

The Effect of ULIP Cost Structure on Investor Persistency: The Moderating Role of InsurTech Adoption

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ABSTRACT

This paper develops a framework that is conceptually theoretical to define the composite relationship between the cost structure of Unit Linked Insurance Plans (ULIPs) and investor persistency- a key determinant of the long-term sustainability and financial performance of insurance providers. The front-loaded pricing structure of ULIPs, including high initial charges and surrender penalties, is generally regarded as a factor that discourages long-term investment. Nevertheless, this study suggests that these costs may also contribute to investor persistency by affecting investors' behavioural and rational decision-making processes. Drawing on agency theory, behavioural finance (particularly loss aversion and the sunk cost effect), and the Technology Acceptance Model, the study investigates whether InsurTech adoption moderates the relationship between ULIP cost structure and investor persistency.

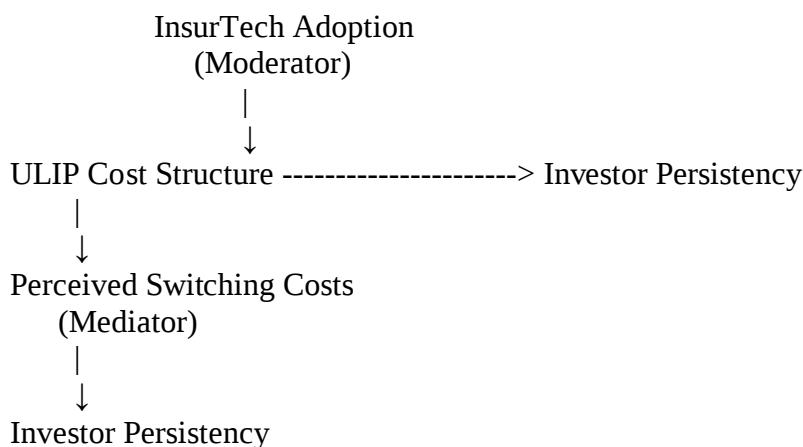
This study is based on the premise that the cost structure of Unit Linked Insurance Plans (ULIPs), particularly high initial charges and surrender costs, may influence investor persistency by increasing the perceived financial and psychological costs associated with discontinuing a policy. These perceived switching costs can encourage investors to maintain their policies over a longer period despite the initial financial burden. However, the strength of this relationship is expected to depend on the extent of InsurTech adoption. Digital innovations, including robo-advisory services, personalized policy management platforms, AI-enabled customer support, and behavioural nudges, have the potential to enhance transparency, improve customer engagement, and help investors better understand the long-term value of their investments. As a result, InsurTech adoption may shift investors' focus from short-term costs to the overall benefits and value of continued policy ownership, thereby strengthening investor persistency. In contrast, limited access to digital insurance services may amplify the perceived burden of policy charges, increase dissatisfaction, and contribute to higher lapse rates. By integrating perspectives from insurance economics, behavioural finance, and digital financial services, this study develops a comprehensive framework to examine the relationship between ULIP cost structure and investor persistency, while highlighting the moderating role of InsurTech adoption. The findings are expected to contribute to the growing literature on digital transformation in insurance and provide practical insights for insurers seeking to improve customer retention through effective product design and technology-enabled service delivery.

Keywords: Unit-Linked Insurance Plans (ULIPs), Cost Structure, Investor Persistency, InsurTech, Surrender Rates, Behavioral Finance, Sunk Cost Fallacy, Switching Costs, Customer Retention, Financial Technology, Agency Theory, Technology Acceptance Model (TAM).

INTRODUCTION

The global insurance industry is undergoing rapid transformation, driven by the growing demand for investment-linked insurance products and the increasing adoption of digital technologies. Among these products, Unit-Linked Insurance Plans (ULIPs) have become an important component of life insurance markets, particularly in emerging economies such as India. By combining life insurance protection with market-linked investment opportunities, ULIPs offer investors both wealth creation and financial security. Despite these advantages, insurers continue to face a significant challenge in maintaining investor persistency,

as high lapse and surrender rates reduce profitability, disrupt long-term risk pooling, and weaken customer relationships. A key factor influencing persistency is the cost structure of ULIPs. These products typically involve front-loaded charges, policy administration fees, and surrender penalties, which increase the financial cost of early policy termination. Traditional economic theory suggests that such costs should discourage policy lapses and improve persistency. However, empirical evidence remains mixed, indicating that the relationship between ULIP cost structures and investor persistency is more complex than financial incentives alone can explain. This suggests that investors' behavioural responses and technological interactions may play a critical role in persistency decisions. This paper addresses this gap by proposing a conceptual framework in which perceived switching costs mediate the relationship between ULIP cost structures and investor persistency. Drawing on behavioural finance, particularly the sunk cost fallacy, we argue that investors who incur substantial upfront costs become psychologically reluctant to terminate their policies, even when doing so may be economically rational. Consequently, perceived switching costs act as a behavioural mechanism that strengthens investor persistency. The paper further proposes that InsurTech adoption moderates this relationship. Digital innovations such as artificial intelligence, robo-advisory services, personalized dashboards, and real-time policy monitoring have transformed how customers interact with insurance products. High levels of InsurTech adoption improve transparency, enhance customer engagement, and shift investors' focus from incurred costs to long-term value creation. As a result, persistency is driven less by financial lock-in and more by informed, value-based decision-making. This study contributes to the literature in four ways. First, it integrates behavioural finance, agency theory, and the Technology Acceptance Model (TAM) to explain investor persistency in ULIPs. Second, it identifies perceived switching costs as a key psychological mechanism linking cost structures to persistency. Third, it conceptualizes InsurTech adoption as a strategic moderator that transforms customer retention from cost-induced lock-in to value-driven loyalty. Finally, it proposes a set of testable propositions that provide a foundation for future empirical research and offer practical insights for insurers, policymakers, and technology providers seeking to improve customer retention in an increasingly digital insurance ecosystem. The remainder of the paper is organized as follows. Section 2 reviews the relevant literature, Section 3 presents the conceptual framework and propositions, Section 4 discusses theoretical and managerial implications, Section 5 outlines directions for future research, and Section 6 concludes the study.



