840$, $p < 0.001$, 95% CI [0.720, 0.959]). Social influence and previous digital finance experience are non-significant predictors—consistent with theoretical expectations that professional accountability structures suppress peer-driven and experiential adoption mechanisms. Implications for IS adoption theory, VDA platform design, and India's digital asset regulatory governance are discussed.

Index Terms—Virtual Digital Assets; UTAUT; Technology Adoption; Perceived Privacy; Professional Institutional Embeddedness; PLS-SEM; India; Regulated Finance Professionals; FinTech; Asia Pacific

I. INTRODUCTION

The Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh et al., 2003) has become the dominant framework in information systems (IS) adoption research. Its core architecture—anchoring adoption intention in performance expectancy, effort expectancy, social influence, and facilitating conditions—was developed and validated across consumer and organisational populations drawn predominantly from general, non-specialist groups. A foundational but empirically underexplored question concerns whether this architecture holds when the adopting population is not a general consumer but an institutionally regulated professional: an actor whose technology evaluation calculus is structured not merely by personal utility and social reference groups, but by statutory compliance obligations, fiduciary duties, professional codes of conduct, and accountability to regulatory bodies.

This study addresses that question in the context of Virtual Digital Asset (VDA) service adoption among India's regulated finance professionals—CAs, CMAs, and Company Secretaries. India ranked first in the Chainalysis Global Crypto Adoption Index for three consecutive years (2023–2025), with approximately USD 338 billion in on-chain value received in 2025—a 99 per cent year-on-year increase (Chainalysis, 2025). Yet no prior study has examined how India's

regulated finance professionals—the statutory compliance interface for over 100 million VDA users—actually evaluate, adopt, and sustain engagement with VDA platforms. Under the Finance Act 2022 (Sections 115BBH and 194S of the Income Tax Act), these professionals serve as the primary compliance interface between India's VDA ecosystem and its investor population. They simultaneously hold VDA investments, advise clients on VDA transactions, and interpret the evolving regulatory framework at the operational level.

Despite this significance, the IS adoption behaviour of India's regulated finance professionals has not previously been examined as a theoretically distinct segment. Prior IS research has examined retail investors (Sukumaran et al., 2022), general consumers (Khan et al., 2024), and institutional traders, but the behaviourally and institutionally distinct profile of regulated accountancy and secretarial professionals—whose adoption calculus is structured by statutory compliance mandates, fiduciary obligations, and professional misconduct exposure—has been entirely overlooked. Drawing on an extended UTAUT framework and applying PLS-SEM to data from 300 currently invested finance professionals, this study identifies a substantially reconfigured adoption architecture interpreted through the lens of professional institutional embeddedness.

Contributions. The study makes four specific contributions to IS adoption theory. First, it provides the first empirical evidence that UTAUT's adoption architecture is substantively reconfigured when the adopting population is a formally regulated professional cohort—demonstrating that institutional accountability structures constitute a genuine boundary condition for the theory. Second, it introduces and empirically documents a privacy-to-performance amplification pathway ($\beta = 0.487$, $p < 0.001$) not previously identified in the IS adoption literature at this magnitude. Third, it extends hedonic IS adoption theory (Wang et al., 2021) to analytically sophisticated regulated professionals, demonstrating that perceived enjoyment ($\beta = 0.290$, $p < 0.001$) functions as an independent attitude driver even in an institutionally constrained adoption context. Fourth, it generates directly actionable evidence for Indian VDA platform designers, professional bodies (ICAI, ICFMA, ICSI), and regulators (SEBI, RBI) on the specific adoption levers most likely to accelerate

responsible, compliance-aligned engagement with India's digital asset ecosystem.

II. THEORETICAL BACKGROUND AND RESEARCH HYPOTHESES

2.1 UTAUT and Institutional Boundary Conditions

UTAUT (Venkatesh et al., 2003) consolidated eight prior technology acceptance models into a unified framework accounting for up to 70 per cent of variance in adoption intention. IS research has increasingly documented that population-level heterogeneity moderates UTAUT's structural architecture. Joo and Choi (2019) showed that technology competency materially alters the effort expectancy pathway among expert users. Nguyen et al. (2020) demonstrated that perceived privacy risk reshapes the adoption calculus for digital payment systems. Wang et al. (2021) established that hedonic motivation constitutes an independent adoption driver not captured by UTAUT's original rational utility constructs.

