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EDITORIAL

This issue of the Journal of the Insurance Institute of India is a non-theme based issue. Topics are left to the discretion of the authors. The result is a wide variety of topics are discussed.

There has been a lot of talk about the cost of procurement of insurance. The chairman of IRDAI has also spoken about it emphasizing the need for control over intermediation costs. A detailed analysis has been made about intermediation in an article dealing with the subject.

Impact of climate change, insights on health insurance, climate risk insurance, are some of the topics on which authors have provided deep insights.

Areas like parametric insurance, implementation of Ind AS, cyber security insurance, ESG, insurance for space are some of the less talked about and emerging areas on which there are analytical articles.

A wide spectrum of subjects have been dealt with, in this issue. The Journal has been providing a platform for a wide range of thoughts to be expressed with relevance to the insurance industry and thereby providing value to the reader. We trust it would catch your interest.

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When Too Much Intermediation Hurts: Rethinking Distribution and Acquisition Costs in Indian Insurance



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Abstract

Insurance products are inherently complex, long-term, and uncertain in terms of benefits. These characteristics create market imperfections that heighten risks for both insurers and consumers. Intermediaries often perform a dual role as advisors and sales agents, creating conflicts of interest that can result in mis-selling, poor product suitability, and weak policy persistency.

Distribution strategies significantly influence insurers' cost structures and risk profiles. Agency-led models involve high recruitment, training, and retention costs, compounded by high agent attrition and regulatory requirements for periodic certification. Bancassurance, often perceived as cost-efficient, is also expensive due to high upfront commissions, revenue-sharing arrangements, and additional servicing and infrastructure fees. Product complexity further escalates costs. Low persistency exacerbates the problem, as insurers front-load expenses to recover

acquisition costs quickly, creating a vicious cycle of high charges, poor customer value, and continued lapses. This article is an attempt to investigate the opportunities for the reduction of customer acquisition/distribution costs in insurance.

Keywords

Spin Selling, Distribution Costs, Distribution Strategies, Agency Model, Bancassurance.

Introduction

Sales and distribution form the backbone of the Indian life insurance industry, shaping not only market reach but also cost structures, customer outcomes, and financial stability. Historically, the agency channel has dominated insurance distribution in India. Since the era of LIC's monopoly, agents have played a central role in customer acquisition, and even today, more than one million agents operate across the country. Despite liberalisation in 2000 and the introduction of alternative channels, agency distribution continues to account for nearly 70%

of new business, underscoring its enduring importance.

Alongside agency distribution, bancassurance has emerged as a major channel, especially for private insurers. Leveraging banks' extensive branch networks and existing customer relationships, bancassurance contributes roughly 20–30% of private insurers' business volumes. Other channels—such as corporate agents, insurance brokers, direct marketing, and digital platforms—have expanded gradually, though channels like Individual Financial Advisors (IFAs) and telemarketing remain underdeveloped. While multi-channel distribution has become the norm, each channel introduces distinct risks that insurers must manage carefully.

High distribution costs have emerged as one of the biggest barriers to improving insurance affordability and penetration in India. A large share of premiums is absorbed by commissions and intermediary expenses rather than funding risk cover or claims. Even though retail insurance policies are exempt

from GST (Goods & Services Tax), the benefits to consumers remain limited because high distribution and operating costs offset tax relief.

The impact of these costs is clear across various product categories, including credit-linked life insurance, traditional savings plans, motor insurance, and retail health insurance. First-year commissions in traditional life insurance products often range from 50% to 70%, significantly reducing policyholder returns. Bancassurance costs are similarly high, despite banks' access to captive customer bases.

The Economic Survey 2025–26 and the Reserve Bank of India have both highlighted that high acquisition and distribution costs are eroding operational efficiency and limiting the benefits passed on to consumers. Despite premium growth from approximately ₹8.3 lakh crore to ₹11.9 lakh crore, insurance penetration has stagnated at around 3.7% of GDP, indicating that growth is concentrated among existing customers rather than expanding coverage.

Regulatory Response and the Evolving Role of IRDAI

Recognising these challenges, the Insurance Regulatory and Development Authority of India (IRDAI) has initiated reviews of commission structures and expense norms. In response to sharply rising commission expenses—particularly first-year and single-premium payouts—IRDAI is considering an overhaul of commission norms by 2026. Proposed reforms include

tighter caps, expense-based limits, and a shift toward incentives linked to policy persistency and service quality rather than sheer sales volumes (Sengupta, 2026).

Regulators are expected to adopt a phased and consultative approach to avoid disrupting distribution networks while addressing cost pressures. Parallel regulatory developments, including amendments under the Sabka Bima Sabki Raksha Bill, 2025, further emphasise compliance, transparency, and accountability across distribution intermediaries. This bill extends insurance coverage to every Indian citizen, particularly those belonging to the marginalised sections of society. This bill allows increasing the limit of Foreign Direct Investment in the Indian Insurance Sector from 74% to 100% to provide better services and attract greater investment.

Risk-Based Capital (RBC) and Distribution Strategy

The adoption of a Risk-Based Capital (RBC) framework has significant implications for insurers' distribution strategies. Under RBC norms, insurers must hold capital commensurate with the risks embedded in their operations, including distribution-related risks such as mis-selling, lapse risk, operational failures, and reputational damage.

For Indian insurers, moving toward an RBC regime would enable more accurate risk pricing, better capital allocation, and stronger incentives to improve sales quality and governance. However, persistent

mis-selling and mass surrenders can significantly increase capital strain, undermining the intended benefits of RBC adoption.

Distribution Reforms to Improve Value and Stability

Several reforms could effectively enhance customer value while lowering financial and capital risks. Smoothing or capping commissions over the policy duration, rather than front-loading payouts, can reduce mis-selling incentives and improve persistence. Expanding standardised, plain-vanilla products—such as Saral Jeevan Bima and Arogya Sanjeevani—can cut selling costs and boost transparency. Saral Jeevan Bima is a standard pure term life insurance policy with consistent terms across all insurers. It provides a straightforward death benefit ranging from Rs 5 lakhs to Rs 25 lakhs. Arogya Sanjeevani is an IRDAI-mandated, standard health insurance policy offering affordable, basic hospitalisation coverage up to ₹5 lakhs with identical terms nationwide.

Clear disclosure of commissions and expense components can empower consumers and exert pricing discipline. Rewarding agents for long-term policy survival and servicing quality aligns distributor incentives with customer outcomes. Scaling assisted-digital models can significantly reduce costs while maintaining advisory support. Linking expense norms to persistency and claims performance rather than premium growth can encourage efficiency.

Product-Wise Distribution Cost and Risk Profile

Different insurance products exhibit markedly different distribution cost structures and risk implications:

- **Term insurance:** Low-cost, pure protection; best value, especially through online or assisted-digital channels.
- **ULIPs (Unit-Linked Insurance Policies):** Moderate but front-loaded costs; suitable only for disciplined long-term investors and prone to mis-selling risk.
- **Traditional savings plans:** Highest distribution costs and lowest value; poor inflation-adjusted returns.
- **Credit-linked insurance:** High and opaque commissions; convenient but poor value.
- **Health insurance:** Moderate commissions; value-driven more by claims ratios than distribution costs.
- **Motor insurance:** Low distribution costs; digital dominance limits overcharging.
- **Pension and annuity products:** High costs, low flexibility; best used cautiously for longevity protection.

Insurance in India is not inherently expensive because risks are high, but because the cost of selling insurance is high. Unless distribution models shift from commission maximisation toward customer-centric, risk-aware value creation—supported by a robust RBC (Risk-based Capital) framework—regulatory relief

measures such as tax exemptions will have only a limited impact. A well-governed, cost-efficient, and risk-sensitive distribution system is therefore essential not only for improving affordability and penetration but also for ensuring the long-term financial resilience of India's life insurance sector.

Table 1: New business acquisition (2024-25)

Sl. No.	Type of Intermediary	Individual New Business			Group New Business		
		Private Sector	Public Sector	Industry	Private Sector	Public Sector	Industry
1	Individual Agents	22.80	93.86	49.44	1.40	2.07	1.87
2	Corporate Agents – Banks	49.66	4.13	32.59	21.28	0.10	6.23
3	Corporate Agents – Others	3.31	0.07	2.10	17.29	0.01	5.01
4	Brokers	5.81	0.23	3.72	7.28	0.24	2.28
5	Direct Business	17.09	0.00	10.68	52.45	97.58	84.52
6	Micro Insurance Agents	0.00	0.17	0.07	0.26	0.00	0.07
7	Common Service Centres	0.02	0.14	0.06	0.00	0.00	0.00
8	Web Aggregators	0.02	0.00	0.01	0.00	0.00	0.00
9	Insurance Marketing Firm	0.21	0.86	0.46	0.04	0.00	0.01
10	Online	1.07	0.53	0.87	0.00	0.00	0.00
11	Point of Sales (PoS)	0.01	0.00	0.01	0.00	0.00	0.00
	Total Business	100.00	100.00	100.00	100.00	100.00	100.00

Source: Annual Report of IRDA 2024-25

Table 1 shows a strong reliance on commission-heavy intermediaries in life insurance, especially individual agents and bank-led corporate agents, which directly affect distribution costs. In a new individual business, individual agents dominate the public sector life insurance market, while bancassurance makes up nearly half of private sector new

business, both typically incurring higher acquisition and commission costs. Although direct business channels are important in group insurance, their contribution to retail individual business remains limited, indicating that digital and direct models that are cost-efficient have not yet replaced traditional intermediaries on a large scale. The

small role of online platforms, web aggregators, and point of sales channels further explains why life insurance distribution costs in India stay high, as insurers still depend on sales methods with high upfront commissions, increasing acquisition costs and putting upward pressure on premiums.

Table 2: Distribution Channels in General Insurance

Distribution Channel	PSUs	Private – excluding SAHI (Standalone Health Insurance)	Specialised	Total
1. Individual Agents	31.37	14.64	0.00	19.96
2a. Corporate Agents – Bank	0.59	8.04	0.01	5.08
2b. Corporate Agents – Others	0.32	5.79	0.00	3.61
Corporate Agents (Total)	0.91	13.83	0.01	8.69
3. Brokers	34.90	45.63	3.15	40.08
4a. Direct Business – Internet	0.41	1.82	0.59	1.27
4b. Direct Business – Other than Internet	28.72	19.51	10.03	22.38
Direct Business (Total)	29.13	21.33	10.63	23.65
5. Micro Insurance Agent	0.01	0.01	0.10	0.01
6. Others	3.68	4.55	86.11	7.61
Grand Total	100	100	100	100

Source: Annual Report of IRDA 2024-25

Table 2 highlights a clear dominance of intermediated distribution channels in India's general insurance business, particularly brokers and individual agents, which together account for a substantial share of total premiums. Brokers alone contribute over 40% of total premiums, with an especially high dependence among private insurers, indicating a strong reliance on commission-based

intermediaries. While direct business channels (internet and non-internet combined) account for about 24% of total premiums, the internet-based share remains marginal, suggesting that digital channels have not yet meaningfully displaced traditional intermediaries. This distribution mix has important cost implications: heavy dependence on agents and brokers tends to inflate acquisition and distribution expenses, which are ultimately passed on to policyholders through higher premiums. In contrast, the relatively limited contribution of digital and direct channels explains why distribution costs in Indian insurance remain elevated, reinforcing policy concerns—such as those highlighted in recent Economic Surveys—about the need to strengthen low-cost, technology-enabled distribution models to improve affordability and penetration.

Table 3: Share of Premium among Distribution Channels

Insurance Type	Distribution Channel	Share of Premium (%)	Notes / Highlights
Life Insurance – Individual New Business	Individual Agents	49.44	Public: 93.86%, Private: 22.80%
	Corporate Agents	34.69	Private: 52.97%, Public: 4.20%
	Direct Sales	10.68	Private: 17.09%, Public: 0%
	Brokers	3.72	Slight increase from 3.06%

Insurance Type	Distribution Channel	Share of Premium (%)	Notes / Highlights
	Online Sales	0.87	Up from 0.65%
	Micro Insurance Agents / Common Service Centres / Insurance Marketing Firms / Point of Sales	0.60	Up from 0.42%
Life Insurance – Group New Business	Direct Sales	84.52	Private: 52.45%, Public: 97.58%
	Corporate Agents – Banks	21.28	Private; Public: 0.10%
	Individual Agents	2.07	Public; Private: 1.40%
	Brokers	2.28	Up from 2.11%
General Insurance	Brokers	40.08	Public: 34.90%, Private: 45.63%
	Direct Sales	23.65	Public: 29.13%, Private: 21.33%
	Individual Agents	19.96	Public: 31.37%, Private: smaller share
	Corporate Agents	8.69	Combined sector contribution
	Others	7.62	Minor channels
Health Insurance	Brokers	32	Group Health: 53%
	Individual Agents	31	Individual Health: 72%
	Direct Sales	25	The entire government business is included
	Bancassurance	8	Minor channel
	Online Sales	2	Minor channel

Source: Annual Report of IRDA 2024-25

The data shows that insurance distribution in India continues to be largely intermediary-driven, but the dominant channel varies significantly by product type and insurer profile. Complex products that require explanation and trust rely more on agents and brokers, while standardised and institutional products

gravitate toward direct or bank-led channels. Public and private insurers also display clear differences in distribution strategy, reflecting legacy structures versus cost-efficiency priorities.