Proposition	Relationship	Expected Direction	Theory
P1	ULIP Cost Structure → Perceived Switching Costs	Positive	Agency Theory
P2	Perceived Switching Costs → Investor Persistency	Positive	Behavioural Finance
P3	InsurTech moderates Switching Costs → Persistency	Positive moderation	TAM
P4	Indirect effect moderated by InsurTech	Conditional	Integrated Model

LITERATURE REVIEW

Unit-Linked Insurance Plans: Structure, Costs, and Investor Appeal

Unit-Linked Insurance Plans (ULIPs) continue to be a significant hybrid financial instrument, integrating life insurance protection with exposure to capital markets. However, the defining characteristic of ULIPs—their complex cost structure—remains the primary subject of academic and regulatory debate. Recent literature confirms that ULIPs feature a layered fee arrangement comprising initial allocation charges, policy administration fees, fund management charges, and surrender penalties. A comprehensive comparative study underscores the substantial cost disadvantage for the investor, finding that the effective annual total cost of ULIPs (>5.5%) can far exceed that of comparable equity mutual funds (1.5–3.5%), potentially reducing long-term wealth accumulation by up to 82%. This evidence reinforces critiques that such costs are excessive and lack transparency, often disadvantaging retail investors. From a theoretical standpoint, the front-loaded cost structure is designed to compensate insurers for upfront acquisition costs and serves as a commitment device to discourage early termination. Recent research frames this as a strategic response to asymmetric information, where insurers use optional two-part tariffs (higher initial fees for lower recurring premiums) as a screening mechanism to identify and retain policyholders with lower lapse risk. This perspective adds nuance to the long-standing tension between insurer profitability and investor fairness. Investor Persistency: Determinants and Theoretical Perspectives. The determinants of investor persistency have been enriched by recent empirical work, particularly on the role of behavioural finance in explaining lapses.

- **Classical Economic Perspectives:**

Traditional models rooted in rational choice theory posit that lapse decisions are a function of comparative financial returns and the magnitude of surrender penalties. While macroeconomic variables remain significant predictors, the rational-economic account is increasingly supplemented by insights from information economics. Recent studies demonstrate that adverse selection plays a crucial role in lapse behaviour, as consumers possess private information about their future lapse likelihood. This asymmetric information can be partially mitigated through contractual screening mechanisms. These findings challenge the idea that persistency is solely determined by rational, financial calculus.

- **Behavioural Finance Perspectives:**

The most significant recent contributions to understanding persistency come from behavioural finance, particularly concerning the mechanisms of the sunk cost fallacy. A landmark 2025 study provides robust empirical evidence that the high upfront costs associated with life insurance products create a "sunk cost" effect, which significantly contributes to lower lapse rates, independent of rational economic factors. This study successfully isolates this behavioural lock-in effect by exploiting randomness in initial tariff size. Furthering this line of inquiry, a 2024 cognitive model of ULIP decision-making reveals that investor willingness is not solely a function of objective product performance but is significantly influenced by perceived performance and emotions. The study demonstrates that positive cognitive assessments and emotions, driven by how investors perceive product features, enhance investment willingness, while individual risk tolerance negatively modulates these perceptions and evaluations. These findings align with Prospect Theory's concepts of loss aversion and mental accounting, suggesting that investors may persist with suboptimal ULIPs not due to a rational assessment of future benefits, but due to the psychological disutility of realizing sunk costs and their cognitive and emotional appraisal of the product.

- **InsurTech Adoption: A Shaping Contextual Factor**

The literature on InsurTech, while nascent, has matured significantly, offering a crucial context for understanding evolving investor perceptions. After a period of extreme volatility from 2020 to 2022, the global InsurTech market has entered a phase of "sustainable maturity," with quarterly investment volumes stabilizing at approximately \$1.1 billion. A key development is the shifting focus of investment, with property and casualty InsurTech surging by 90.5% in Q3 2025, and AI-centered InsurTechs capturing 74.8% of all funding in the same quarter. This reflects a recalibrated investor strategy moving away from "winner-take-all" bets

towards a more balanced portfolio approach. The impact on insurance markets is profound. AI is increasingly deployed not to replace human underwriters, but to enhance their capabilities through workflow automation, fraud detection, and risk assessment. The commercial insurance sector, in particular, is at an inflection point, driven by customer expectations for digital purchasing experiences. These technological changes are reshaping the insurance value chain, potentially enhancing transparency and product customization, thereby influencing how investors perceive the value and trustworthiness of products like ULIPs.