We employ professional institutional embeddedness (Scott, 2001; Abbott, 1988) to theorise this boundary condition. Regulated professionals evaluate technology not only through personal utility assessments and social reference group signals, but through a professional accountability lens that prioritises normative compliance, fiduciary risk, and independent analytical assessment. Accordingly, we would expect: the social influence pathway to be attenuated (peer endorsement conflicts with mandated independent due diligence); privacy assessment to be elevated as a professional performance signal (privacy failures constitute professional misconduct exposure); and attitude formed through deliberate professional evaluation to strongly predict sustained adoption intention.

2.2 Extended UTAUT: Construct Selection and Hypotheses

Perceived privacy (Nguyen et al., 2020) is included because CAs and CMAs bear direct professional responsibility for client data under the ICAI Code of Ethics. Privacy confidence is theorised to amplify perceived platform performance expectations—a privacy-to-performance amplification mechanism grounded in professional data responsibility.

H1: Perceived Privacy → Performance Expectancy (positive relationship).

Perceived risk (Pavlou, 2003) is included as an antecedent of performance expectancy. This cohort's advanced risk–return training and statutory tax treatment of VDA gains under Section 115BBH may lead professionals to treat volatility as a calibrated portfolio parameter rather than a generalised performance inhibitor.

H2: Perceived Risk → Performance Expectancy (negative relationship).

Technology competency (Joo & Choi, 2019) is included as an antecedent of effort expectancy. Finance professionals engage daily with sophisticated digital infrastructure—audit analytics, MCA21, SEBI compliance portals—providing baseline competency expected to reduce perceived effort with VDA platforms.

H3: Technology Competency → Effort Expectancy (positive relationship).

Perceived enjoyment (Wang et al., 2021) is included to test whether hedonic motivation operates as an independent attitude driver alongside rational performance assessment among analytically oriented professionals.

H4: Performance Expectancy → Attitude (positive).

H5: Effort Expectancy → Attitude (positive; expected attenuation).

H6: Social Influence → Attitude (expected near-zero).

H7: Previous Experience → Attitude (positive; expected attenuation).

H8: Perceived Enjoyment → Attitude (positive).

H9: Attitude → Intention to Continue Using VDA Services (dominant predictor expected).

III. RESEARCH METHODOLOGY

3.1 Research Design and Sample

The study adopted a quantitative cross-sectional survey design, consistent with established IS adoption research employing PLS-SEM (Hair et al., 2019). The target population was practising finance professionals in India—CAs, CMAs, and Company Secretaries—currently invested in at least one VDA product. This eligibility criterion ensured respondents had direct first-hand experience of VDA service adoption. Data were collected from 300 finance professionals via a structured survey administered through snowball sampling. Snowball sampling is theoretically appropriate for this professionally networked population where verified active investor cohorts are

not accessible through probabilistic sampling frames (Naderifar et al., 2017). The findings should be interpreted as initial evidence of profession-specific adoption dynamics among a self-selected population of VDA-active finance professionals, rather than as population-representative estimates.

3.2 Measurement Instrument

The survey instrument comprised 50 five-point Likert-scale items (1 = strongly disagree; 5 = strongly agree) and 10 demographic items. Scales were adapted from validated prior studies: UTAUT constructs from Venkatesh et al. (2003); perceived risk from Pavlou (2003); perceived privacy from Nguyen et al. (2020); technology competency from Joo and Choi (2019); perceived enjoyment from Wang et al. (2021); and previous experience from Dindar et al. (2020). All adapted items were reviewed by two subject-matter experts and pilot-tested with 30 practising finance professionals prior to finalisation.

3.3 Analytical Approach

PLS-SEM using SmartPLS 4 (Ringle et al., 2022) was employed. The measurement model was evaluated for internal reliability (Cronbach's $\alpha \geq 0.70$), composite reliability (CR > 0.70), convergent validity (AVE ≥ 0.50 ; Fornell & Larcker, 1981), and discriminant validity using the Fornell–Larcker criterion and HTMT ratio (< 0.85; Henseler et al., 2015). VIF values were examined for multicollinearity (threshold < 3.5). Structural path coefficients were estimated via bootstrapping (5,000 subsamples) with bias-corrected 95% confidence intervals.

Figure 1. Privacy-mediated performance expectations and hedonic engagement in virtual digital asset adoption: an institutional UTAUT framework of regulated finance professionals in India

IV. DATA ANALYSIS

4.1 Reliability and Convergent Validity

Table 1 presents construct reliability and validity statistics. All Cronbach's α values exceed 0.70 and all CR values exceed 0.70. Four AVE values fall marginally below 0.50; where this occurs, corresponding CR values substantially exceed 0.70, providing sufficient evidence of convergent validity (Fornell & Larcker, 1981; Hair et al., 2019).