In individual life insurance, individual agents remain the primary channel, contributing nearly half of new business premiums. This dominance is largely driven by public insurers, where agents account for an overwhelming majority of sales, highlighting dependence on traditional, relationship-based selling. Private insurers, however, rely more heavily on corporate agents and direct sales, signalling a deliberate shift toward scalable and lower-cost distribution. Although online and alternative channels, such as point of sales and common service centres, are growing, their contribution remains marginal, indicating early-stage digital adoption rather than widespread transformation.

Group life insurance presents a stark contrast. Direct sales account for the vast majority of new business premiums, particularly for public insurers. This reflects the institutional and standardised nature of group products, where purchasing decisions are centralised and driven by pricing and coverage terms rather than individual persuasion. Banks acting as corporate agents play a supplementary role, mainly for private insurers, while brokers and individual agents have limited relevance.

In general insurance, brokers emerge as the most significant channel, especially for private insurers. This reflects the complexity of commercial

and speciality risks that require advisory support, customisation, and negotiation. Public insurers, in contrast, continue to depend more on individual agents and direct sales, consistent with their established field-force models.

Health insurance distribution is more balanced across channels. Brokers dominate group health business, while individual agents lead individual health sales. Direct sales form a sizable share due to government and mass health schemes, whereas bancassurance and online channels remain minor.

The data indicate that complexity increases reliance on intermediaries, while scale and standardisation favour direct distribution. Private insurers appear more aggressive in optimising channel costs, while digital channels offer long-term potential but have yet to materially disrupt traditional models.

SPIN (Situation, Problem, Implication, and Need-Payoff) Selling

SPIN selling is a consultative sales framework designed for complex, high-involvement products where customer needs are not immediately clear, and purchase decisions carry significant risk. The model structures sales conversations around four types of questions: Situation, Problem, Implication, and Need-Payoff. Rather than pushing product features or competing on price, SPIN helps salespeople uncover latent needs and guide customers toward recognising the value of a solution. Developed by **Neil Rackham** through research

covering more than 35,000 sales calls, the framework demonstrated that success in complex sales depends more on effective questioning and diagnosis than on persuasion alone. This makes SPIN particularly relevant for insurance, where products are intangible, long-term, and require careful assessment of risk and suitability.

SPIN selling can help reduce distribution costs in insurance, especially in complex segments, by improving sales efficiency and lowering hidden acquisition costs. A consultative, need-driven approach increases the likelihood that policies sold are appropriate and valued, leading to higher conversion rates, lower mis-selling, and reduced policy lapses or early surrenders. These factors are major but often overlooked contributors to distribution expense. By focusing on fewer, higher-quality interactions, insurers can reduce repeated prospecting, excessive commissions, complaint handling, and rework costs associated with cancellations and grievances. Over time, this improves both cost efficiency and customer outcomes.

The SPIN method is most effective in insurance sectors characterised by complexity, high financial stakes, and consultative decision-making. In such contexts, customers rarely decide based on price alone; they require guidance to understand risks, long-term implications, and coverage adequacy. SPIN enables insurers to shift from transactional selling to problem diagnosis, positioning insurance as a solution to clearly articulated needs.

In life insurance, particularly protection-oriented and savings-linked products such as term plans, endowments, Unit-Linked insurance policies, and retirement solutions, SPIN selling is highly effective. These products involve long-term commitments and emotional considerations around family security and income stability. Situation and Problem questions help assess existing coverage and financial preparedness, while Implication questions highlight the consequences of underinsurance. Need-Payoff questions, then frame life insurance as a critical tool for protection and long-term planning.

Health insurance is another strong fit for SPIN selling across retail and group segments. Many customers underestimate healthcare inflation, exclusions, and out-of-pocket expenses. SPIN questioning reveals coverage gaps and financial vulnerabilities, shifting the discussion away from premium comparison toward adequacy and effectiveness. This supports the sale of comprehensive solutions such as family floaters, top-ups, and employer-sponsored health plans.

SPIN selling is particularly powerful in commercial and corporate general insurance, including property, fire, engineering, marine, and liability covers. These business-to-business products require detailed risk assessment and alignment with business objectives. Decision-makers are concerned with asset protection, operational disruption, and regulatory compliance—areas well suited to Implication and

Need—Payoff questioning. Liability insurance, including professional indemnity, product liability, and cyber risk, benefits especially from SPIN, as these risks are abstract and infrequent but potentially catastrophic.

The framework is also effective in group insurance and employee benefits, such as group life, group health, and workers' compensation. Here, the human resources and finance teams evaluate insurance as a strategic tool for compliance, employee retention, and productivity. SPIN links insurance design to these broader objectives, strengthening the value proposition.

SPIN selling aligns best with insurance segments where diagnosis, customisation, and long-term value creation are central. By moving customers from price-centric decisions to a deeper understanding of risk and protection needs, SPIN

supports more sustainable sales and lower distribution costs in complex insurance markets.

The way forward

Insurance is often “sold, not bought,” so insurers rely heavily on agents and intermediaries, driving up distribution and acquisition costs that form a large share of premiums. These costs can be reduced without hurting sales through smarter models. The Insurance Regulatory and Development Authority of India's (IRDAI) structural policy framework aims to improve distribution and reduce costs. Instead of uniform commission structures, distributor payouts must be linked to measurable customer value, active policy servicing, and rural market penetration. Aggregate limits must be enforced on the combined sum of commissions, rewards, and hidden incentives under Section 40 to prevent competitive bidding

for bancassurance partners. Single distributors must be allowed to sell life, general, and health products simultaneously. The company boards must be made accountable to manage the overall Expenses of Management within the statutory 30–35% caps.

Digital-first and embedded insurance enable direct, low-commission sales with faster onboarding. Data-driven targeting replaces mass selling with personalised outreach, enhancing trust, improving conversion and lowering acquisition costs. Self-service tools and chatbots shift routine education away from agents, who can focus on complex, high-value cases. Performance-based agent incentives, partnerships with banks, fintech companies, and employers, and selective use of SPIN selling further reduce costs while supporting scalable, affordable growth. 

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Parametric Insurance: Global Practices and Emerging Applications in India



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Abstract

In comparison to traditional loss assessment, parametric insurance is a risk transfer mechanism that allows faster payouts once the predefined triggers are met. This paper identifies the best practices across the world in parametric insurance including data fusion and advanced analytics, sovereign risk pooling, ESG linked and nature-based insurance, digitalisation and smart contracts, and regulatory sandbox models. This study also discussed

some applications of parametric insurance for Indian insurance sector with reference to heatwave insurance for the informal sector, urban flood risk management, and agricultural insurance. This study also looks into regulatory and implementation aspects of parametric insurance in India. The results point out that parametric insurance have a huge potential in India. However, the success of parametric insurance will be conditional on regulatory support, robust data systems, and adequate institutional coordination.

Keywords

Parametric Insurance, Climate Risk, Agricultural Insurance, Disaster Risk Financing.

1. Introduction

The limitations of traditional indemnity-based insurance models are shown through rising frequency and intensity of climate related risks, particularly, floods, droughts, and heatwaves. The traditional insurance systems usually cause delays in payment because of the time taken

to assess claims. Therefore, the parametric insurance has received international attention due to accelerated settlement of claims. Parametric insurance operates under set triggers like amount of rainfall, wind velocity and temperatures. Payouts are automatically disbursed once the set triggers are met without the need for loss verification. Therefore, parametric insurance suits disaster risk management and climate risk insurance. Insurers and governments around the world are moving towards the use of parametric insurance models to improve financial resilience. The parametric insurance solutions can be implemented in India due to increasing exposure to climate risk and growing digital infrastructure.

2. Scope and Significance of Study

The paper is concerned with the importance of parametric insurance as a new instrument in risk management. It explores the best parametric insurance practices in the world and applies parametric insurance to heatwave insurance, urban flood risk management, and agriculture insurance. The importance of this study is that it covers climate risk and disaster funding. It further explores innovative insurance solutions for the vulnerable populations.

3. Research Objectives

- 1) To determine the world best practices in Parametric insurance.
- 2) To discuss how parametric insurance can be applied to

heatwave insurance, urban flood risk management, and agriculture insurance.

- 3) To address the regulatory and implementation issues of Parametric insurance in India.

4. Literature Review

In the literature, it is evident that parametric insurance has increasingly become significant in dealing with climate and disaster related risks. World Bank (2020) states that parametric insurance provides faster payouts and improves financial resilience in comparison to traditional insurance options. On the same note, the Organisation for Economic Co-operation and Development (2023) points out that digital technologies and smart contracts can increase transparency and efficiency. World Bank (2017) shows how sovereign risk pooling mechanisms can reduce costs and improve disaster response. Munich Re (2024) highlight the need to integrate advanced analytics, artificial intelligence, and multi-source data for improving the accuracy of parametric triggers. Nature based insurance solutions are also coming into focus globally. The Nature Conservancy (2022) show how parametric insurance can support ecosystem restoration. Additionally, Financial Conduct Authority (2022) in United Kingdom is experimenting with new insurance models through sandbox frameworks. Although the global community is rapidly shifting to the parametric insurance model, there is limited research on how to integrate parametric insurance

with existing schemes such as the Pradhan Mantri Fasal Bima Yojana. Additionally, there is limited research on how regulatory frameworks and digital infrastructure can scale parametric insurance models. This research paper fills the gap as it examines global parametric insurance practices as well as its application to the insurance sector in India in relation to heatwave insurance, urban flood risk management and agriculture insurance.

5. Research Methodology

The proposed study employs a descriptive, qualitative, and a case study research design to analyse the global best practices in a parametric insurance and comment on its relevance to the Indian scenario. The descriptive approach presents key concepts, global trends, and parametric insurance applications with a qualitative approach focusing on in depth analysis of secondary sources such as policy reports, industry publications, and academic literature. Selected case studies such as nature-based insurance models was used to illustrate how parametric insurance operates in real world scenarios. This study is based entirely on secondary sources such as reports and publications from World Bank, Organization for Economic Cooperation and Development, and Munich Re. Hence, this comprehensive research design allowed for an application-oriented analysis linking global best practices with implementation possibilities in Indian insurance sector.

6. Discussion of Research Objectives

6.1 To determine the world best practices in Parametric insurance.

The global best practices in Parametric insurance are data fusion and advanced analytics, sovereign risk pooling, ESG linked and nature-based insurance, digitalisation and smart contracts, and regulatory sandbox. All of them are discussed as follows: -

6.1.1 Data Fusion and Advanced Analytics

Multi-source data integration is the key trend noticed in the global parametric insurance. The chances of error were higher in earlier models which often relied on single weather station or data point. To get more accurate and complete picture of an event, insurers now combine data from satellites, ground-based weather station, and climate models. For instance, large scale events such as cyclones or flood can be tracked through satellite images, while local data for rainfall or river levels can be provided through ground sensors. On the other hand, climate models can help in predicting how events can develop over time. Thus, using multi source data can reduce the mismatch chances between actual loss and pay out (basis risk). Synthetic Aperture Radar (SAR) is one of the important technologies which can detect floods during clouds or heavy rainfall. SAR is useful because normal satellite images can often fail during bad weather conditions. Furthermore,

insurers now use artificial intelligence (AI) and machine learning (ML) for analysing huge amount of data with speed. AI and ML are able to detect patterns, make better predictions, and create superior insurance triggers. Consequently, the emphasis of parametric insurance management has moved beyond financial capacity (underwriting capacity) to superior data systems and analytical capacities (Munich Re, 2024).

6.1.2 Sovereign Risk Pooling

With reference to disaster risk financing, one of the most important applications of parametric insurance is sovereign risk pooling. Under this model, a common insurance pool is formed by multiple countries. This helps in risk sharing instead of managing risks individually. Caribbean Catastrophe Risk Insurance Facility and African Risk Capacity are examples of regional initiatives which use parametric insurance to protect against natural disasters such as hurricanes, earthquakes, and droughts. Diversification of risk is one of the major advantages of risk pooling. The overall risk is spread across the pool, reducing the cost of insurance for participating countries. Furthermore, it helps to negotiate better terms with global insurers. The speed of pay-outs is another benefit of sovereign risk pooling. Since, parametric insurance is based on predefined triggers, funds are received quickly after a disaster occurs. Thus, governments can support affected populations and repair infrastructure with immediate

liquidity provided by pay-outs from parametric insurance. Overall, this model shows that parametric insurance can support national and regional risk management strategies.

6.1.3 ESG Linked and Nature Based Insurance

An important part of environmental, social, and governance (ESG) framework is parametric insurance. Parametric insurance models not only cover financial losses but also support the protection and restoration of natural ecosystems. For instance, in coral reef insurance, payouts are triggered after events such as hurricanes or storms. These payouts are used to repair and restore damaged reefs (The Nature Conservancy, 2022). A real-world case is the coral reef insurance programme in Quintana Roo, Mexico. In this programme, a parametric insurance policy is purchased for protecting the section of Mesoamerican Reef. The parametric insurance policy gets triggered when speed of a wind from a hurricane exceeds a predefined threshold. The funds, thus, released are used by trained local "reef brigades" for reattaching broken coral fragments. These nature-based insurance solutions, instead, of relying on lengthy damage assessments link payouts directly to environmental indicators. Overall, parametric insurance not only provides financial compensation but also contributes to environmental sustainability.