• Theoretical Gaps and Motivation for Conceptual Framework

Despite these advancements, several theoretical gaps persist. The literature has separately developed sophisticated models of ULIP cost structures, behavioural drivers of lapse, and the broad technological shifts in the insurance sector. However, there is a lack of integrative research that connects these domains. Specifically, how does the emerging InsurTech landscape—characterized by increased transparency, AI-driven personalization, and digital distribution—moderate the traditional behavioural biases (such as the sunk cost fallacy) that influence persistency? While behavioral models explain the psychological lock-in effect of front-loaded costs, and InsurTech literature explains technological potential, the interplay between these factors remains unexplored. This gap motivates our conceptual framework, which seeks to investigate whether and how InsurTech adoption mediates or moderates the relationship between objective cost structures, investor perceptions, and actual persistency behavior.

• InsurTech Adoption: Reconfiguring the Insurance Landscape

The digital transformation of financial services, broadly characterized under the rubric of FinTech, has now penetrated the insurance sector with full force, giving rise to the distinct phenomenon of **InsurTech** (Stoeckli et al., 2018; Eling & Lehmann, 2018). InsurTech encompasses a wide array of technological innovations—including artificial intelligence (AI), big data analytics, blockchain, robo-advisory platforms, mobile applications, and the Internet of Things (IoT)—that are fundamentally reshaping how insurance products are designed, priced, distributed, and serviced (Nicoletti, 2020). While much of the early InsurTech literature focused on underwriting efficiency, fraud detection, and claims processing, a growing body of scholarship has begun to examine the impact of InsurTech on customer behaviour and engagement (Eling & Lehmann, 2018).

• The Technology Acceptance Model (TAM) and Investor Engagement

To theorize the mechanisms through which InsurTech adoption influences investor behaviour, we draw upon the **Technology Acceptance Model (TAM)**, originally developed by Davis (1989) and extensively validated across diverse technology adoption contexts. TAM posits that an individual's behavioural intention to use a technology is determined by two primary cognitive beliefs: **perceived usefulness** (the extent to which the technology enhances performance) and **perceived ease of use** (the extent to which the technology is effortless to adopt). In the insurance context, the adoption of InsurTech platforms—such as mobile policy dashboards, real-time performance tracking applications, and robo-advisory tools—shapes investors' perceptions of the policy's usefulness and their ability to engage meaningfully with their investments (Wang, 2020).

Crucially, InsurTech platforms possess the potential to reduce **information asymmetry**—a persistent challenge in insurance relationships, wherein the insurer possesses significantly more information about product terms, fees, and performance than the policyholder (Stoeckli et al., 2018). By providing transparent, user-friendly visualizations of cost breakdowns, projected returns, and surrender penalties, InsurTech can demystify the complex ULIP fee structure, enabling investors to make more informed and rational decisions. Furthermore, advanced platforms leverage behavioural nudges—such as personalized reminders, goal-tracking features, and educational content—that can reframe the investor's temporal orientation from short-term cost-salience to long-term value creation (Nicoletti, 2020).

• InsurTech as a Moderator of Behavioural Biases

The most compelling theoretical insight from the intersection of behavioural economics and information systems is that technology can both exploit and mitigate cognitive biases (Ariely, 2008). In the context of ULIP

persistence, we propose that InsurTech adoption serves as a critical **moderator** that shapes the strength and nature of the psychological mechanisms linking cost structures to persistence.

In settings characterized by **low InsurTech adoption**, investors operate in an environment of informational opacity. They receive periodic, often complex, annual statements; have limited real-time visibility into fund performance; and lack interactive tools to simulate the consequences of surrender versus retention. Under these conditions, the psychological salience of sunk costs remains dominant. Investors recall the significant initial charges they have already borne, experience anxiety about the complexity of the product, and may be more susceptible to negative framing of their investment performance. Paradoxically, this environment can lead to two distinct outcomes: some investors may persist due to the sunk cost fallacy, while others—particularly those experiencing high cognitive dissonance—may lapse prematurely as a behavioural avoidance mechanism to escape the ongoing discomfort of a poorly understood product.

Conversely, in environments characterized by **high InsurTech adoption**, the investor experience is fundamentally transformed. Robo-advisory platforms provide personalized, data-driven insights that project long-term policy values, highlight the diminishing impact of initial charges over an extended holding period, and compare policy performance against relevant benchmarks (Wang, 2020). Gamified dashboards and behavioural nudges encourage regular engagement, reinforce positive saving habits, and reduce the emotional salience of the initial costs by framing them as a necessary investment for a superior long-term outcome. Crucially, by enhancing transparency and investor education, InsurTech can attenuate the irrational pull of the sunk cost fallacy and recalibrate the investor's decision calculus from a **cost-centric** perspective (where the focus is on what has been lost) to a **value-centric** perspective (where the focus is on what can be gained). This does not necessarily eliminate persistence; rather, it transforms its basis from a negative, cost-induced lock-in to a positive, value-induced loyalty.

• Synthesis and Identification of Research Gaps

The preceding review reveals that while significant strides have been made in understanding ULIP cost structures, investor persistence, and InsurTech adoption independently, the *intersection* of these three domains remains theoretically and empirically underdeveloped. We identify three critical gaps that our conceptual paper seeks to address.

