



PARAMETRIC INSURANCE: UNLOCKING THE NEXT FRONTIER OF INSURANCE

Abstract

India's life insurance penetration has stagnated at 2.7% despite a growing middle class and rapid digital advancements. Growth has been hindered by documentation barriers, operational inefficiencies, and trust deficits in traditional indemnity-based models. Parametric life insurance (PLI) offers a transformative solution by automating payouts based on predefined, verifiable triggers such as natural disasters or health crises, ensuring immediate liquidity for policyholders. This white paper outlines an IT-driven approach to PLI, emphasizing robust data validation layers, smart contract execution, and frictionless disbursement through India Stack. It addresses challenges such as basis risk through hyper-localized data and hybrid models, while highlighting commercial benefits including reduced operating costs, scalability, and brand differentiation. Effective distribution strategies include leveraging digital platforms, last-mile networks, and contextual bundling with loans or government programs. Fraud risk management shifts focus on data integrity and clean onboarding processes. By adopting PLI, insurers can unlock financial inclusion for underserved populations through a phased roadmap for pilot implementation and scaling.



Strategic roadmap for parametric life insurance in the Indian market

1. The problem statement: the 2.7% stagnation

Despite significant digital progress and a growing middle class, India's life insurance penetration has plateaued at approximately 2.7% as of 2025, according to the IRDAI. The traditional indemnity-based model is facing a scalability wall due to:

- **The documentation barrier:** In rural and semi-urban India, proving a loss through formal death certificates and legal heir documentation can take weeks or months.
- **Operational friction:** The high cost of investigating claims in remote geographies

makes low-ticket “sachet” insurance economically unviable for major carriers.

- **The trust deficit:** For lower-income segments, uncertainty around payout timing and approval is a major deterrent.

2. The solution: transitioning to parametric life insurance (PLI)

Parametric life insurance represents a fundamental shift in philosophy. Instead of paying out based on an assessed loss, PLI pays based on the occurrence of a predefined, objective event (a trigger).

The value proposition is simple: if a catastrophic event (e.g., a major flood, earthquake, or localized health crisis) occurs and is verified by an independent data source, the payout is automatically

triggered. This provides immediate liquidity to families during their time of greatest need—often before a formal claim is filed.

3. Engineering the product: an IT-led approach

To capture this emerging market, IT organizations must move beyond traditional policy administration systems and build a “parametric engine” characterized by three core pillars:

I. The data oracle and validation layer

The backbone of PLI is data integrity. IT teams must architect an oracle layer—a sophisticated middleware framework that pulls data from trusted third parties such

as:

- **Climate data:** Real-time feeds from the India Meteorological Department (IMD) or satellite imagery from ISRO.

· **Public health data:** Monitoring district-level mortality or hospitalization surges through the National Health Authority (NHA).

· **IoT integration:** In industrial sectors, leveraging localized sensors to trigger payouts for high-risk manual labor roles.

II. Smart contract execution

By utilizing smart contracts (on a private ledger or highly automated rules engine),

insurers can minimize claims department involvement and limit manual intervention to exceptional cases.

· **Zero-touch processing:** When the oracle confirms the trigger, the system matches the event to the policyholder's geolocation and initiates an instant payout.

· **Transparency:** Policyholders can track trigger status through a simple mobile interface, creating a level of visibility that traditional insurance lacks.

III. Frictionless disbursement through India Stack

The product must be UPI-native. By integrating with the Aadhaar-enabled payment system (AEPS), insurers can ensure that the moment a trigger threshold is reached, funds are pushed directly to the beneficiary's bank account.

This "push" rather than "pull" mechanism becomes a powerful enabler of financial inclusion.

4. Addressing basis risk (the strategic challenge)

The primary critique of parametric insurance is basis risk—the possibility that an individual suffers a loss, but the trigger threshold is not officially met (e.g., a flood occurs, but the nearest sensor is 5 km away

and does not register qualifying levels).

IT-driven mitigation strategies

· **Hyper-localization:** Using AI to interpolate data between sensors to create high-resolution risk maps.

· **Hybrid models:** Designing products where a parametric trigger provides immediate partial liquidity (e.g., 20% of the sum assured), while the remaining 80% follows a simplified indemnity process.

5. Business impact and ROI

Implementing a parametric life framework offers three distinct commercial advantages:

1. Significant operating expense

reduction: Automation can reduce operating costs per policy by up to 70%. While expenses related to climate

and health data procurement, fintech and e-commerce integrations, last-mile business correspondent networks, and IoT infrastructure remain, the overall cost structure can support ₹100 premium products at commercial viability.

2. Brand differentiation: Being first to

market with "instant claims" creates a strong competitive advantage in rural and semi-urban distribution.

3. Scalability: A parametric system can handle 10 or 10 million claims simultaneously without increasing headcount or administrative strain.



6. Distribution of parametric products in the Indian market

Effective distribution of parametric life insurance products requires a shift from traditional agency models to technology-enabled, trust-based channels. Key approaches include:

· **Digital micro-distribution partners:**

Leveraging mobile apps, UPI-based microinsurance platforms, and embedded insurance models through fintech apps and e-commerce platforms. These platforms already possess demographic and geolocation data needed to match customers with relevant parametric triggers, enabling frictionless onboarding.

· **Last-mile distribution through business correspondent (BC) networks:**

BC agents act as local educators, explaining parametric triggers and building trust within communities.

· **Partnerships with cooperatives**

and self-help groups (SHGs): SHGs, farmer producer organizations (FPOs), cooperatives, and microfinance institutions play a crucial role in driving community-based adoption and insurance awareness across rural India.

· **Contextual bundling with loans, agri-inputs, gig platforms, or migrant welfare**

schemes: Ride-sharing, food delivery, freelance marketplaces, logistics firms, and manufacturing units can distribute parametric life coverage as part of employment benefits, particularly for hazardous occupations where measurable triggers such as heatwaves or natural disasters apply.

· **Bundling with government or NGO**

programs: Parametric products align well with livelihood and disaster-relief programs in disaster-prone regions, enabling rapid reach to vulnerable populations without requiring extensive insurer infrastructure.



7. Fraud risk management in parametric life insurance

Although parametric insurance reduces subjective claim assessment, certain fraud risks remain. Key mitigation strategies include:

· **Geolocation manipulation:** Prevented through GPS locking, Aadhaar address verification, and time-stamped coordinates.

· **Trigger tampering in IoT devices:**

Controlled through encrypted hardware and cross-validation with independent datasets.

· **Mass enrollment spikes before predicted climatic events:** Managed through anomaly detection models.

· **Identity fraud:** Reduced through Aadhaar, PAN, and DigiLocker-based real-time KYC processes.

Why fraud management differs for parametric products

Traditional insurance fraud typically involves manipulating claims documents, death certificates, or medical reports.

Parametric insurance removes these friction points because payouts are tied to verifiable external events rather than individual loss assessments.

As a result, fraud prevention shifts toward strong onboarding controls—ensuring clean identity, verified location, and validated eligibility—rather than post-claim investigation. Operational focus moves from manpower-intensive claims departments to robust data governance and clearly defined trigger frameworks.



8. Conclusion and next steps

The future of insurance in India is not just digital—it is autonomous. Parametric life insurance offers one of the fastest pathways to protecting the “missing middle.”

Recommended action plan

- **Phase 1:** Identify a specific geo-hazard (e.g., cyclone-prone coastal regions) for a pilot.
- **Phase 2:** Establish API partnerships with at

least two independent data providers.

- **Phase 3:** Launch a sachet PLI product through a digital-first distribution partner to test the automated payout engine.

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