6.1.4 Digitalisation and Smart Contracts

An important innovation in parametric insurance is its integration with blockchain and digital payment systems. Such digitalisation and smart contracts can improve efficiency, transparency, and reliability in disaster risk contexts. Blockchain-enabled smart contracts are self-executing agreements that trigger payouts automatically when predefined and measurable conditions are met and verified through independent data sources. Digital payment also supports this framework by making payouts through direct fund transfer to beneficiaries. One of the first examples of blockchain being used in parametric insurance pertained to the platform created by AXA called Fizzy. This system gave automatic compensation to passengers due to flight delays beyond a certain limit. Even though this product was abandoned in the year 2019, yet it continues to be a valuable case study that can be used to illustrate the possibility of blockchain application in parametric insurance. On the whole, parametric insurance can be improved through the inclusion of smart contracts with digital payments.

6.1.5 Regulatory Sandbox

Regulatory Sandbox is a tool used globally. Insurers can test innovative products under regulator's supervision on a small scale through these sandboxes. The regulators

monitor the performance of such products in a controlled setting and offer advice to the insurers. For instance, the Financial Conduct Authority (2022) in the United Kingdom has launched a sandbox whereby companies can test blockchain and IoT in insurance. The regulatory sandboxes can also be used to develop parametric insurance products and test the accuracy of triggers, reliability of the data sources, and the ability of the automated payouts in a controlled environment before it can be rolled out on a large scale.

6.2 To discuss how parametric insurance can be applied to heatwave insurance, urban flood risk management, and agriculture insurance.

Parametric insurance is applied to heatwave insurance for the informal sector, urban flood risk management, and agriculture insurance as follows:

6.2.1 Heatwave Insurance for the Informal Sector

Extreme heat events present a high risk to the informal sector employees such as construction workers, delivery persons, and street vendors. These employees are at risk because they rely on outdoor employment and lack formal income protection measures. The solution that is viable is parametric insurance which adjusts its payouts based on established heat-related limits and not actual damage assessment. The Wet Bulb Globe Temperature (WBGT) is a widely used composite

heat index that can be considered as an appropriate indicator for the heat wave insurance product. WBGT measures the combined impacts of air temperature, humidity, sun radiation, and wind speed. It is more accurate for measuring heat stress on human body as compared to the traditional temperature measurements. Therefore, WBGT offers a better fit in designing heat related insurance triggers. The parametric insurance covers can be integrated with existing government platforms such as the e-Shram portal and Direct Benefit Transfer. This will ensure targeted delivery and efficient disbursement. Parametric insurance can therefore increase income stability and resilience of the vulnerable populations.

6.2.2 Urban Flood Risk Management

One of the major problems in the Indian cities like Mumbai, Chennai and Bengaluru is urban flooding due to heavy rains. Parametric insurance can be used to overcome this challenge by availing instant liquidity to the municipal authorities in the case of disaster response and recovery. Compared to the conventional insurance, which is based on indemnity, the parametric insurance solutions are based on pre-determined occurrences such as intensity of rainfall, level of rivers, and the depth of floods. These predetermined alerts are detected with the help of satellite information, IoT-based measurements, and weather systems. Auto payouts are automatically made in cases where

these preset limits are crossed, thus, removing delays caused due to damage assessment. Such payouts can therefore be used by the local municipal authorities in emergency services, clearing of the debris, and fixing of infrastructure.

6.2.3 Agriculture Insurance

The Pradhan Mantri Fasal Bima Yojana (PMFBY) has increased crop insurance coverage in India. Nevertheless, a number of operational issues are observed in this scheme like delay in settling claims and exclusive use of crop cutting experiments (CCEs) for estimating losses. Parametric insurance can complement the existing system through the introduction of index-based triggers that rely on objective and real time data. These schemes can take into consideration measures like Normalized Difference vegetation index (NDVI), rainfall levels, and soil moisture conditions. NDVI, derived from satellite imagery, measures vegetation health and serves as a reliable proxy for crop performance. On a similar note, rainfall and soil moisture data can provide insights into weather related stress that affects agricultural output. Payouts can be automatically triggered when these indicators fall below or exceed predefined thresholds under a parametric model. This can eliminate the need for extensive field level verification and reduce claim settlement time. A hybrid approach under PMFBY that integrates parametric triggers for quick initial payouts with indemnity-

based assessment for final loss compensation can be implemented. This layered approach will ensure speed, accuracy, and credibility of agricultural insurance systems.

6.3 To address the regulatory and implementation issues of Parametric insurance in India.

Insurance Regulatory and Development Authority of India (IRDAI) has an important role to play in adopting and scaling parametric insurance in India. To balance innovation with consumer protection, IRDAI has introduced regulatory sandbox framework that provides a controlled environment for firms to test new products, technologies, and business models on a limited scale under regulatory supervision. Thus, an environment is created by IRDAI in which parametric insurance solutions, particularly those using advanced technologies such as satellite-based data, IoT sensors, artificial intelligence and machine learning tools can be experimented.

Recent reforms such as the “Use and File Procedure” will simplify the product approval process by allowing insurers to launch products with reduced prior approval. This will improve the speed by which insurance products reach the market. An important aspect through which parametric insurance can be implemented is the availability and integration of reliable data systems. Parametric insurance relies on objective and real-time data such as satellite imagery, weather parameters,

and sensor-based measurements. With reference to India, institutions such as the India Meteorological Department (IMD) and the Indian Space Research Organisation (ISRO) can help in providing weather and satellite data. Hence, collaboration is required between IMD, ISRO, insurers, and technology providers for ensuring accuracy and credibility of parametric triggers.

The other significant element in implementation will be digital infrastructure like digital platforms, mobile applications, and Direct Benefit Transfer (DBT) that will help disburse payout faster to the beneficiaries. Moreover, the parametric insurance implementation demands straightforward and clear product design that is closely in line with the customer needs. Also, it should be noted that the policy terms, trigger conditions and payout structures are expected to be properly communicated to the policyholder because the payouts are pegged on predetermined indices and not the actual losses.

On the whole, the regulatory support provided by IRDAI combined with data infrastructure, digital systems, and proper coordination between regulators, insurers, and technology providers can establish a solid foundational environment for parametric insurance adoption in India.

7. Summary and Conclusion

Parametric insurance is shifting risk management through faster payouts.

With reference to climate risk, parametric insurance can improve financial resilience. Data driven and technology enabled models are important part of parametric insurance. Sovereign risk pooling is increasing financial resilience at national levels. Environmental sustainability with risk management is seen through ESG Linked and nature insurance. Parametric insurance can be applied for heatwave protection, urban flood management, and agricultural risk mitigation in the Indian insurance context. For efficient implementation of parametric insurance, a strong regulatory and digital infrastructure is required.

8. Recommendations

- To ensure reliability and accuracy of parametric insurance products, it is recommended to strengthen data infrastructure and improve integration across multiple data sources.
- To facilitate innovation, promote pilot project through regulatory sandbox frameworks
- To enhance awareness and understanding among stakeholders for effective utilization of parametric insurance solutions.
- To balance speed and accuracy in claim settlements, use hybrid insurance models that combine

parametric and indemnity-based approaches.

- To ensure timely disbursements of payouts to beneficiaries, use of digital platforms such as Direct Benefit Transfer (DBT) systems.

9. Limitations of the Study and Further Research

This study is based entirely on secondary sources. Further research can be done by collecting primary data from farmers so that their willingness to adopt parametric can be known. Research can also be carried out to develop India specific parametric models that are customized to local risks and conditions. **T**

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Insurance for Space: Pricing Risk Beyond Historical Data



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Abstract

The commercialization of outer space has transformed the global economic and risk landscape. Satellite infrastructure underpins telecommunications, navigation, financial transactions, climate monitoring, and national defence. The increasing privatization of launch services, mega-constellation deployment, reusable launch vehicles, and space tourism has amplified both economic opportunity and insurable exposure. However, space insurance markets face extraordinary challenges: limited historical data, catastrophic loss potential, technological uncertainty, systemic orbital debris risk, and fragmented international regulation.

This paper provides a comprehensive examination of the economics, underwriting methodologies, capital structures, and regulatory frameworks governing space insurance. It evaluates how insurers price low-frequency, high-severity risks beyond traditional actuarial reliance on historical loss data. The analysis integrates economic theory, catastrophe modelling, international space law, and emerging financial instruments such as insurance-

linked securities and parametric insurance. The study concludes that the sustainability of space insurance markets depends on debris mitigation enforcement, regulatory harmonization, advanced probabilistic modelling, and diversified capital participation.

Keywords

Space Insurance, Satellite Risk, Actuarial Modelling, Reinsurance, Space Law, Catastrophic Risk.

1. Introduction

Outer space has transitioned from a state-dominated geopolitical arena into a commercially dynamic economic sector. Companies such as SpaceX, Blue Origin, Arianespace, and OneWeb have redefined access to orbit, reducing launch costs and enabling large-scale satellite deployment.

The Organisation for Economic Co-operation and Development estimates that the global space economy exceeds USD 500 billion annually, with growth projections suggesting expansion to over USD 1 trillion by the 2040s (Organisation for Economic Co-operation and Development [OECD], 2022).

This rapid expansion has generated substantial insurable value at risk. Satellite launches can exceed \$300 million per mission, and in-orbit satellite constellations may represent billions in aggregate exposure. Insurance plays a foundational role in facilitating financing, satisfying regulatory requirements, and stabilizing private investment.

However, unlike auto or property insurance, space insurance cannot rely on extensive actuarial datasets. Launch events are infrequent, technology evolves rapidly, and correlated risks—such as orbital debris—pose systemic threats (Swiss Re Institute, 2021; Munich Re, 2022).

Research Questions

This paper addresses:

1. What makes space risks uniquely difficult to insure?
2. How do insurers price space risk without credible historical loss data?
3. What market dynamics and regulatory structures support sustainable space insurance?

2. Literature Review and Theoretical Foundations

2.1 Insurance Economics

Modern insurance theory originates in the work of Kenneth Arrow, who formalized risk pooling and welfare implications in *Essays in the Theory of Risk-Bearing* (Arrow, 1971).

Traditional insurance markets rely on the law of large numbers, whereby a sufficiently large pool of independent risks allows insurers to estimate future losses with reasonable accuracy (Arrow, 1971). Space insurance departs significantly from this framework because each mission may involve unique technologies, mission objectives, orbital environments, and launch systems. Consequently, insurers cannot depend solely on historical frequency data and must instead integrate engineering assessments and expert judgement into underwriting decisions.

Furthermore, information asymmetry can create adverse selection problems, where operators with higher-risk missions possess superior knowledge regarding technological vulnerabilities. This increases the importance of technical due diligence and independent engineering reviews during underwriting (Arrow, 1971; Cummins, 2017).

2.2 Catastrophic Risk and Reinsurance

Research by J. David Cummins emphasizes that catastrophic risks require layered capital systems combining primary insurers, reinsurers, and capital markets (Cummins, 2017).

Space risk resembles catastrophe risk because of:

- Low frequency
- Extreme severity
- Tail dependence
- Capital intensity

Catastrophic risk theory highlights the challenge of losses that are both infrequent and highly concentrated. In the space sector, a single launch failure may generate hundreds of millions of dollars in insured losses within minutes. Reinsurance therefore serves as a critical mechanism for distributing risk globally and protecting insurer solvency. Cummins (2017) argues that catastrophic risks often exceed the capacity of individual insurers and require broader capital participation through reinsurance and alternative capital markets.

Space insurance markets frequently employ layered coverage structures, whereby primary insurers retain a portion of the risk while transferring excess exposure to reinsurers. This arrangement enables insurers to participate in large satellite programs without concentrating excessive capital in a single mission (Cummins, 2017).

2.3 Orbital Debris and Systemic Risk

The orbital debris cascade model was introduced by Donald J. Kessler in 1978 (Kessler & Cour-Palais, 1978).

The Kessler Syndrome concept remains one of the most significant long-term threats to space sustainability. Under this scenario, successive collisions create increasing amounts of debris, eventually rendering certain orbital

regions unusable for commercial operations (Kessler & Cour-Palais, 1978). Such a development would represent a systemic market failure because losses would not be confined to individual operators but would affect all spacecraft sharing the affected orbital environment.

As satellite deployments continue to accelerate, particularly in low Earth orbit, debris-related risk is expected to become a more significant determinant of pricing and insurability (International Insurance Society, n.d.).

3. Structure and Segmentation of Space Insurance

Space insurance covers a range of mission phases and potential losses:

- **Launch Insurance:** Pre-launch insurance protects manufacturers and operators against damage occurring during transportation, storage, fueling, and integration with the launch vehicle. Launch insurance typically remains the most expensive component of coverage because the launch phase concentrates substantial risk into a very short period.
- **In-Orbit Insurance:** Early-orbit coverage generally extends through the first year after deployment because this period contains elevated risks associated with solar array deployment, propulsion system activation, orbit raising, and payload commissioning. Once a satellite demonstrates operational stability, insurers may offer multi-year in-orbit coverage at lower annual premium rates.

- **Third-Party Liability:** Third-party liability insurance serves a distinct purpose by addressing legal obligations arising from damage to persons, property, aircraft, ships, or other spacecraft. In many jurisdictions, such coverage is mandatory before launch licenses are granted under national space legislation (Outer Space Treaty, 1967; Liability Convention, 1972).
- **Parametric Insurance:** Triggered by pre-defined events instead of traditional loss valuation.

Although the space insurance market remains small relative to global insurance, it has grown alongside satellite activity (Swiss Re Institute, 2021; Munich Re, 2022). According to market forecasts, the global space insurance market — once valued at roughly \$3.6 billion — is expected to grow toward \$6.2 billion by 2030, reflecting increased commercial activity and expanding risk profiles (Market Growth Reports, 2025; Yahoo Finance, 2026).