First, the existing literature on ULIP persistence has predominantly focused on either the rational, economic determinants of lapses or, separately, the behavioural biases that influence investor decision-making. However, there is a notable absence of an integrated framework that synthesizes these perspectives to explain how objective cost structures translate into behavioural outcomes through psychological mechanisms such as perceived switching costs. Specifically, the mediating role of the sunk cost fallacy in the costs-persistence relationship has been theoretically posited but not systematically developed.

Second, the role of InsurTech in the persistence equation has been largely neglected. While the InsurTech literature has examined its effects on underwriting, distribution, and claims, its potential to moderate the behavioural dynamics of policy retention has received scant attention. How does digital engagement alter the psychological impact of front-loaded costs? Does transparency attenuate or amplify the sunk cost effect? These questions remain theoretically unanswered.

Third, and most importantly, there is no existing theoretical model that posits a conditional (moderated) relationship between cost structures, perceived switching costs, and persistence, wherein InsurTech adoption serves as the key boundary condition. We argue that the relationship between ULIP costs and persistence is not universal but contingent upon the technological environment in which the investor is embedded. This proposed moderated-mediation framework represents a novel theoretical contribution that can guide future empirical research and inform strategic decision-making in the insurance industry.

Conceptual Framework and Propositions

Based on the synthesis of the literature reviewed in the preceding section, this section develops an integrated

conceptual framework that explicates the hypothesized relationships among ULIP cost structure, perceived switching costs, investor persistency, and the moderating role of InsurTech adoption. We draw upon agency theory, behavioural finance (specifically, the sunk cost fallacy and loss aversion), and the Technology Acceptance Model (TAM) to ground our propositions in established theoretical traditions. The framework culminates in a set of clearly articulated, testable propositions that provide a blueprint for future empirical investigation.

Our conceptual model is a **moderated-mediation framework** comprising four core constructs:

1. **Independent Variable (IV):** ULIP Cost Structure (characterized by front-loaded charges and surrender penalties)
2. **Mediating Variable (MV):** Perceived Switching Costs (encompassing financial, psychological, and relational dimensions)
3. **Dependent Variable (DV):** Investor Persistency (operationalized as policy retention or reduced lapse propensity)
4. **Moderating Variable (MOD):** InsurTech Adoption (capturing the extent of digital engagement, transparency, and robo-advisory utilization)

Theoretical Logic: We propose that the objective ULIP cost structure does not directly and uniformly influence persistency. Rather, its effect is transmitted through the psychological mechanism of perceived switching costs, which is in turn shaped by the degree of InsurTech adoption. Specifically, high front-loaded costs increase investors' perception of switching costs (financial penalties, psychological discomfort, relational disruption), which subsequently enhances persistency through behavioural lock-in (the sunk cost fallacy). However, the strength and nature of this mediated relationship are contingent upon InsurTech adoption. When InsurTech adoption is low, the mediated relationship operates through a **cost-induced, negative lock-in** mechanism. Conversely, when InsurTech adoption is high, the relationship transforms into a **value-induced, positive loyalty** mechanism, attenuating the purely behavioural impact of sunk costs and recalibrating the investor's decision calculus toward long-term value.

The Direct Effect of ULIP Cost Structure on Perceived Switching Costs

The first link in our conceptual chain posits that the unique cost structure of ULIPs serves as a primary antecedent to investors' perceptions of switching costs. Drawing on the marketing literature, perceived switching costs are conceptualized as the multi-dimensional barriers—financial, psychological, and relational—that a consumer anticipates in terminating an existing service relationship (Burnham, Frels, & Mahajan, 2003; Jones, Mothersbaugh, & Beatty, 2000). In the ULIP context, these costs are particularly salient.

Financial switching costs are the most explicit dimension, comprising the surrender penalties, exit loads, and the forfeiture of accumulated benefits that policyholders face upon early termination (Kiesenbauer, 2012). The front-loaded nature of ULIPs, characterized by substantial initial allocation charges, means that investors who surrender early recover only a fraction of their total premium contributions, thereby crystallizing significant realized losses (Bhattacharya & Gursoy, 2019). **Psychological switching costs** encompass the emotional discomfort, cognitive dissonance, and anxiety associated with terminating a long-term financial commitment. Investors may experience regret, fear of making a suboptimal decision, or the discomfort of admitting a poor past choice (Arkes & Blumer, 1985). **Relational switching costs** capture the perceived disruption to the ongoing relationship with the insurer, including the loss of personalized service, the effort required to establish a new relationship, and the uncertainty associated with an alternative provider (Colgate & Lang, 2001).

We argue that the complex, front-loaded cost structure of ULIPs creates a fertile environment for the elevation of all three dimensions of perceived switching costs. The explicit surrender penalties directly elevate financial switching costs. The cognitive complexity and opacity of the fee structure heighten psychological switching

costs by inducing uncertainty and anxiety. Furthermore, the long-term nature of the insurance relationship, coupled with the significant initial investment, amplifies relational switching costs by embedding the investor in a perceived contractual and psychological commitment.

Proposition 1: ULIP cost structure (characterized by front-loaded charges and high surrender penalties) is positively associated with investors' perceived switching costs.

The Mediating Role of Perceived Switching Costs on Investor Persistency

The second link in our framework addresses the mediating mechanism: how perceived switching costs translate into actual persistency behaviour. We draw upon two complementary theoretical streams—behavioural finance (specifically, the sunk cost fallacy) and the switching costs literature—to argue that perceived switching costs exert a positive influence on investor persistency.