Table 1 Construct Reliability, Composite Reliability, and Average Variance Extracted

Construct	Cronbach's α	CR	AVE	VIF	Items (n)
Perceived Privacy (PP)	0.812	0.863	0.514	2.1	5
Perceived Risk (PR)	0.779	0.841	0.469†	1.8	5
Technology Competency (TC)	0.834	0.879	0.548	2.3	5
Performance Expectancy (PE)	0.856	0.896	0.582	2.7	6
Effort Expectancy (EE)	0.801	0.856	0.498†	1.9	5
Social Influence (SI)	0.788	0.848	0.483†	1.6	5
Previous Experience (PEX)	0.797	0.853	0.493†	1.7	5
Perceived Enjoyment (PEN)	0.823	0.871	0.531	2.0	5
Attitude toward VDA (ATT)	0.891	0.921	0.659	—	6
Intention to Continue (INT)	0.877	0.910	0.629	—	8

Note. CR = Composite Reliability; AVE = Average Variance Extracted. † AVE marginally < 0.50; CR > 0.70 provides sufficient evidence of convergent validity (Fornell & Larcker, 1981). All VIF < 3.3.

4.2 Factor Analytic Suitability

The KMO measure of sampling adequacy was 0.936, substantially exceeding the accepted minimum of 0.60. Bartlett's test of sphericity yielded $\chi^2(903) = 13,962.409$, $p < 0.001$, confirming the appropriateness of the factor analytic approach (Table 2).

Table 2 KMO and Bartlett's Test of Sphericity

Test	Result
KMO Measure of Sampling Adequacy	0.936

Bartlett's Test — χ^2	13,962.409
Degrees of Freedom (df)	903
Significance (p)	< 0.001

4.3 Discriminant Validity

Table 3 presents the Fornell–Larcker matrix. The square root of AVE for each construct (diagonal) exceeds all inter-construct correlations, confirming discriminant validity. All HTMT ratios (Table 3b) fall below 0.85 (Henseler et al., 2015).

Table 3 Inter-Construct Correlations — Fornell–Larcker Criterion ($\sqrt{\text{AVE}}$ on Diagonal)

	PP	PR	TC	PE	EE	SI	PEX	PEN	ATT
PP	0.717								
PR	0.342	0.685							
TC	0.298	0.261	0.740						
PE	0.503	0.219	0.387	0.763					
EE	0.311	0.248	0.512	0.461	0.706				
SI	0.287	0.203	0.274	0.338	0.291	0.695			
PEX	0.276	0.234	0.351	0.302	0.338	0.319	0.702		
PEN	0.349	0.189	0.312	0.421	0.283	0.261	0.298	0.729	
ATT	0.431	0.172	0.389	0.618	0.301	0.214	0.289	0.403	0.812

Note. Diagonal values = $\sqrt{AVE}$. All diagonal values exceed corresponding row correlations, confirming discriminant validity (Fornell & Larcker, 1981).

Table 3b Heterotrait–Monotrait (HTMT) Ratio Matrix

	PP	PR	TC	PE	EE	SI	PEX	PEN
PR	0.412							
TC	0.371	0.318						
PE	0.589	0.271	0.453					
EE	0.384	0.302	0.601	0.532				
SI	0.349	0.251	0.334	0.401	0.352			
PEX	0.338	0.287	0.423	0.366	0.409	0.387		
PEN	0.423	0.231	0.379	0.497	0.341	0.316	0.361	
ATT	0.521	0.211	0.469	0.731	0.364	0.261	0.349	0.488

Note. All HTMT values < 0.85 (Henseler et al., 2015). All VIF < 3.3.

4.4 Structural Model and Hypothesis Testing

Table 4 reports structural path coefficients, t-statistics, p-values, and bias-corrected 95% confidence intervals estimated via bootstrapping (5,000 subsamples). Five of the nine hypothesised paths are supported.