Table 1 – Core Coverage Types

Coverage	Risk Covered	Duration	Premium (% of Insured Value)
Pre-launch	Manufacturing & transit	Weeks–Months	0.5–1%
Launch	Rocket failure	Minutes–Hours	5–20%
Early Orbit	Deployment anomalies	12 months	2–5%
Multi-year Orbit	Technical malfunction	1–15 years	1–3% annually
Third-party Liability	Surface or orbital damage	Event-based	Variable

Source: Swiss Re space risk report and Munich Re satellite risk analysis

4. Distinctive Risk Attributes of Space Missions

Space activities present risk factors radically different from traditional insurance classes:

4.1 Technical and Engineering Complexity

Space systems operate in extreme conditions characterized by vacuum, radiation exposure, thermal cycling, micrometeoroid impacts, and limited opportunities for repair. Even minor component failures can jeopardize mission success because most satellites cannot be physically

served after launch. Satellites and launch vehicles combine advanced mechanical, electronic, and software systems that must operate reliably in the harsh environment of space. Failures can be catastrophic and unrecoverable.

The increasing integration of software-defined systems and autonomous operations also introduces cybersecurity and software reliability concerns. Failures resulting from software defects may be difficult to predict using traditional engineering methods, adding another layer of uncertainty to underwriting assessments (Munich Re, 2022).

4.2 Environmental and Debris Risk

The increasing volume of debris is a growing hazard. Estimates suggest there are more than 1.2 million pieces of debris larger than 1 cm orbiting



Earth, and over 50,000 fragments above 10 cm — each capable of catastrophic damage (International Insurance Society, n.d.). This problem escalates with satellite proliferation, especially in low Earth orbit (LEO).

The probability of collision has increased as the number of active satellites and debris fragments continues to grow. Low Earth orbit is particularly congested due to the deployment of large communications constellations. Collision avoidance maneuvers consume fuel and may shorten operational lifetimes, creating both direct and indirect financial consequences for operators.

Debris risk also exhibits characteristics of a common-pool resource problem, where the actions of one operator can affect the safety of all other users of the orbital environment. This creates challenges for insurers because losses may arise from factors outside the control of the insured party (International Insurance Society, n.d.).

4.3 Systemic and Correlated Risk

Correlated risk is especially problematic for insurers because diversification becomes less effective when multiple assets share common vulnerabilities. Manufacturing defects, software errors, launch vehicle anomalies, or solar weather events may affect large numbers of satellites simultaneously.

Mega-constellations magnify this issue. Thousands of satellites may be produced using identical designs and components, meaning that a single design flaw could trigger widespread losses. Such exposures resemble systemic financial risks more than conventional insurance risks, requiring specialized capital management strategies (Arrow, 1971; Swiss Re Institute, 2021).

Mega-constellations like Starlink and OneWeb introduce clusters of identical satellites sharing similar risk profiles. A single systemic issue — such as a manufacturing defect or orbital collision — can lead to simultaneous losses across a constellation, violating the independence assumption central to diversification in insurance (Arrow, 1971).

5. Market Participants

Major reinsurers include:

- Munich Re
- Swiss Re
- Lloyd's of London

These institutions provide underwriting capacity, technical expertise, and global risk diversification. Lloyd's of London operates through syndicates that collectively insure complex aerospace

risks, while Munich Re and Swiss Re contribute substantial actuarial and engineering resources to risk assessment. Specialized brokers such as Marsh, Aon, and Willis Towers Watson also play important roles by structuring coverage programs, negotiating policy terms, and coordinating risk placement across multiple insurers.

The market remains relatively concentrated because underwriting space risks requires highly specialized technical knowledge and substantial capital reserves. As a result, only a limited number of insurers actively participate in large satellite and launch programs (Munich Re, 2022; Swiss Re Institute, 2021).

6. Economic Dependence on Satellite Infrastructure

Satellite systems support:

- Telecommunications
- GPS logistics
- Weather forecasting
- Financial timing systems

Satellite-enabled digital infrastructure plays a critical role in global economic development (World Bank, n.d.).

In addition, satellite infrastructure supports precision agriculture, maritime navigation, environmental monitoring, disaster management, military reconnaissance, and broadband internet access in remote regions. Global navigation satellite systems provide timing signals that synchronize banking transactions, stock exchanges, power grids, and telecommunications networks. Disruptions to these systems could

generate cascading economic consequences extending far beyond the space sector itself (World Bank, n.d.).

The increasing digitalization of economies has therefore amplified the strategic importance of resilient satellite networks and strengthened demand for risk-transfer mechanisms that protect these critical assets.

7. Challenges in Pricing Space Risk

7.1 Lack of Stable Historical Data

Unlike automobile or property insurance markets that benefit from millions of observations annually, space insurers must often make pricing decisions using a comparatively small sample of launches and satellite missions. Technological evolution further reduces the usefulness of historical data because past performance may not accurately predict outcomes for new spacecraft designs or launch systems.

The limited number of observations increases statistical uncertainty and widens confidence intervals around estimated loss probabilities, making premium determination significantly more challenging (Swiss Re Institute, 2021).

Space insurance has historically operated around a small number of claim events. Data suggests that the industry has hovered near a ~5% mission failure rate since 2000, with only 165 claims exceeding \$10 million dollars across the history of the sector (Swiss Re Institute, 2021; Munich Re, 2022).

This scarcity and volatility of data inhibit the development of statistically stable frequency-severity models typically used in property-casualty pricing.

7.2 Rapid Innovation and Model Uncertainty

The commercial space industry evolves at a pace that frequently outstrips traditional actuarial methods. Reusable rockets, electric propulsion systems, autonomous collision-avoidance technologies, and artificial intelligence applications have altered operational risk profiles. Because these technologies possess limited historical performance records, insurers must estimate future reliability using simulations, engineering tests, and expert assessments rather than established loss experience (Munich Re, 2022).

Emerging technologies like reusable launch vehicles, novel satellite architectures, and AI-controlled systems introduce new risk classes with little track record.

7.3 Asymmetric Information

Information asymmetry can influence both underwriting and claims management. Satellite operators typically possess proprietary information regarding component reliability, software architecture, manufacturing processes, and mission design. Insurers therefore require extensive technical disclosures, independent verification, and engineering reviews to reduce uncertainty and limit adverse selection.

Operators often possess detailed internal engineering and mission data, whereas insurers must

depend on technical presentations and limited test data to estimate risk — contributing to information asymmetry and potential adverse selection (Cummins, 2017).

8. Risk Modelling Approaches and Alternative Mechanisms

Given the limitations of traditional actuarial methods, the space insurance industry has turned to alternative pricing and risk assessment frameworks:

8.1 Engineering-Based Underwriting

Engineering-based underwriting evaluates mission reliability through detailed assessments of satellite architecture, component heritage, testing records, supplier quality controls, and launch vehicle performance. Technical experts assess reliability based on design review, manufacturing quality, and historical performance of similar components. Engineers often contribute more to pricing than pure statistical models.

8.2 Probabilistic Simulation and Scenario Stress Tests

Monte Carlo simulations enable insurers to estimate thousands of potential mission outcomes under varying assumptions regarding component failure, collision probability, launch reliability, and environmental conditions. Fault-tree analysis identifies critical failure pathways and quantifies the contribution of individual subsystems to overall mission risk.

8.3 Parametric Products

Parametric insurance can be particularly useful in space

applications because objective triggers are often observable and verifiable. Examples include launch vehicle failure, inability to reach designated orbit, prolonged communication loss, or measurable reductions in satellite performance.

Because payouts are predetermined, claims can be settled rapidly, improving liquidity for operators following mission disruptions. However, basis risk remains a significant concern where actual financial losses differ substantially from the contractual payout amount.

8.4 Reinsurance and Risk Transfer

Beyond traditional reinsurance, insurers are exploring insurance-linked securities (ILS) and catastrophe-bond structures as potential sources of additional capacity. These instruments transfer risk directly to capital market investors, reducing dependence on conventional reinsurance markets and potentially increasing resilience against large-scale loss events (Cummins, 2017).

9. Market Dynamics and Recent Loss Experience

9.1 Record Losses in 2023

According to a Slingshot Aerospace report, 2023 was the worst year in history for space insurance, with approximately \$995 million in total claims against \$557 million in premiums, resulting in a net industry loss of \$438 million. Major claims included over \$445 million for a high-profile satellite loss and \$348 million due to a battery failure event. These results forced upward premium rate adjustments and re-evaluation of underwriting practices.

9.2 Market Contraction and Insurer Exits

Several major insurers — including Allianz, AIG, Swiss Re, and Brit — have reduced or exited space insurance activities due in part to accumulated losses and pricing challenges. This contraction has strained market capacity and increased costs for remaining insureds.

10. Insurance Penetration and Coverage Gaps

A significant proportion of low Earth orbit satellites operate without dedicated insurance coverage because operators often regard replacement costs as more

economical than paying annual premiums. This trend is particularly evident among large constellations where individual satellites possess relatively low unit values.

Despite the growth in satellite deployments, insurance penetration remains low relative to total assets in orbit. An analysis found that out of nearly 13,000 active satellites, only around 300 are insured for in-orbit risks (European Space Policy Institute, 2022). This means that tens of billions of dollars worth of space infrastructure operates without financial risk protection — especially in LEO markets where cost sensitivity and constellation scale disincentivize coverage.

greater regulatory harmonization (Outer Space Treaty, 1967; Liability Convention, 1972).

12. Emerging Trends and Future Directions

Space insurance is at a critical juncture with several emerging trends:

12.1 Growth of Parametric and Blanket Insurance for Constellations

Blanket coverage structures are becoming increasingly attractive because they allow insurers to cover large groups of satellites under a single policy rather than underwriting each asset individually. This approach reduces administrative complexity and aligns coverage more closely with the economics of large-scale constellation operations.

12.2 Integration of Predictive Analytics and AI

Advances in machine learning and real-time satellite telemetry — such as using probabilistic debris tracking and orbit modelling — may improve underwriting precision over time and reduce information asymmetry.

12.3 Sustainability and Debris Mitigation Incentives

Future insurance models may increasingly incorporate environmental risk metrics such as end-of-life disposal compliance, collision-avoidance capability, and participation in space situational awareness programs. Operators demonstrating responsible orbital behavior may benefit from lower premiums, similar to how insurers reward risk-reduction practices in other sectors (International Insurance Society, n.d.).

Table 2 – Satellite Insurance Penetration by Orbit Type

Orbit Type	Estimated Active Satellites	Insured Satellites	Insurance Penetration (%)
LEO	~9,241	~50	~0.5
GEO/MEO	~870	~238	~27
Total	~13,000	~300	~2.3

Compiled from industry tracking and insurance reports

This low penetration highlights a widening gap between risk exposure and coverage, particularly for smaller satellites where operators may elect to self-insure or forego coverage due to cost (European Space Policy Institute, 2022).

11. Regulatory and Legal Context

The Outer Space Treaty establishes foundational principles governing space activities, including state responsibility for national space operations and liability for damage caused by space objects. The Liability Convention further clarifies compensation mechanisms, imposing absolute liability for damage occurring on Earth and fault-based liability for damage occurring in space.

National regulatory regimes implement these obligations through licensing requirements, financial responsibility provisions, and mandatory insurance mandates. However, differences among national frameworks create uncertainty for insurers operating across multiple jurisdictions, emphasizing the need for

13. Policy Implications and Sustainability

Managing space risks effectively requires collaboration among insurers, operators, and regulators:

- **Data Sharing Initiatives:**
Improved loss databases and shared reliability metrics could support better pricing (Swiss Re Institute, 2021).
- **Public–Private Risk Pools:**
Government backstops could underwrite extreme systemic risks that private markets cannot absorb (Cummins, 2017).
- **Debris Mitigation Standards:**
Regulatory frameworks incentivizing sustainable orbital behavior could reduce systemic risk and lower insurance costs over time (International Insurance Society, n.d.).

14. Conclusion

Space insurance remains an essential component of the commercial space economy. While traditional actuarial approaches are constrained by data limitations, the industry has adopted multidimensional models that incorporate engineering expertise, probabilistic simulation, and alternative products such as parametric policies. Market pressures from rapid satellite growth, debris congestion, and record losses demand innovative solutions and collaborative frameworks. Sustaining a viable insurance market will require regulatory adaptation, enhanced transparency, and risk-sharing mechanisms that balance innovation with financial resilience. **TJ**

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Implementation of Ind AS in the Indian Insurance Sector: Analysis of the IRDAI's 2026 Regulatory Framework and Its Implications



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Abstract

The implementation of Indian Accounting Standards (Ind AS) for insurers from 1 April 2026 represents a major shift in financial reporting in the Indian insurance sector, which continues to operate within a strong prudential, actuarial, and legal framework. Based on the March-April 2026 IRDAI regulatory documents, including the exposure draft, consultation paper, response to public comments, Gazette notification, press release, Joint Expert Group order, and clarificatory circular, this paper shows that India has adopted a hybrid reporting approach.

Under this framework, entity-level Ind AS financial statements coexist with existing regulatory requirements such as segregation of policyholder and shareholder funds, distribution based on actuarial surplus, solvency norms, and additional sector-specific disclosures. The transition is supported through measures such as two-year parallel reporting, one-year forbearance, independent validation, and institutional support through the Joint Expert Group.

The study highlights that the impact of Ind AS goes beyond changes in measurement. It affects how profit, equity, performance, assurance, and regulatory communication are understood in practice. At the

same time, the framework creates certain challenges, including multiple interpretations of profit, overlapping assurance mechanisms, increased reporting burden, disclosure complexity, and differences in implementation across insurers.