According to the **sunk cost fallacy**, individuals irrationally escalate their commitment to a course of action when they have already incurred significant irrecoverable costs, because the psychological pain of realizing those losses outweighs the rational assessment of future benefits (Thaler, 1980; Kahneman & Tversky, 1979; Arkes & Blumer, 1985). In the ULIP context, once investors have incurred substantial initial charges and administration fees, the decision to surrender forces them to explicitly recognize those losses—a psychologically aversive experience. Consequently, investors may choose to persist with the policy, even if a rational analysis would suggest that switching to an alternative investment could yield superior returns.

Beyond the sunk cost fallacy, the switching costs literature provides a complementary rationale. High perceived switching costs act as a **behavioural barrier** to exit, reducing the likelihood of termination regardless of satisfaction with the current product (Jones et al., 2000). Investors who perceive high financial penalties, anticipate psychological discomfort, and fear relational disruption are more likely to remain with their current insurer, even in the face of suboptimal performance (Colgate & Lang, 2001). Thus, perceived switching costs serve as a psychological lock-in mechanism, converting the objective cost structure into a subjective experience of entrapment that enhances retention.

It is important to note that this mediating mechanism is fundamentally **behavioural** rather than purely rational. While rational-choice models would predict that high switching costs mechanically deter exit, our framework emphasizes that it is the *perception* of these costs—shaped by cognitive biases, emotional responses, and information asymmetries—that truly drives persistency. This distinction is critical for understanding the empirical inconsistencies in prior research, as objective costs may not uniformly translate into perceived costs across investor segments.

Proposition 2: Perceived switching costs mediate the positive relationship between ULIP cost structure and investor persistency, such that higher perceived switching costs lead to greater policy retention.

The Moderating Role of InsurTech Adoption

The core novelty of our conceptual model lies in the proposition that the mediated relationship between ULIP cost structure, perceived switching costs, and persistency is **conditional** upon the level of InsurTech adoption. We argue that InsurTech adoption fundamentally alters the psychological and informational environment in which investors make persistency decisions, thereby moderating both the first stage (cost → perceived switching costs) and the second stage (perceived switching costs → persistency) of the mediation pathway.

The Moderated Mediation Hypothesis

Finally, we integrate the first-stage and second-stage moderation effects into a comprehensive **moderated mediation** hypothesis. We predict that the indirect effect of ULIP cost structure on investor persistency through perceived switching costs is contingent upon the level of InsurTech adoption. Specifically:

- When InsurTech adoption is **low**, the positive indirect effect of ULIP cost structure on persistency (via perceived switching costs) is relatively **stronger**, as both the formation of perceived switching costs

and their behavioural impact on persistency are amplified by informational opacity and the dominance of the sunk cost fallacy.

- When InsurTech adoption is **high**, the positive indirect effect is relatively **weaker**, as InsurTech attenuates the formation of perceived switching costs (first-stage moderation) and transforms the basis of persistency from cost-induced lock-in to value-induced loyalty (second-stage moderation).

However, we emphasize that high InsurTech adoption does not necessarily reduce persistency in absolute terms; rather, it reduces the *behavioural, non-rational* component of persistency. In fact, by fostering value-based engagement, InsurTech may sustain or even enhance persistency through positive mechanisms, leading to more durable and mutually beneficial long-term relationships.

Proposition 4: The indirect positive effect of ULIP cost structure on investor persistency, mediated by perceived switching costs, is moderated by InsurTech adoption. Specifically, the indirect effect is stronger when InsurTech adoption is low and weaker (but potentially transformed) when InsurTech adoption is high.

THEORETICAL AND PRACTICAL IMPLICATIONS

Our conceptual framework, which integrates ULIP cost structures, perceived switching costs, and InsurTech adoption, offers several significant contributions to theory and practice. This section delineates these implications, addressing the needs of academic researchers, insurance practitioners, regulators, and policymakers.

Theoretical Implications

Advancing the Behavioural Insurance Literature

Our framework makes a foundational contribution to the emerging field of behavioural insurance by demonstrating that persistency decisions are not purely rational, economic calculations but are profoundly shaped by cognitive biases and psychological mechanisms. While prior research has acknowledged the role of behavioral factors in insurance decisions (e.g., Eling & Kochanski, 2013; Kiesenbauer, 2012), our model provides a systematic theoretical account of *how* and *why* these biases operate in the specific context of ULIPs. By introducing perceived switching costs as a mediating mechanism and the sunk cost fallacy as its underlying behavioural driver, we move beyond descriptive accounts of behavioural anomalies toward a theoretically grounded explanatory framework.

Specifically, we extend the application of **Prospect Theory** (Kahneman & Tversky, 1979) and the **sunk cost fallacy** (Thaler, 1980; Arkes & Blumer, 1985) to the insurance domain. Our model illustrates that the front-loaded cost structure of ULIPs creates a psychological environment where loss aversion is activated, and where the cognitive pain of realizing sunk costs drives irrational commitment. This theoretical extension enriches both the behavioural finance literature and the insurance economics literature by demonstrating the applicability of behavioural constructs in a product context that has traditionally been analysed through rational-choice lenses.