Table 4 Structural Path Coefficients and Hypothesis Test Results

H	Path	β	t-stat	p	95% CI	Decision
H1	PP → PE	0.487	8.213	< 0.001	[0.371, 0.603]	Supported
H2	PR → PE	−0.050	1.349	0.178	[−0.121, 0.022]	Not Supported
H3	TC → EE	0.521	9.017	< 0.001	[0.412, 0.631]	Supported
H4	PE → ATT	0.618	11.432	< 0.001	[0.512, 0.724]	Supported
H5	EE → ATT	−0.049	1.341	0.183	[−0.121, 0.023]	Not Supported
H6	SI → ATT	−0.018	0.573	0.567	[−0.080, 0.044]	Not Supported
H7	PEX → ATT	0.106	1.299	0.194	[−0.055, 0.267]	Not Supported
H8	PEN → ATT	0.290	5.881	< 0.001	[0.193, 0.387]	Supported
H9	ATT → INT	0.840	13.692	< 0.001	[0.720, 0.959]	Supported

Note. Bootstrapping with 5,000 subsamples; bias-corrected 95% CIs. PP = Perceived Privacy; PR = Perceived Risk; TC = Technology Competency; PE = Performance Expectancy; EE = Effort Expectancy; SI = Social Influence; PEX = Previous Experience; PEN = Perceived Enjoyment; ATT = Attitude toward VDA Service; INT = Intention to Continue.

V. RESULTS AND DISCUSSION

5.1 Overview: A Reconfigured Adoption Architecture

Five of nine hypothesised paths are supported. The findings converge on a pattern theoretically coherent

when interpreted through the lens of professional institutional embeddedness: social influence and prior experience pathways are non-significant; a privacy-to-performance amplification mechanism operates through professional data responsibility structure; and

attitude functions as the dominant predictor of sustained adoption intention. These patterns constitute initial evidence consistent with a professional boundary condition for UTAUT.

5.2 Path-Level Interpretation

H1 — Perceived Privacy → Performance Expectancy ($\beta = 0.487$, $p < 0.001$, Supported). Privacy confidence functions as a performance signal. Professionals bound by client data confidentiality under the ICAI Code of Ethics experience platform privacy failures as professional misconduct exposures rather than consumer inconveniences. When a digital asset platform credibly addresses this concern through independently audited privacy infrastructure, the professional's assessment of its performance potential rises across all service dimensions. This privacy-to-performance amplification mechanism appears distinctive to regulated professional adoption contexts.

H2 — Perceived Risk → Performance Expectancy ($\beta = -0.050$, $p = 0.178$, Not Supported). Finance professionals trained in risk–return analysis treat digital asset market volatility as a calibrated portfolio parameter rather than a generalised performance inhibitor. India's Finance Act 2022 contextualises this further: by providing a defined statutory tax treatment of VDA gains and losses, the regulatory framework transforms volatility from an open-ended uncertainty into a bounded, calculable portfolio variable.

H3 — Technology Competency → Effort Expectancy ($\beta = 0.521$, $p < 0.001$, Supported). Existing technological fluency—built through daily engagement with audit analytics platforms, MCA21, and SEBI compliance systems—robustly reduces perceived effort when engaging with VDA platforms. For IS system designers, this suggests that interface design for regulated professional adopters should prioritise integration with familiar professional workflow paradigms.

H4 — Performance Expectancy → Attitude ($\beta = 0.618$, $p < 0.001$, Supported). Performance expectancy is the dominant rational driver of attitude formation. The magnitude of this path substantially exceeds performance expectancy-to-attitude coefficients reported in general-consumer IS adoption studies.

H5 — Effort Expectancy → Attitude ($\beta = -0.049$, $p = 0.183$, Not Supported). Ease-of-use appears to function as a threshold condition rather than an attitude differentiator for this technologically fluent

population, providing initial evidence of a professional competency boundary condition for the effort expectancy pathway in UTAUT.

H6 — Social Influence → Attitude ($\beta = -0.018$, $p = 0.567$, Not Supported). The non-significance of social influence is the most theoretically striking result. Social influence—one of UTAUT's four core constructs and a consistently significant predictor in general-consumer IS adoption studies—is statistically negligible ($\beta \approx 0$). Regulated professionals embedded in formal accountability structures mandating independent due diligence may form their VDA adoption dispositions through independent research rather than peer endorsement.

H7 — Previous Experience → Attitude ($\beta = 0.106$, $p = 0.194$, Not Supported). Prior experience with digital financial instruments does not significantly facilitate VDA service adoption attitude. The genuinely novel technical architecture of decentralised digital asset services may require cognitive frameworks that prior experience with conventional digital financial services does not provide.

H8 — Perceived Enjoyment → Attitude ($\beta = 0.290$, $p < 0.001$, Supported). The significant independent contribution of perceived enjoyment introduces a hedonic dimension into the adoption calculus. Real-time market dynamics, blockchain protocol complexity, and the frontier character of decentralised finance appear to generate genuine intellectual-hedonic engagement among analytically oriented professionals, extending Wang et al.'s (2021) perceived enjoyment framework to a regulated professional IS adoption context.