The paper concludes that the success of Ind AS implementation will depend not only on the standards themselves but also on how effectively they are integrated within the existing regulatory and institutional framework.

Keywords

Ind AS 117, IFRS 17, Insurance Accounting, IRDAI, Hybrid Reporting, Actuarial Surplus, Parallel Reporting, Accountability.

1. Introduction

International Financial Reporting Standards (IFRS) are globally accepted accounting standards developed to improve comparability, transparency, and consistency in financial reporting across jurisdictions. India has largely aligned its financial reporting system with IFRS through the adoption of Indian Accounting Standards (Ind AS), which are based on IFRS with certain modifications to reflect domestic regulatory and legal requirements. Ind AS has been implemented in a phased manner for most companies in India.

However, the insurance sector remained outside this convergence for a long time. Insurance companies in India continued to follow a separate regulatory reporting framework prescribed by the Insurance Regulatory and Development Authority of India (IRDAI). This framework focused on actuarial valuation, solvency requirements, and segregation of policyholder and shareholder funds under the Insurance Act, 1938. As a result, Ind AS was not applicable to insurance entities even when other sectors had transitioned to IFRS-aligned standards.

At the global level, IFRS 17 introduced a consistent framework for accounting for insurance contracts, based on fulfilment cash flows, explicit risk adjustment, and recognition of profit over the period in which services are provided (Alhawtmeh, 2023; Arce et al., 2023;

Basu & Grace, 2022; IASB, 2017). In India, this framework has been adopted in the form of Ind AS 117, which is largely converged with IFRS 17 in terms of principles and measurement approaches.

A significant regulatory development occurred when IRDAI issued a notification on 30 March 2026 mandating the adoption of Ind AS by insurance companies from 1 April 2026. This marked the extension of IFRS-aligned reporting to the insurance sector. However, the adoption does not replace the existing regulatory system. Ind AS 117 has been introduced alongside continuing requirements such as fund segregation, actuarial-surplus-based distribution, and solvency regulation.

This has resulted in a layered reporting framework. While Ind AS governs recognition, measurement, presentation, and disclosures at the entity level, the regulatory framework continues to influence how financial outcomes are interpreted. The transition therefore represents not only a change in accounting standards but also a broader shift in financial reporting and accountability in the insurance sector.

Against this background, this paper addresses three key questions. First, what is the nature and scope of Ind AS adoption when the final regulations are analysed together with the exposure draft, consultation process, and subsequent clarifications? Second, how does the framework reconcile entity-level Ind AS reporting with continuing

statutory requirements such as fund segregation, actuarial-surplus-based distribution, and solvency regulation? Third, what are the implications of this framework for key stakeholders?

These questions are important because existing literature has mainly focused on the technical and implementation aspects of IFRS 17. Limited attention has been given to how jurisdictions embed such standards within their domestic regulatory systems. The Indian experience provides insight into this process by showing how globally aligned accounting standards operate within an existing legal and regulatory framework.

To understand this transition, the paper analyses the sequence of IRDAI documents issued during March and April 2026, which reflect the movement from proposal to implementation.

As shown in Table 1, the regulatory framework emerged through a structured and iterative process, beginning with conceptual proposals and progressing through stakeholder engagement, legal enactment, and operational clarification. This sequence indicates that the final Ind AS framework for insurers is not a one-step adoption, but the outcome of a calibrated regulatory approach that balances global accounting principles with domestic.

Table 1: Timeline and Purpose of the IRDAI Regulatory Documents

Date	Document	Regulatory Stage	Purpose and Key Content
03 March 2026	Exposure Draft	Proposal Stage	Initiates formal transition to Ind AS for insurers; outlines proposed amendments to IRDAI regulations and invites stakeholder feedback on implementation approach, policy choices, and disclosures.
03 March 2026	Consultation Paper	Stakeholder Engagement	Provides detailed rationale for Ind AS adoption, including global convergence with IFRS 17, industry readiness, transition approach, and key policy issues such as fund segregation and surplus distribution.
30 March 2026	Response to Public Comments	Regulatory Refinement	Summarises stakeholder concerns and IRDAI responses; confirms mandatory implementation from 1 April 2026, introduces one-year forbearance, supports two-year parallel reporting, and removes retrospective annual cohort burden proposals.
30 March 2026	Gazette Notification	Legal Enactment	Formally notifies Ind AS-based financial reporting framework; mandates preparation of financial statements under Ind AS while retaining statutory requirements such as fund segregation and actuarial surplus-based distribution.
30 March 2026	IRDAI Press Release	Public Communication	Announces adoption of Ind AS from 1 April 2026; emphasises improved transparency, comparability, and global alignment; confirms parallel reporting (two years) and transitional support measures.
01 April 2026	Joint Expert Group (JEG) Order	Implementation Governance	Establishes a multi-institutional expert group (IRDAI, ICAI, IAI, SEBI, NFRA) to address implementation challenges, provide guidance, and recommend refinements to disclosures, audit expectations, and actuarial roles.
01 April 2026	IRDAI Clarificatory Circular	Operational Clarification	Provides detailed guidance on implementation issues including quarterly reporting, audit/review requirements, reconciliation, fund segregation, solvency continuity, discount rate determination, and independent validation.

Source: (IRDAI, 2026a–2026h)

2. Literature Review and Conceptual Framework

2.1 IFRS 17 as a Technical and Institutional Reform

IFRS 17 represents both a change in measurement and a shift in how insurance performance is understood and reported. Pulawska & Strzelczyk (2025) show that its development followed an extensive due-process, where stakeholder participation played a key role in shaping the standard. Kumar & Rastogi (2025) highlight that its principles-based nature requires significant judgement, as preparers, auditors, and actuaries must interpret model-driven estimates rather than apply fixed rules.

A second stream of literature focuses on how IFRS 17 changes reporting outcomes. Palmborg et al. (2021) show that linking profit to services provided, instead of premiums received, alters traditional performance indicators. Nichilo (2022) notes that components such as risk adjustment involve considerable judgement, which may lead to variation across firms. KPMG (2022) further show that transition effects differ depending on firm-specific systems and the interaction with IFRS 9.

A third strand examines how global standards interact with domestic regulatory systems. Albu et al. (2014) argue that IFRS can create tensions when introduced into environments shaped by existing legal and regulatory structures. This is particularly relevant in insurance, where rules on surplus distribution,

solvency, and policyholder protection are defined by law. Institutional research suggests that such adoption is influenced not only by regulatory pressure but also by organisational responses and adaptation strategies (DiMaggio & Powell, 1983; Oliver, 1991; Scott, 1987).

From a user perspective, the usefulness of IFRS 17 depends on how well its outputs are understood. Okafor et al. (2016) find that current-value-based measures can improve market relevance, but only when users can interpret the underlying assumptions. Overall, the literature shows that IFRS 17 is complex, judgement-driven, and shaped by institutional context. However, limited attention has been given to how regulators translate these standards into workable frameworks

within existing legal systems. This gap is central to the present study. While IFRS 17 forms the conceptual basis for Ind AS 117, the Indian implementation reflects jurisdiction-specific adaptations, particularly in relation to regulatory and actuarial structures.

2.2 Regulatory Hybridisation

To examine this gap, this paper adopts the concept of regulatory hybridisation (Agarwal et al., 2024). In this study, hybridisation refers to the integration of global accounting standards with domestic regulatory structures through adaptation rather than replacement. This approach is useful in the Indian context, where Ind AS has been introduced without removing the existing prudential framework.

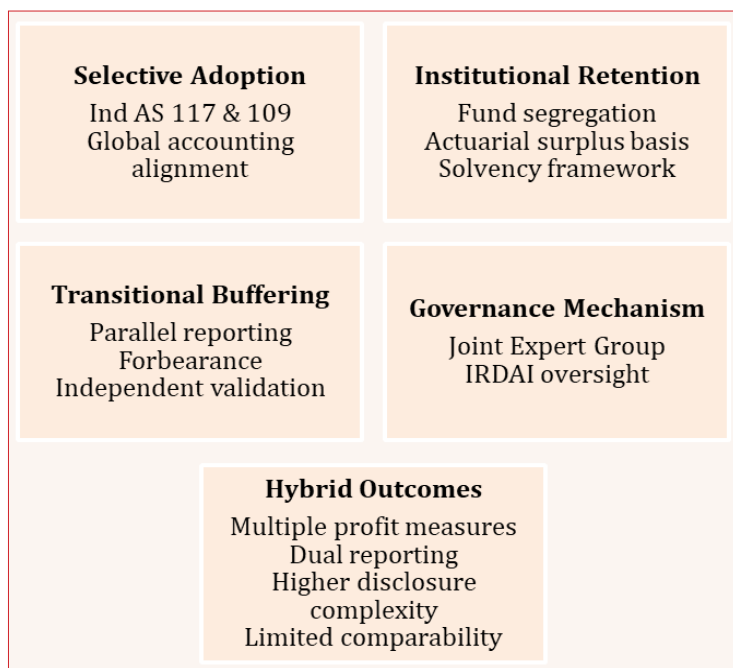


Figure 1: Regulatory Hybridisation

Under this lens, Ind AS applies at the entity level, while key regulatory features continue to operate alongside it. These include fund-level structures, actuarial control, and solvency requirements. The result is a layered system in which accounting and regulatory logics coexist. This hybrid framework operates through four mechanisms. First, selective adoption ensures that Ind AS governs recognition, measurement, presentation, and disclosures. Second, institutional retention preserves key legal and regulatory requirements. Third, transitional arrangements support implementation without disrupting existing systems. Fourth, coordinated governance enables ongoing clarification and refinement during the transition phase (see Figure 1).

3. Research Design

3.1 Document-Based Interpretive Design

This study adopts a document-based interpretive design, as the focus is on understanding how a regulatory framework is formed and finalised. In this context, official documents are not merely sources of information; they reflect how regulatory intent is developed, refined, and formalised (Bowen, 2009). An interpretive approach is therefore suitable for examining how Ind AS implementation has been framed through consultation, revised through stakeholder input, and embedded in the final regulatory structure. This method is particularly appropriate at an early stage, where the regulatory

framework has been established but reporting practices are still evolving.

3.2 Corpus and Analytical Procedure

The analysis is based on seven official IRDAI documents issued between 3 March and 1 April 2026, covering the full regulatory sequence from proposal to implementation. The study follows a three-step approach. First, the documents are analysed in chronological order to understand how the framework evolved over time. Second, the content is examined across key themes, including measurement approach, regulatory structure, transition process, governance mechanisms, and implications for accountability. Third, the findings are interpreted using the concept of regulatory hybridisation to explain how global accounting requirements have been integrated with existing regulatory practices. The analysis places particular emphasis on changes between the proposal stage and the final framework, as these differences provide insight into regulatory priorities and decision-making.

3.3 Methodological Limitations

This approach has certain limitations. As it relies on formal documents, it captures the official regulatory position but does not fully reflect informal processes such as negotiations or firm-level implementation practices. Further, interpretive analysis involves judgement. To ensure consistency, the documents are analysed systematically across stages and

interpreted using a clearly defined conceptual framework. The findings therefore focus on understanding the structure and intent of the regulatory framework rather than its practical outcomes at the firm level.

4. The Indian Regulatory Developments

4.1 Public Consultation

The consultation process played a key role in shaping the final framework. The initial proposal set out the broad direction for Ind AS implementation, while stakeholder responses highlighted concerns relating to readiness, transition timelines, and operational clarity. In response, the final framework retained the implementation timeline but introduced calibrated adjustments to ease transition. These included a structured deferral option for certain insurers, extension of transition arrangements, and refinement of technical requirements. The outcome reflects a balanced approach, where regulatory intent is maintained while accommodating practical implementation challenges.

4.2 Coexistence of Entity-Level Reporting and Statutory Structures

The framework introduces Ind AS at the entity level while continuing existing statutory requirements under the Insurance Act, 1938. Insurers are required to prepare complete Ind AS financial statements, including primary statements and detailed disclosures. At the same time, the regulatory structure governing policyholder and shareholder

funds remains unchanged. Fund-wise reporting continues through separate accounts and supporting schedules. In participating business, this distinction becomes particularly

significant, as accounting profit under Ind AS does not determine distributable surplus, which continues to be based on actuarial principles. This dual structure creates a layered

reporting system, where financial performance is viewed through both accounting and regulatory lenses.

Table 2: Ind AS compared with retained Indian statutory-prudential features

Reporting Area	Ind AS	Retained Indian Statutory-Prudential Feature	Hybrid Reporting Outcome
Measurement of Insurance Liabilities	Fulfilment cash flows, discounting, risk adjustment, contractual service margin (CSM)	Actuarial valuation and regulatory prudence continue under Insurance Act	Coexistence of economic valuation and prudential assessment
Profit Recognition	Service-based profit recognition over coverage period	Distribution based on actuarial surplus (Section 49)	Separation of accounting profit and distributable surplus
Financial Statement Structure	Entity-level financial statements (balance sheet, P&L, OCI, cash flows)	Mandatory policyholder-shareholder fund segregation	Layered reporting combining entity view and fund-based structure
Equity and Capital Representation	Equity reflects Ind AS measurement outcomes	Solvency and capital governed by regulatory framework	Equity not directly aligned with regulatory capital strength
Financial Instruments	Classification, measurement, and impairment based on expected credit loss and fair value	Investment norms and valuation governed by IRDAI regulations	Dual influence on asset valuation and performance reporting
Disclosures	Extensive disclosures on assumptions, risk adjustment, CSM, sensitivities	Additional sector-specific disclosures (funds, actuarial assumptions, solvency)	Expanded disclosure environment with overlapping narratives
Segmentation and Fund-Level Reporting	Aggregation based on portfolios and groups under Ind AS	Separate reporting for funds and linked business	Increased granularity but higher interpretive complexity
Cash Flow Reporting	Cash flows presented under Ind AS framework	Receipts and payments account retained in regulatory format	Parallel presentation of cash flow information

Source: Author

Table 2 highlights that the framework does not replace the existing system but builds on it. Ind AS introduces a more consistent measurement and presentation approach, while key regulatory features continue to operate alongside it. The result is a hybrid structure in which economic valuation and regulatory prudence coexist, requiring users to interpret multiple dimensions of performance.