Integrating Insurance Economics with Information Systems Theory

Perhaps our most significant theoretical contribution lies in the integration of insurance economics with information systems theory, specifically the **Technology Acceptance Model (TAM)** (Davis, 1989). By positioning InsurTech adoption as a critical moderator, we bridge two scholarly domains that have largely developed in isolation. This integration is timely and relevant, given the accelerating digital transformation of financial services.

Our moderated-mediation framework demonstrates that technology does not merely facilitate operational efficiency but fundamentally reshapes the psychological and informational environment in which investors make decisions. By enhancing transparency, reducing information asymmetry, and enabling cognitive

reframing through robo-advisory and behavioural nudging, InsurTech alters the very mechanisms through which cost structures influence behaviour. This insight contributes to the growing body of literature on **FinTech and InsurTech** (e.g., Stoeckli et al., 2018; Eling & Lehmann, 2018; Wang, 2020) by moving beyond descriptive accounts of technological adoption toward a nuanced understanding of technology's *moderating* effects on consumer behaviour.

Reconceptualizing Persistency as a Multi-Dimensional Outcome

Our framework challenges the traditional conceptualization of persistency as a monolithic outcome driven primarily by economic incentives. We distinguish between two qualitatively distinct forms of persistency: **cost-induced lock-in** (negative, fragile, and rooted in behavioural biases) and **value-induced loyalty** (positive, durable, and rooted in rational engagement). This distinction has important theoretical implications. It suggests that not all persistency is equally valuable to insurers. Persistency driven by cost-induced lock-in may be unstable, as investors may lapse as soon as the lock-in period expires or when a more attractive alternative emerges. Conversely, persistency driven by value-induced loyalty is more sustainable and contributes to long-term customer lifetime value.

This reconceptualization opens new avenues for theoretical development, inviting researchers to explore the antecedents, consequences, and boundary conditions of these distinct persistency types. It also aligns with the broader marketing literature on customer retention, which distinguishes between "true loyalty" and "spurious loyalty" (Dick & Basu, 1994; Jones et al., 2000).

Extending Agency Theory to the Digital Context

Finally, our framework extends **agency theory** by demonstrating how InsurTech can mitigate agency problems in insurance relationships. Traditional agency theory in insurance has focused on the misalignment of incentives between insurers, intermediaries, and policyholders, particularly concerning commission structures and mis-selling (Bhattacharya & Gursoy, 2019; Outreville, 2011). Our model suggests that InsurTech—by enhancing transparency, providing personalized advice, and reducing information asymmetry—can serve as a governance mechanism that attenuates agency conflicts. This extension enriches agency theory by incorporating technological capabilities as a contextual factor that shapes the effectiveness of contractual mechanisms.

Practical Implications

Implications for Insurance Product Design

For insurance product designers and actuaries, our framework offers critical insights into the strategic design of ULIP cost structures. While front-loaded costs have traditionally been justified as a necessary mechanism to recover acquisition expenses and ensure long-term persistency, our model suggests that this rationale is contingent upon the technological environment.

In contexts with **low InsurTech adoption**, insurers may rely more heavily on front-loaded costs and surrender penalties to achieve persistency through cost-induced lock-in. However, this strategy carries significant risks, including regulatory scrutiny (as seen with IRDAI's caps on initial charges), reputational damage, and the potential for post-lock-in mass lapses.

In contexts with **high InsurTech adoption**, insurers have greater flexibility in designing cost structures. Because InsurTech can foster value-induced loyalty through transparency, education, and personalized engagement, insurers may consider **reducing front-loaded charges** in favour of more back-ended or spread-out fee structures. This approach could enhance customer trust, reduce regulatory risk, and attract more financially sophisticated investors who are deterred by high initial costs. Furthermore, insurers can leverage InsurTech to develop **dynamic pricing models** that adjust fees based on investor engagement levels, rewarding digitally active investors with lower costs.

Implications for Customer Relationship Management (CRM) and Retention Strategies

Our findings have direct implications for CRM strategies. Traditional retention strategies have focused on financial incentives (e.g., loyalty bonuses) and contractual barriers (e.g., surrender penalties). While these remain relevant, our framework suggests that **psychological engagement** and **perceived value** are equally—if not more—important drivers of long-term persistency.

Insurers should invest in InsurTech platforms that:

- **Provide real-time, transparent visualizations** of policy performance, cost breakdowns, and projected future values.
- **Offer personalized robo-advisory services** that contextualize costs within the investor's broader financial goals and risk profile.
- **Implement behavioural nudges**—such as personalized reminders, milestone celebrations, and educational content—that foster positive engagement and reinforce the long-term value proposition.
- **Gamify the investor experience** to sustain engagement, build trust, and reduce the emotional salience of sunk costs.

Crucially, these strategies should be tailored to different investor segments. For less financially sophisticated investors who may be more susceptible to the sunk cost fallacy, enhanced transparency and education may be particularly effective in reducing anxiety and preventing irrational lapses. For more sophisticated investors, advanced analytics and personalized recommendations may be more appropriate.

Implications for Regulatory Policy

Our framework offers important insights for regulators concerned with investor protection and market stability. Regulators have historically focused on capping charges, mandating disclosure, and enforcing cooling-off periods to protect investors from excessive costs and mis-selling. While these measures are valuable, our model suggests that regulators should also consider the role of digital infrastructure in enhancing investor outcomes.