H9 — Attitude → Intention to Continue ($\beta = 0.840$, $p < 0.001$, 95% CI [0.720, 0.959], Supported). The dominant finding is the exceptional predictive power of attitude toward sustained adoption intention. Among regulated professionals who have adopted through deliberate, multi-criterion professional evaluation, the translation of a favourable attitude to sustained adoption intent appears near-complete.

VI. THEORETICAL CONTRIBUTIONS

This study advances the IS adoption literature in four directions. First, it provides empirical evidence consistent with professional institutional embeddedness as a boundary condition for the UTAUT architecture. The non-significance of social

influence ($\beta \approx 0$) and previous experience in a regulated professional population are theoretically interpretable as indicators of institutionally embedded IS adoption. Future research should develop and validate an institutional embeddedness scale and test its moderating role directly.

Second, the study introduces an empirically observed privacy-to-performance amplification pathway in a regulated professional context. The theoretical mechanism—professional data responsibility elevating privacy as a performance-relevant signal—is theoretically grounded but not directly tested; future research should develop mediation designs to explicitly test this mechanism.

Third, the study provides empirical evidence of a professional competency boundary condition for the effort expectancy pathway, consistent with Joo and Choi (2019) and extended to the regulated financial professional context in an emerging Asia-Pacific regulatory environment.

Fourth, the study extends perceived enjoyment as a significant IS adoption driver to analytically sophisticated regulated professionals. The form of hedonic motivation identified here—intellectual engagement with complex frontier technology—may be theoretically distinct from recreational enjoyment constructs developed in general-consumer contexts.

VII. PRACTICAL IMPLICATIONS

Privacy architecture as a performance signal. Independently audited privacy infrastructure and SEBI-compliant data governance should be positioned as core service performance attributes in professional communications, not merely as compliance credentials.

Professional body engagement over social proof. The non-significance of social influence implies that conventional social proof and influencer marketing are unlikely to be effective for this segment. IS platform communication strategies should foreground professional body endorsements (ICAI, ICAI, ICSI), regulatory compliance credentials, and analytically accessible risk-adjusted performance evidence.

Attitude formation as the decisive investment lever. The dominant attitude-to-intention coefficient ($\beta = 0.840$) implies that investments in the antecedents of positive attitude—privacy architecture, performance

analytics, and intellectually engaging platform design—yield adoption returns that may be near-irreversible once professionals have completed their due diligence process.

Digital asset literacy as a distinct IS competency domain. The non-significance of previous digital finance experience implies that conventional IS onboarding approaches premised on experience transfer are ineffective for this architecturally discontinuous domain. Structured professional development programmes delivered through ICAI, ICAI, and ICSI represent the highest-leverage channel for attitude formation.

VIII. LIMITATIONS AND FUTURE RESEARCH

Several limitations constrain the findings. The sample was obtained through snowball sampling from currently invested professionals and is not nationally stratified. The cross-sectional design captures adoption dynamics at a single time point in an actively evolving regulatory environment. Most critically, institutional embeddedness is employed as a theoretical interpretive lens rather than a directly operationalised construct. Future research should develop and psychometrically validate an institutional embeddedness scale and test its moderating role directly. A theoretically important extension concerns the comparison of adopters with non-adopters. Cross-national comparisons across Asia-Pacific regulatory regimes—Singapore's MAS framework, Australia's ASIC regime, Japan's FSA approach—would directly advance understanding of how regulatory architecture shapes professional IS adoption dynamics.

IX. CONCLUSION

This study presents the first empirically grounded examination of VDA service adoption among India's regulated finance professionals, using an institutional extension of UTAUT and PLS-SEM applied to 300 currently invested Chartered Accountants, CMAs, and Company Secretaries. The findings establish a structural pattern consistent with theoretical expectations about professional institutional embeddedness as a boundary condition for UTAUT: performance expectancy—driven substantially by perceived privacy confidence ($\beta = 0.487$)—and perceived enjoyment ($\beta = 0.290$) are the dominant

predictors of a favourable attitude toward digital asset services, while attitude is the dominant predictor of sustained adoption intention ($\beta = 0.840$, 95% CI [0.720, 0.959]). Social influence and previous digital finance experience are non-significant predictors—a pattern consistent with the expectation that formal professional accountability structures suppress peer-driven and experience-based adoption mechanisms. The study provides initial, theoretically interpretable evidence that UTAUT's predictive architecture is substantively reconfigured in a regulated professional population.

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