4.3 Enhanced Performance Visibility

The new framework increases the level of disclosure and detail in financial reporting. Ind AS requires insurers to provide extensive information on assumptions, measurement components, and risk exposures, along with more granular reporting across business segments. While this improves transparency, it also makes interpretation more complex. During the transition phase, users must understand new measurement concepts, reconciliations, and assumptions. As a result, the quality of communication becomes as important as the quality of measurement.

4.4 Transition Governance and Assurance

The transition framework is supported by structured governance and oversight mechanisms. The regulations require parallel reporting during the transition phase, along with defined processes for review and validation. A formal mechanism has also been established to support implementation, including guidance on technical issues, validation processes, and reporting expectations. This ensures that the framework remains adaptable as practical challenges emerge. At the same time, assurance responsibilities are distributed across multiple participants, including management, auditors, and actuaries. This expands the scope of oversight but also requires clear coordination to ensure consistency and accountability. Figure 2 presents the structure of transition governance under the Ind AS framework.

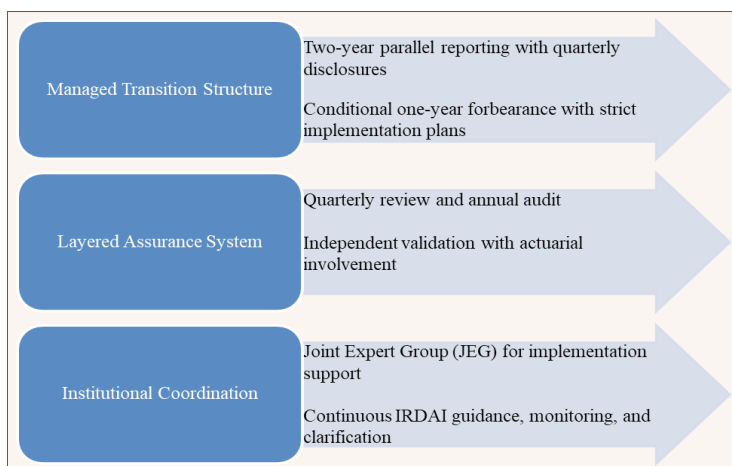


Figure 2: Transition governance architecture

5. Discussion

5.1 Reconfiguration of Accountability

The new framework reshapes accountability in several important ways. First, accountability shifts at the level of measurement. Financial results are now more closely linked to underlying economic assumptions such as fulfilment cash flows, discount rates, risk adjustment, and contractual service margin. This brings greater transparency but also increases the need for disciplined judgement and clear documentation. Second, the framework separates accounting profit from distributable surplus. While Ind AS determines reported performance, surplus distribution continues to follow actuarial principles. This reduces the risk of over-distribution but requires stronger governance to interpret different profit measures correctly. Third, assurance becomes more distributed. Responsibility is no longer limited to the statutory audit

but extends across management, auditors, actuaries, and regulators. This broader structure can improve oversight, but it also requires clear coordination to avoid gaps or overlaps. Finally, communication becomes central to accountability. During transition, insurers must clearly explain new measurement concepts, reconcile different reporting views, and clarify the distinction between accounting results and regulatory outcomes. As a result, effective communication is no longer optional but a core requirement of the framework.

5.2 Structural Risks

Despite these gains, the framework introduces several structural challenges. The first concern is comparability. While Ind AS aims to improve consistency, the hybrid structure requires users to interpret multiple reporting layers together. Differences in assumptions, systems, and implementation quality may therefore reduce comparability

across firms. Second, performance interpretation becomes more complex. The separation between accounting profit and distributable surplus, although necessary, makes it difficult for users to assess financial strength using a single measure. Entity-level results may not fully reflect regulatory or fund-level realities. Third, implementation demands are uneven. The framework requires significant investment in systems, data, and coordination between actuarial and finance functions. Larger insurers may adapt more easily, while smaller firms may face operational constraints. Fourth, assurance responsibilities are spread across multiple participants. While this can strengthen oversight, it may also dilute accountability if roles are not clearly defined. Fifth, increased disclosure may create information overload. More detailed reporting does not automatically improve understanding, especially when users must navigate multiple reconciliations and explanations.

Finally, the framework remains evolving in nature. Ongoing guidance and clarification support flexibility but may also create uncertainty during the initial years of implementation.

Overall, the framework is robust but complex. Its effectiveness will depend on how well insurers, regulators, and users manage the balance between improved transparency and increased interpretive demands.

6. Implications for Practice and Future Research

The implementation of Ind AS in the Indian insurance sector has important implications for both practice and research. From a practice perspective, the transition should be viewed as a governance initiative where boards and management need to clearly link accounting outcomes with actuarial measures, solvency positions, and fund-level reporting. Preparers must strengthen coordination across actuarial, finance, investment, and

technology functions, along with improving documentation, controls, and validation processes. The role of assurance also expands. Auditors and actuaries need clearer coordination and well-defined responsibilities, given the increased reliance on models and assumptions. At the same time, regulators must ensure that ongoing guidance supports clarity and consistency, rather than adding to reporting complexity. From a research perspective, several areas remain open. Early evidence can assess whether Ind AS improves comparability or whether differences in implementation reduce its effectiveness. The market interpretation of accounting profit, particularly when it is not directly linked to distributable surplus, is another important area. Further research can also examine how governance mechanisms, validation practices, and regulatory oversight evolve over time, and how they influence the long-term effectiveness of the framework.

Table 3: Practical implications

Stakeholder	Key Implication	Challenge	Required Response
Preparers	Integration of Ind AS with actuarial and regulatory systems	Dual reporting, complex measurement models, data and system demands	Strengthen actuarial-finance-IT integration; improve documentation and controls
Auditors	Expanded assurance scope beyond traditional financial audit	Need to evaluate models, assumptions, and multiple reporting frameworks	Develop expertise in actuarial models; coordinate with actuaries and validators
Actuaries	Greater involvement in financial reporting and validation	Alignment of actuarial valuation with Ind AS measurement and disclosures	Enhance collaboration with finance; support assumption transparency and validation
Boards and Management	Reinterpretation of performance and capital metrics	Distinction between accounting profit and distributable surplus; governance complexity	Strengthen oversight frameworks; ensure clarity in internal reporting and decision-making

Stakeholder	Key Implication	Challenge	Required Response
Regulators	Ongoing role in implementation and interpretation	Need to manage transition, ensure consistency, and avoid regulatory ambiguity	Provide continuous guidance; balance flexibility with standardisation
Investors and Analysts	Increased disclosure and improved visibility	Difficulty in interpreting multiple profit measures and layered reporting	Develop understanding of Ind AS assumptions, fund structures, and reconciliations

Source: Author

Table 3 summarises how the hybrid framework affects different stakeholders. It highlights that successful implementation requires coordinated efforts across functions, along with a clear understanding of the new reporting and governance requirements.

7. Conclusion

The adoption of Ind AS in the Indian insurance sector represents a significant shift in financial reporting,

but not a complete departure from the existing regulatory system.

The 2026 framework integrates Ind AS principles with established requirements relating to fund structure, surplus distribution, and solvency. This study shows that regulatory hybridisation provides a more accurate explanation of this transition than simple convergence.

The framework reflects a combination of global accounting standards and domestic regulatory practices,

resulting in a system where multiple reporting and governance elements operate together. The long-term effectiveness of this framework will depend on how well stakeholders manage the interaction between accounting standards and regulatory requirements. Its success will ultimately be determined by whether it improves transparency and comparability without creating excessive complexity in interpretation and implementation. **II**

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Insurance Industry of India: Chronic Ailments and Possible Remedies



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Abstract

The insurance industry suffers from some chronic ailments. Insurance awareness continues to be low. Insurance intermediaries fail to play their role persistently and ethically. Insurers are confused about whether to grow in market share or profitability. Private life insurers (except SBI Life) do not possess one crore plus in-force policies. Private non-life insurers shy away from addressing emerging risks as they depend solely on health and motor third-party insurance for their survival. FDI inflow is not significant.

To cure these chronic ailments, the insurers must launch countrywide insurance awareness campaigns. They should recruit, train and incentivise the intermediaries properly. Insurers must make a career in the insurance industry more exciting for the new generation of youth. More need-based products should be launched using IRDAI's Sandbox Scheme. Better Customer Engagement should continue

throughout the customer journey. Insurers should help people in risk adaptation and risk mitigation in addition to risk management.

Keywords

Insurance Penetration, Insurance Awareness, FDI inflow, Insurance Awareness Campaigns, Emerging Risks.

The Current Scenario shows little positive momentum

With the GDP growth rate of around 7%, the Indian economy is now the fastest-growing among the world's major economies. With the country's rising prosperity and enviable position in the global economy, there should have been an ever-increasing demand for various life and non-life insurance products, especially since India has a large population that is uninsured or underinsured. Our insurance industry is expected to exhibit increased Insurance Penetration and Density, the two recognised metrics for assessing the maturity of an insurance market. The sector has the mandate of reaching the lofty goal

of insuring all Indians by 2047. Let's look at what the ground realities are:

- India's insurance penetration stands at 3.7 according to the latest IRDAI Annual Report¹, with life insurance penetration at 2.7 and Non-Life Penetration at just 1. Insurance Density in India is just \$97 compared to the global average of \$943. So, India is far behind the world's average in Insurance Density.
- According to the IRDAI Handbook 2023-24², the life insurance industry experiences a low 61-month Persistency Ratio. 20 out of 27 life insurers have below 50% of 61-month persistency ratios (in policies). That means more than 50% of the policies are lapsed, surrendered and resulted in death claims within 5 years of commencement of policies.
- The IRDAI Handbook also says that the number of in-force policies of the life insurers hovers between 32 and 33 crores only. Since many customers have

multiple policies, the total number of unique policyholders will not exceed 22 crores at the moment. That again underlines the fact that we are yet to find a roadmap for how insurance can be made available to all Indians.

- Incurred Claims Ratios of public sector non-life insurers continue to be high and it stands at 97.30% in 2024-25. This ratio is somewhat favourable for private non-life insurers.
- Many non-life insurers are sustaining based on the reduction of operating expenses and improvement in investment incomes, rather than on profitability.

Let us see what the Insurance Penetration levels of various developed and emerging countries of the world are, in Table-1.

Table 1: Insurance Penetration and Density of Developed Countries Alongside India

Country	Life Insurance Penetration	Non-Life Insurance Penetration	Total Penetration	Total Insurance Density (\$)
United Kingdom	9.2	2.6	11.8	6,185
Sweden	6.8	1.8	8.6	4,975
France	6.5	3.1	9.6	4,432
Italy	5.4	2.2	7.6	3,053
Switzerland	2.7	4.0	6.7	6,980
Taiwan	7.5	3.2	10.7	3,614
South Korea	4.2	5.3	9.5	3,395
Singapore	6.5	1.7	8.2	7,468
Japan	6.4	2.0	8.4	2,738
US	2.7	9.4	12.1	10,295
South Africa	9.6	2.4	12.0	756
Canada	3.3	4.8	8.0	4,389
India	2.7	1.0	3.7	97

Source: IRDAI Annual Report 2024-25

In Table 1, we find that all developed and powerful emerging countries have Insurance penetration much above that of India. Non-life insurance penetration in India is among the lowest in the world. Some people argue that middle-class and upper-middle-class Indians have become more return-conscious, which is why they prefer to invest more and save less through life insurance products.

But Table 1 shows that, despite the stock and derivatives markets being quite mature in developed countries, this has not diminished the value of life insurance there.

The Challenges that hinder the development of the Industry

Low Insurance Awareness

Even 78 years after independence from British rule and 26 years after the opening of the insurance sector, most Indians still do not understand the value of insurance. This is due to the absence of financial literacy in large sections of our population. According to a latest report published by the online Insurance Marketplace Policybazar titled "How India Buys Insurance"³, nearly 50% of Indians are totally unaware of the Term Assurance products. There is a critical insurance gap in Health Insurance adoption, as well. According to this report, 48% of Health Insurance customers opt for a family floater plan of just Rs. 5 lakh or less when the medical inflation in healthcare expenses is skyrocketing. Most people have yet to value insurance as a risk management tool. Life insurance is hardly viewed as a savings tool. In the bigger cities, people tend to spend disproportionately higher amounts on risky investment products. There is an appalling lack of financial preparedness and risk perception even among the well-educated, upper-middle-class Indians.

Insurance Intermediaries are yet to come of age

Insurers still depend heavily on offline intermediaries in general and tied agents in particular. This is because Indians still depend heavily on these insurance intermediaries for insurance-related information and advice. But these intermediaries lack basic skills that can help them acquire new customers in larger numbers. The insurance intermediaries are not adept enough at identifying the prospects, assessing their life insurance needs, suggesting the right products and being in touch with the customers throughout the customer journey. The intermediaries primarily look for people who appear to have the ability to buy high-value policies, which in turn can fetch high commission incomes. While everyone in their communities has insurance needs and has some purchasing power too, the intermediaries are not able to insure a greater number of Indians. The intermediaries are always in a hurry to complete the sales process and very often end up selling either the wrong products or selling products that customers later find too expensive to keep in force. This leads to lower persistency ratios of the insurers.