Specifically, regulators could:

- **Mandate minimum standards for digital transparency**, requiring insurers to provide user-friendly, real-time dashboards that clearly visualize cost structures, surrender penalties, and projected returns.
- **Promote the adoption of robo-advisory and educational tools** as a complement to traditional disclosure requirements, recognizing that transparency alone is insufficient if investors do not engage with or understand the information.
- **Encourage the development of industry-wide digital platforms** that enable investors to compare ULIP products, switch providers seamlessly, and access independent advice.
- **Monitor the distribution of persistency types**, distinguishing between cost-induced lock-in and value-induced loyalty, to ensure that high persistency rates are not masking consumer detriment.

By adopting a technology-informed regulatory approach, policymakers can foster a more competitive, transparent, and consumer-friendly insurance market.

Implications for InsurTech Developers and Technology Vendors

For InsurTech developers, our framework highlights the strategic importance of designing platforms that address the psychological and behavioural aspects of investor decision-making. Beyond operational efficiency and transaction processing, InsurTech platforms should be designed to:

- **Reduce cognitive load** through intuitive interfaces and simplified visualizations.
- **Enhance perceived usefulness** by demonstrating clear value in terms of financial outcomes and decision support.
- **Facilitate cognitive reframing** by presenting costs as investments in long-term value rather than as losses.
- **Enable personalization** to cater to different investor segments with varying levels of financial literacy, risk tolerance, and engagement preferences.

By incorporating insights from behavioural economics and human-computer interaction, InsurTech developers can create platforms that not only satisfy regulatory requirements but also genuinely enhance investor welfare and retention.

FUTURE RESEARCH AGENDA AND METHODOLOGY

This section outlines a comprehensive research agenda for empirically validating our conceptual framework. We discuss appropriate research designs, construct measurement, contextual considerations, and potential methodological challenges. Our goal is to provide a clear roadmap that facilitates rigorous empirical testing by future researchers.

Research Design Options

Given the multi-level nature of our conceptual model—involving individual investor perceptions, product-level cost structures, and organizational-level InsurTech adoption—a combination of research designs is recommended.

Quantitative Cross-Sectional Survey Design

A large-scale cross-sectional survey design would be appropriate for an initial empirical test of the moderated-mediation framework. Researchers could collect primary data from ULIP investors across multiple insurers and markets. The survey instrument would measure:

- **Perceived ULIP cost structure** (investor perceptions of front-loaded charges and surrender penalties)
- **Perceived switching costs** (financial, psychological, and relational dimensions)
- **Investor persistency** (self-reported retention intentions or actual lapse behaviour)
- **InsurTech adoption** (self-reported use of digital tools, robo-advisory, dashboards, etc.)
- **Control variables** (demographics, financial literacy, risk tolerance, policy tenure, investment amount)

Structural Equation Modelling (SEM) using software such as AMOS, LISREL, or SmartPLS would be employed to test the hypothesized mediation, moderation, and moderated-mediation pathways (Hayes, 2018). PROCESS macro for SPSS (Model 7 or Model 14) would be particularly suitable for testing the conditional indirect effects.

Advantages: Feasible, cost-effective, allows testing of perceptual mechanisms.
Limitations: Cross-sectional data cannot establish causality; self-reported persistency may not perfectly align with actual behaviour; common method bias risk.

Quantitative Longitudinal Design

To establish causal direction and temporal precedence, a longitudinal design is recommended. Researchers could track a cohort of new ULIP investors over a period of 3-5 years, measuring perceived switching costs and InsurTech engagement at multiple time points and recording actual lapse behaviour at the end of the

observation period. This design would provide stronger evidence for the hypothesized causal pathways and would allow researchers to distinguish between short-term and long-term persistency dynamics.

Advantages: Establishes causality; captures actual rather than self-reported persistency; enables analysis of temporal dynamics.

Limitations: Resource-intensive; high attrition rates; subject to external shocks (market volatility, regulatory changes).

Multi-Level Design Incorporating Objective Insurer Data

An ideal empirical test would combine individual-level investor data with objective, insurer-level data on ULIP cost structures and organizational InsurTech adoption. Multi-level modelling (MLM) or Hierarchical Linear Modelling (HLM) could be used to analyse how organizational-level variables (e.g., insurer's digital maturity, robo-advisory deployment) moderate individual-level relationships. This design would require collaboration with insurance companies to access proprietary data on policy terms, investor characteristics, and actual lapse events.

Advantages: Reduces common method bias; incorporates objective cost and technology data.

Limitations: Requires institutional access and data-sharing agreements; complex modelling requirements.

Mixed-Methods Approach

A mixed-methods design combining quantitative surveys with qualitative interviews or focus groups could provide deeper insights into the psychological mechanisms underlying our propositions. Semi-structured interviews with ULIP investors who have either persisted or lapsed could explore their decision-making processes, emotional responses to costs, and engagement with InsurTech platforms. Thematic analysis of interview data could complement and enrich the quantitative findings, potentially uncovering additional mechanisms or contextual factors not captured in the conceptual model.

Advantages: Provides depth and richness; enables triangulation; may reveal unexpected insights.

Limitations: Time-consuming; requires specialized qualitative research skills; findings may not be generalizable.

Operationalization and Measurement of Constructs

To facilitate rigorous empirical testing, we provide preliminary guidance on the operationalization and measurement of our core constructs. Validated scales from prior literature should be adapted to the ULIP context.