A plethora of investment products vie for a good slice of the customer's investable surplus today. People are in the habit of mixing up savings and investment-oriented products and insurance products have to compete with financial products that are quite different in nature. The insurance

industry is not able to get the type of insurance intermediaries it really needs in this fiercely competitive scenario. Although insurance is considered everywhere in the world as the cornerstone of sound financial planning, our intermediaries fail to position insurance as a financial planning product in addition to being a risk management product. As the intermediaries are not conversant about the insurance products and also other financial products available in the market, they can not always sell insurance confidently and keep running here and there to somehow reach business targets. In our country, most youths join the industry as agents when they fail to get decent white-collar jobs. There are more than 26 lac agents now, with half of them belonging to the private insurers. Agency Managers look for people who can somehow sell a few products. Many people join this profession just to supplement their existing incomes coming from totally different occupations. We have many school teachers, shopkeepers, housewives and retired persons working as part-time insurance agents. Many of them view it as a temporary job, rather than a long-term career option. Many of them cannot answer the queries raised by prospects knowledgeable in financial matters.

Many of the agents contact their customers only with the intention of collecting renewal premiums or selling more policies. This type of "sales only" attitude alienates them from the public they are supposed to

serve. When they find the job tough, they quit their job at the insurance agency, leaving a trail of dissatisfied customers. Unless the intermediaries are passionate about keeping their customers happy, the industry can't create loyal customers in larger numbers. In the absence of loyalty, insurance penetration takes a hit.

Table 2 shows the average productivity of agents, which is really dismal for most insurers.

From Table 2, it is clear that most private insurers find it challenging to build a productive tied-agency channel, although the private insurers together have an equal number of tied agents as LIC. It is also clear that the profession of insurance agency is not bringing enough income for the agents on average. LIC depends heavily on tied agents as this channel brings 93.86% of the total individual insurance business of LIC. However, even the productivity of LIC agents has come down to 14 from 28 in the last 10-15 years. Private insurers are sourcing 49.66% of new business from the bancassurance channel. But Bancassurance is showing serious shortcomings in India. There are far too many grievances against this channel at Consumer Courts and the offices of Insurance Ombudsmen. It is now clear that many bancassurance partners prioritise commission-earning over need-based selling. Also, bank employees are not always properly trained on the nature of insurance contracts. Insurance Penetration can increase if insurance intermediaries better understand their roles and responsibilities.

Table 2: Average Productivity of Agents (No of Policies) Per Annum

Insurer	Average Productivity	Average Premium (In Rs. Lakh)	Insurer	Average Productivity	Average Premium (In Rs. Lakh)
LIC	14	3.9	Birla Sunlife	2	1.78
Ageas Federal	1	1.03	Aviva	1	1.89
Bajaj Allianz	1	1.35	Bharti Axa	1	0.41
Canara HSBC	1	1.29	HDFC Life	1	1.15
ICICI Prudential	1	1.45	India First	5	3.46
Kotak Life	1	0.79	Max Life	1	1.84
PNB Metlife	1	0.87	Pramerica	1	0.54
Reliance Nippon	1	0.57	SBI Life	3	2.25
Shriram	1	0.97	Star Union Dai-ichi	1	0.66
Tata AIA	2	2.17	Private Average	1.4	1.41
Industry Average	7.6	2.63	-----	-----	-----

Source: IRDAI Handbook 2023-24

Insurers are under pressure to grow both in Top-line and Bottom-line

Insurers are under pressure to grow their top-line, as that improves their market share. They also need to grow in the bottom-line, as that keeps them profitable in the industry. As some of them are listed companies, they have an obligation towards the shareholders to quickly improve profitability. What the insurers fail to see is the larger picture. If the insurers can insure larger and larger members of the uninsured population and can keep the policies in force for a long time, both the goals of growing in top-line and bottom-line will be achieved. So, there is no conflict between growing the top-line/bottom-line and the number of people insured. Insurers can find value in all market segments today, provided they are focused on selling the right

products to the right people. The insurers have to develop need-based products (and not one-size-fits-all types of products) that may appeal to diverse market segments. If this is kept in mind, there will be better Policy Persistency, better top-line and better bottom-line. Table 3 shows that most insurers have below 1 crore in-force policies as of the date!

Table 3: Number of In-force Policies of Insurers (in crores)

Insurers	Policies In-Force	Insurers	Policies In-Force
LIC	27.51	Birla Sunlife	0.22
Ageas Federal	0.06	Aviva	0.04
Bajaj Allianz	0.41	Bharti Axa	0.07
Canara HSBC	0.09	Edelweiss Tokio	0.03
Future Generali	0.04	HDFC Life	0.80
ICICI Prudential	0.52	India First	0.13
Kotak Life	0.24	Max Life	0.52
PNB MetLife	0.18	Pramerica	0.03
Reliance Nippon	0.23	SBI Life	1.17
Shriram Life	0.14	Star Union Dai-ichi	0.08
Tata AIA	0.35	Private Total	5.44
Industry Total	32.95	-----	-----

Source: IRDAI Handbook 2023-24

From Table 3, it is clear that the insurers find it challenging to keep policies in force, as only two insurers have one crore plus in-force policies.

Non-life insurers find it difficult to go beyond Motor and Health Insurance

More than 70% of non-life insurance premiums come through Motor and Health Insurance. Other important segments, such as property, marine, engineering, and liability, are grossly underpenetrated. Insurance for SMEs remains limited outside the Tier-I cities.

In the absence of historical data, non-life insurers are hesitant to insure emerging risks in a big way, such as cyber risk, climate risk, supply chain risk, and terrorism-related risk. The risk-taking capacity of domestic reinsurers is also limited. Also, most insurers are risk-averse and prefer insuring Motor and health-related risks primarily.

The health insurance industry finds it challenging to sell its products to retail customers. Only 39% of health insurance premiums come from retail customers. With the government-sponsored Ayushman Bharat scheme insuring the lives of 50 crores, the insurers find their market size squeezed. On top of it, the leading hospitals have developed excessive bargaining power over the insurers and the costs of medical treatments are increasing everywhere. All this is stifling the growth and profitability of the non-life sector.

The quantum of the FDI inflow is not too encouraging

Private insurers need a good amount of capital to make their presence felt across the country and scale up operations. Now that foreign insurers are allowed to bring 100% of their capital, the industry feels they can jumpstart their operations with renewed vigour. But, the insurers will do well to remember that even when the FDI limit was raised from 49% to 74%, there was a large gap between actual inflow of FDI and its potential.

The foreign insurers find the Indian regulations too compliance-heavy and unpredictable as compared to the banking and Fintech sectors. Frequent rule changes on solvency norms and agents' commissions are something they were not comfortable with. Furthermore, they find that low insurance awareness and long break-even cycles (8-10 years) make it challenging to sustain operations in India.

The way forward for Insurers

We have just seen the challenges that continue to act as roadblocks in the road that is supposed to take the Indian insurance industry forward. Let us see how the insurers can remove these roadblocks and march towards the goal of providing the protection of insurance to all.

Insurers must work vigorously to increase Insurance Awareness at the Ground Level

Our Education System makes the students job-ready. But there is little emphasis on building life skills. The

skill to manage Personal Finance is a quintessential life skill. The students need to learn the value of earning, saving, responsible spending and giving. The insurers and the insurance regulator should work in tandem to persuade the educational boards to include Personal Finance in the curriculum. The students of schools/colleges need to learn the basics of savings, risk management and insurance. Educational seminars on the value of Insurance should be conducted regularly. It should be explained why protecting one's money is equally important as growing money.

Insurance companies should encourage the premier Business Schools to incorporate Actuarial Science and Risk Management into their curriculum. Currently, Finance and Marketing are well-represented in the course, but insurance-specific modules continue to be missing.

Insurance Intermediaries should be properly selected, trained and incentivised

Insurance intermediaries, in general, and tied agents in particular, must be selected with care. There is a misconception among some industry leaders that the more insurance agents, the merrier it is for the industry. This conception is wrong, as the productivity of agents (in terms of the number of policies sold) decreased continuously in India with the number of agents. The solution lies not in possessing a large army of agents but in equipping these foot soldiers with the right armoury.

The insurers have to select such people as agents who have enough patience in getting results and an ethical orientation. There should be more career-oriented recruits rather than part-time or family/friend network sellers. If the agents do not fit the values and culture of the industry, they are found to work at cross purposes. Many insurance agents are found to be more interested in selling financial products other than insurance. Training has to be not just on information on the products, but also on financial planning, customer sensitivity and ethical selling.

Agents should be rewarded not just for bringing new business but also for registering better policy persistency and customer satisfaction. Each new agent should be tied up with one experienced mentor for the initial few months of their agency career to set the recruits on the right track. The agents who show better customer sensitivity should be made Financial Partners through campaigns and testimonials. This will improve the image of the agency profession in society. Once agents get a more respectful place in society, they can do their work with honour and greater confidence.

Insurance should be promoted as an industry that offers satisfying and intellectually stimulating careers

If the industry has to grow rapidly, it should be able to attract the best talent. If the insurers want better talent, they have to increase the entry-level pay package. The

organisational structure needs modification, too. As the structures of the insurers are mostly hierarchical and compliance-driven, career advancement is slow in the industry. To attract better talent graduating from top universities/management institutes, the organisational structures have to change to facilitate faster career advancement.

As today's youths prefer innovation-led roles in the areas of AI, Data Science and Customer Experience Design rather than routine administrative jobs, the job contents have to change to make the job in the industry more exciting and intellectually satisfying. The industry should also create easily accessible thought leaders to mentor the young recruits.

To attract the best talent, insurers can rebrand the insurance industry as one that promotes financial protection through the use of Data Science and Behavioural Economics. This can attract the youths who are driven by an urge to work for a noble cause.

More innovative products should be developed

Insurers mostly launch products that are one-size-fits-all in nature. Life insurance needs are different for a typical white-collar employee, a gig worker and a self-employed individual. Insurers have to develop suitable products for each category of people. They can test the viability of products through the Regulatory Sandbox Scheme. Now, three years are allowed to test the viability of a product launched under Regulatory

Sandbox scheme. This facility should be used by both life and non-life insurers.

Embedded insurance products can also be developed by contacting the businesses that offer non-insurance products, which can provide bite-sized insurance products as add-ons. Insurers have to identify "Insurance Moments" which are naturally connected with events like buying a motorbike, starting a business or proceeding on adventure tourism. There should also be more bundled insurance products like car plus flood insurance, health care plus mental wellness, travel cancellation plus lost device plus cyber risk insurance, etc.

AI-driven segmentation of the market can be made on the basis of data on spending, mobility and lifestyle. That will help develop need-based products and market them to the right people at the right time.

Customer Engagement should be livelier and more interactive

To engage with the customers better, the insurers have to begin with deep customer understanding. Engagement has to be pleasant and continuous. Right now, engagement between insurers and insureds happens at the time of purchase/renewal of insurance products or claims. Insurers have to develop a 360-degree engagement during the entire customer journey. Level of engagement can improve only through tailored communications. Such personalised communications can make insurance more useful.

Non-life insurers should help people in Risk Mitigation and Adaptation

Non-life insurers should not project themselves solely as indemnifiers of losses, but rather as entities that can help people adapt with and mitigate various risks. In health insurance, their focus should be on promoting better health by arranging regular health check-ups, fitness tracking and rewarding a healthy lifestyle. They can develop affordable long-term health care plans for senior citizens. There should also be micro health covers and short-term health insurance covers for low-income people and gig workers.

Non-life insurers should not shy away from developing products that manage Emerging Risks

The non-life insurers can improve their penetration and profitability by developing more cyber insurance

products and natural catastrophe insurance products. For these to happen, they can tie up with leading climate scientists, cybersecurity specialists and data scientists to model such risks accurately, on the basis of historical data. Partnerships with InsurTechs can also help. Catastrophe Bonds can also be floated. In respect of cyber insurance, our insurers can learn a lot from the insurers of the US and Israel, while a lot can be learnt from the Japanese insurers for developing climate risk insurance products.

Insurers have to set their Houses in Order

Indian insurers have to do their own basic jobs properly before they can expect the FDIs to roll in. The Sabka Bima Sabki Raksha (Amendment of Insurance Law) Act 2025, which was recently passed

in Parliament, has paved the way for foreign insurers to bring in 100% capital. But insurers need to get their chronic ailments cured before that. Foreign partners can bring technical and actuarial expertise, customer-centric processes and best global practices. Our chronic illnesses are low insurance literacy, a widespread culture of mis-selling and churning among a large section of insurance intermediaries and an inability to change the organisational structure. No foreign insurer is expected to dirty its hands by attempting these basic jobs. Indian insurers know the Indian conditions best and they have to cure the chronic ailments by taking necessary remedial measures. If the insurers want to insure the lives and properties of all Indians by 2047, they may take certain remedial steps suggested in the preceding sections of this paper. **■**

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Climate Risk Insurance and Green Finance: Building a Resilient Financial Ecosystem for Start-Ups in Uttar Pradesh



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Abstract

Climate change creates financial threats for new-age companies especially in developed states like UP. This study looks at which start-ups in the state are aware of and have adopted Climate Risk Insurance (CRI) and Green Finance (GF), the main barriers to their adoption and which sectors are more climate vulnerable. A descriptive and analytical research design was adopted with the help of primary data, gathered through a structured questionnaire from 150 purposively selected start-ups, and supported through secondary

sources. Percentages and frequency distributions were used to analyse. The results show that there is moderate to high level of awareness regarding CRI and GF among start-ups as 84 percent of start-ups reported moderate or high awareness of CRI and 82 percent of GF. They remain at low adoption, with CRI at 21% and GF at 27%. The main barriers are high costs, low tech-savviness, procedural complexity and lack of institutional support. According to a report, agriculture tech start-ups show a high level of climate vulnerability of 68%. This is followed by manufacturing with 42%

and IT and Services are comparably less vulnerable. This study looks at how CRI and GF function together in improving start-up resilience, something we know little about at the state level. This means affordable, simpler and sector-specific financial instruments backed by stronger institutional coordination will lead to improved adoption and enhance the financial resilience of UP start-ups.