ULIP Cost Structure (Independent Variable)

ULIP cost structure can be operationalized as either an **objective** or **perceived** measure:

- **Objective measure:** Extracted from actual policy documents, capturing the percentage of initial allocation charges, annual administration fees, fund management charges, and surrender penalties (measured as a percentage of fund value or premium paid). This measure would be collected from insurer records or public disclosure documents.
- **Perceived measure:** Captured through investor self-reports using adapted items from prior research on fee perceptions (e.g., Walsh, 2002). Sample items: "The initial charges on my ULIP policy are substantial"; "The surrender penalties on my policy are high"; "The fee structure of my ULIP is complex and difficult to understand." Responses recorded on a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree).

Contextual Considerations and Boundary Conditions

Our conceptual framework is intended to be generalizable across markets, but researchers should consider the following contextual factors that may influence the observed relationships:

- **Regulatory environment:** Markets with strict caps on charges (e.g., India) may exhibit weaker cost-perceived switching cost relationships compared to less regulated markets. Researchers should control for regulatory differences in cross-country studies.
- **Investor financial literacy:** Less financially literate investors may be more susceptible to the sunk cost fallacy and less likely to benefit from InsurTech transparency. Researchers should test whether financial literacy moderates the InsurTech effect.
- **Cultural factors:** Markets with high uncertainty avoidance (e.g., Japan, Germany) may exhibit stronger psychological switching costs. Cross-cultural validation would enhance the generalizability of the framework.
- **Market maturity:** In emerging markets with rapidly growing insurance penetration, the dynamics may differ from mature markets with established customer relationships.
- **Product heterogeneity:** Different types of ULIPs (e.g., aggressive growth vs. conservative balanced funds) may influence cost perceptions and persistency decisions.

Methodological Considerations and Mitigation Strategies

To ensure robust empirical findings, researchers should address the following methodological challenges:

- **Common Method Bias:** To mitigate the risk of common method variance in cross-sectional survey designs, researchers should employ procedural remedies (e.g., temporal separation of predictor and criterion variables, anonymous responses, psychologically separated scales) and statistical remedies (e.g., Harman's single-factor test, common latent factor correction, marker variable technique) (Podsakoff et al., 2003).
- **Endogeneity Concerns:** To address potential endogeneity—where unobserved factors may influence both perceived switching costs and persistency—researchers should consider instrumental variable approaches or longitudinal designs that establish temporal precedence. Policy tenure or regulatory changes may serve as plausible instruments.
- **Measurement Validity:** To ensure the validity of adapted scales, researchers should conduct confirmatory factor analysis (CFA), assess composite reliability ($CR > 0.70$), and examine average variance extracted ($AVE > 0.50$). Discriminant validity should be established by comparing AVE to squared inter-construct correlations (Fornell & Larcker, 1981).
- **Sample Representativeness:** Researchers should strive for diverse and representative samples to enhance external validity. Where sampling biases are unavoidable, they should be explicitly acknowledged and discussed.
- **Statistical Power:** For moderated-mediation models, researchers should conduct a priori power analyses to determine the minimum sample size required to detect hypothesized effects (Fritz & MacKinnon, 2007; Preacher et al., 2007).

Proposed Analytical Framework

We recommend the following analytical approach for testing our propositions:

1. **Descriptive Analysis:** Examine means, standard deviations, and bivariate correlations among all study variables.

2. **Measurement Model Validation:** Conduct CFA to confirm the factor structure, reliability, and validity of all multi-item scales.
3. **Test of Mediation (P1 and P2):** Use SEM or PROCESS (Model 4) to test the indirect effect of ULIP cost structure on investor persistency through perceived switching costs. Bootstrap confidence intervals (5000 resamples) should be used to assess the significance of the indirect effect.
4. **Test of Moderation (P3a and P3b):** Use SEM with interaction terms or PROCESS (Model 1) to test the moderating effects of InsurTech adoption on the IV → MV and MV → DV paths separately.
5. **Test of Moderated Mediation (P4):** Use PROCESS (Model 7 or Model 14) or SEM with conditional indirect effects to test whether the indirect effect varies across levels of InsurTech adoption. The Johnson-Neyman technique should be used to probe the regions of significance for the moderator.
6. **Supplementary Analysis:** Conduct multi-group analyses (e.g., low vs. high InsurTech groups), test alternative model specifications, and examine the robustness of findings to control variables and potential endogeneity.

CONCLUSION

This conceptual paper develops a theoretically grounded framework explaining the relationship between ULIP cost structures, perceived switching costs, investor persistency, and the moderating role of InsurTech adoption. Drawing on behavioural finance, agency theory, and the Technology Acceptance Model, the framework demonstrates that investor persistency is shaped not only by objective costs but also by behavioural biases, particularly the sunk cost fallacy. It further highlights how InsurTech adoption can moderate these effects by enhancing transparency, engagement, and perceived value, thereby shifting persistency from cost-driven lock-in to value-driven loyalty.

The framework contributes to the literature by integrating perspectives from insurance economics, behavioural finance, and information systems while offering practical implications for insurers, policymakers, and product designers. It also provides a foundation for future empirical research by proposing testable relationships and directions for validation across different contexts. As the insurance industry undergoes rapid digital transformation, understanding the interaction between product design, investor behaviour, and technology will be essential for improving customer retention and building sustainable, customer-centric insurance ecosystems.

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