Keywords

Climate Risk Insurance, Green Finance, Start-Ups, Climate Vulnerability, Financial Resilience, Uttar Pradesh.

1. Introduction

Climate change poses a threat to economic stability and sustainability for business firms globally (Agarwal et al., 2018). In India, natural phenomena like floods, drought, heatwaves, and unpredictable weather have become more frequent, hindering smooth running of businesses (Arora & Pujar, 2024). This makes climate vulnerable start-up firms vulnerable due to low financial buffer, poor risk management practices, and limited funding options (Bhatnagar, Taneja, & Özen, 2022). It is, therefore, necessary for Uttar Pradesh, which has a burgeoning start-up culture, agriculture, and industries along with environmental vulnerability, to adopt financial measures for business resilience and sustainability (Chaturvedi et al., 2024).

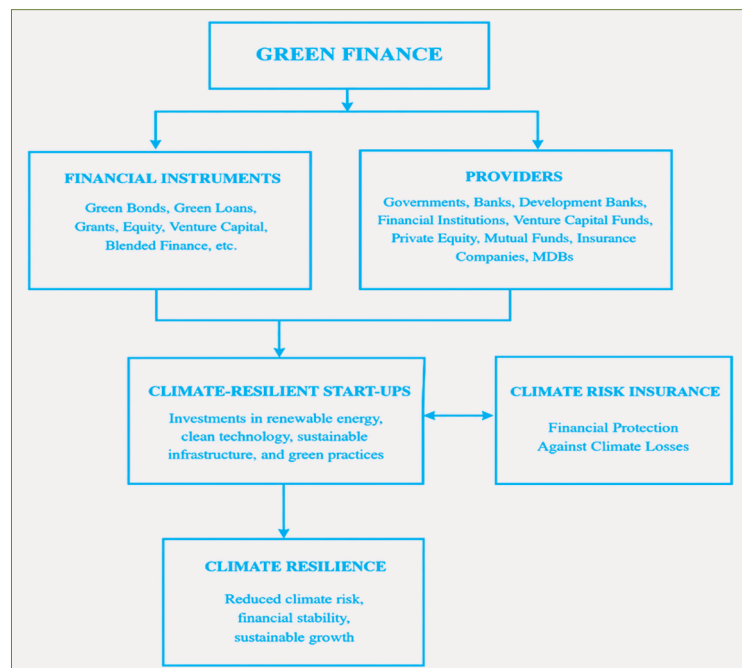
Green Finance (GF) ensures that capital flows towards environmentally sound and resilient actions, which comprise reduction in greenhouse gas emissions, energy efficiency, natural resource conservation, renewable energy, and sustainability (Ghosh, 2022; Kim, 2020). Through the inclusion of environmental and social considerations in financial decisions, GF ensures sustainable infrastructure, green technologies, climate-resilient business models, and a low-carbon economy (Taneja et al., 2023; Landscape of Green Finance in India, 2024). The adaptation aspect of GF includes climate-resilient infrastructure, while the mitigation side of GF includes renewable energy, energy-efficient production, green transport, sustainable agriculture, waste

management, and low-carbon industries (Chaturvedi et al., 2024). In start-up firms, GF provides green technologies, renewable energy, sustainable production, circular economy approaches, and climate-smart technology. Indian initiatives through renewable energy, green infrastructure, green bonds, ESG investments, and climate entrepreneurship have made GF more relevant. In Uttar Pradesh, GF may help to mitigate environmental vulnerability while promoting sustainable businesses (Bhatnagar, Taneja, & Özen, 2022; Garg & Srivastava, 2025).

Climate Risk Insurance (CRI), on the other hand, is another way to complement GF by securing start-ups against financial harm resulting from floods, droughts, storms, heat waves, and other weather conditions related

to climate change (Ghosh, 2022). While GF aids in the efforts towards prevention and risk mitigation, CRI enables recovery and continued operations. However, the adoption of both policies by start-ups in India is inconsistent across states (Gopan & Singh, 2024).

Figure 1 represents the complimentary approach. Government, banks, financial institutions, private equity firms, mutual funds, multilateral development banks, and insurers offer grants, green bonds and loans, equity, venture capital, blended finance, credit lines, refinancing, and insurance. The above-mentioned funds are used to finance green technologies, sustainable infrastructure, and responsible conduct of business, while CRI prevents risks of climate change.



Source: Author's Own Compilation

Figure 1: Conceptual Framework Linking Green Finance and Climate Risk Insurance for Climate-Resilient Start-Ups

The state of Uttar Pradesh provides a platform to analyze this relationship due to climate exposure faced by the agri-tech, manufacturing, renewable energy, and IT services industries in this state (Isaac, 2022). Poor awareness, financial limitations, poor institutional frameworks, and policy hurdles make the implementation of GF and CRI difficult (Krishnan et al., 2021). Evidence at the state level is scarce when it comes to the areas of awareness, adoption, obstacles, and sectoral vulnerabilities. This research paper seeks to fill this void by investigating the above-mentioned aspects and the synergistic nature of GF and CRI (Kumar, Babu & Deshmukh, 2024).

1.1 Research Questions

The study addresses the following research questions:

1. What are the levels of awareness and adoption of CRI and GF among start-ups in Uttar Pradesh?
2. What are the major barriers influencing their adoption?
3. How does sector-specific climate vulnerability differ, and what are its implications for financial resilience?

1.2 Research Objectives

The study aims to:

1. To assess awareness and adoption of CRI and GF among start-ups in Uttar Pradesh.

2. To identify economic, informational, procedural, and institutional barriers to their adoption.
3. To examine sector-wise differences in perceived climate vulnerability and implications for financial resilience.
4. To examine the complementary role of CRI and GF in strengthening financial resilience in Uttar Pradesh.

2. Literature Review

The studies regarding Green Finance (GF) and Climate Risk Insurance (CRI) have proliferated along with climate change, sustainable investments, and business resilience. However, there is a lack of research that examines the role of both in the context of start-up resilience in Uttar Pradesh.

2.1 Green Finance Instruments

GF directs funding into areas such as renewable energy, green infrastructure, clean technology, resource efficiency, and climate adaptation. Grants by the government go into renewable energy, clean technology, sustainable farming, and conservation. Green bonds provide financing for renewable energy, energy-efficient buildings, transport, waste management, water efficiency, and resilient infrastructure; green loans finance renewable energy, green buildings, pollution control, sustainable production, and agriculture.

Equity financing allows start-ups to obtain funding without any obligation to repay in fixed amounts. Green

venture capital involves both finance and expertise/networks. Private equity helps in upgrading and scaling up operations. Blended finance utilizes public, private, and philanthropic capital to lower risks and bring in investment. Green lines of credit offer flexible finance to improve efficiency in terms of machines/energy and adaptation; and refinancing enhances liquidity for green loans. These instruments support adaptation, emissions reduction, resilience, competitiveness, and growth.

2.2 Green Finance Providers

GF is provided by governments, banks, financial institutions, NBFCs, venture capital firms, private equity, mutual funds, MDBs, and insurance companies using grants, loans, equity, guarantees, technical assistance, and CRI. The government provides policies, subsidies, tax incentives, and regulations, banks provide green finance, and NBFCs provide project financing, green lending, advisory services, and risk management. Green and ESG businesses receive venture capital, private equity, and mutual fund investments. MDBs like the World Bank and Asian Development Bank provide finance, guarantees, expertise, and capacity building for renewables, adaptation, and disaster-risk reduction. Insurance companies provide CRI. Providers of GF assist in mitigation, adaptation, innovation, and risk management.

2.3 Green Finance and Climate Risk Insurance

GF and CRI complement each other in relation to climate-related

risks in finance and development. GF facilitates the development of renewable energy, resilient infrastructure, sustainable technologies, and agriculture, while CRI covers risks such as flooding, drought, storms, heat waves, and other types of damages caused by climate change. GF facilitates prevention and risk reduction, and CRI offers recovery services, which allows for preventive investment and continuous business operations.

In case of agriculture, manufacturing, and renewable energy startups, GF and CRI can complement each other and enhance resilience. GF fosters sustainable production and technologies, while CRI covers climate-related losses and may enhance investor confidence and low-carbon growth. Coordination among governments, financial institutions, insurers, and investors is necessary for climate adaptation and entrepreneurship.

2.4 Review of Previous Studies

Lakhanpal, Singh, and Choudhury (2023) found that GF was responsible for encouraging innovation and sustainability in green start-ups from India. Paul and Poddar (2024) have stated that ESG collaborations help in getting financial support. Sarin and Sharma (2024) found that GF encourages innovation and climate-resilient models, but awareness, regulation gap, and access barrier are some of the barriers for its implementation.

Taneja et al. (2023) Stressed the importance of green bonds, climate

funds, and ESG approaches for reducing risks, raising capital, ensuring stability, and achieving environmental objectives. Yadav (2022) showed that responsible investments, green finance, and sustainability reporting promoted sustainable development and reputation.

Climate Finance for Adaptation and Sustainable Development in India (2025) Focused on renewable energy, adaptation, resilient infrastructure, and institutional collaboration for small businesses. Green Finance and Climate Risk Mitigation in India (2022) emphasized the importance of enabling policies and better access to green financing. Green Finance and Investment in India: Revealing Enablers and Barriers for a Sustainable Future (2025) noted that policy, institutional financing, investor confidence, and regulations were enablers, while awareness, financial limitations, and complexity were barriers.

Green Portfolio Optimization and Sustainable Investments in Indian Markets (2023) concluded that sustainable investments facilitate environmental protection and financing. Climate Oriented Financial Products Such as Climate Insurance and Green Bonds in India (2025) concluded that using green bonds along with climate insurance increases resilience and adaptation in climate sensitive industries and new ventures.

In general, there is evidence for the relevance of GF, climate finance, sustainable investments, CRI, and

green start-ups to sustainability and resilience. Yet, lack of knowledge, lack of support, procedural problems, and limited funds hinder their use. Furthermore, their combined contribution to start-up resilience has not been sufficiently studied.

2.5 Research Gap

Previous literature includes GF, climate finance, sustainable investing, bonds, loans, grants, blended finance, and funding agencies. Nonetheless, most of these studies are more conceptual or national, and little work has been done on the climate-vulnerable start-up ecosystem of Uttar Pradesh. Moreover, there has been little discussion of the combined effect of GF and CRI. Costs, complexities, lack of knowledge, low awareness, and inadequate support continue to remain understudied.

This research fills these gaps by studying the issues of awareness, adoption, barriers, and vulnerability for start-up firms of Uttar Pradesh, considering both GF and CRI.

The outcomes aim to help the policymakers, financial institutions, insurers, and entrepreneurs make their financial strategy.

3. Research Methodology

The research methodology followed a descriptive and analytical approach using primary data collected through a well-designed questionnaire from 150 purposely selected start-ups offering their services in the state of Uttar Pradesh, along with relevant secondary data. The analysis of awareness, adoption, barriers, and

vulnerability of different sectors to Climate Risk Insurance and Green Finance has been carried out through descriptive statistics, such as percentages and frequency distribution.

3.1 Research Design

The research design used in the current study is descriptive and analytical because the aim of the study was to determine the level of awareness, adoption levels and the obstacles that come with Climate Risk Insurance (CRI) and Green Finance (GF) and how the start-ups are vulnerable given the sector in the state of Uttar Pradesh. The use of the research design was considered appropriate in this case because it was possible to collect and analyze data systematically.

3.2 Population of the Study

The targeted population was the start-up firms located in the state of Uttar Pradesh that had businesses operating in the fields of agriculture technology, manufacturing, and IT services. The selection of these specific industries was done considering the susceptibility of these industries to climate change risks and their significance in contributing to the economic growth of the state.

3.3 Sample Size and Sampling Technique

The study adopted purposive sampling technique to select a sample of 150 start-ups. This process was done to facilitate the selection of start-ups that had been exposed to an extent where they

could have made financial decisions concerning risk management and sustainability. Purposive sampling was conducted in order to ensure that the respondents were well informed and held enough powers on issues of financial risk management and sustainability strategies within their organizations. The founders, co-founders, and senior management team were the main respondents since they were directly involved in decision-making processes.

3.4 Sources of Data

This research has used primarily primary data, while the secondary data was used as an additional source.

- **Primary Data:** Primary data collection involved the use of an elaborate questionnaire which the start-up representatives filled. The questionnaire underwent scrutiny by subject experts to ensure validity and measure clarity.
- **Secondary Data:** The secondary data were obtained from government publications, policy statements, research articles and literature available in the startup ecosystem on climate finance, insurance, and sustainable entrepreneurship.

3.5 Data Collection Procedure

The information was gathered through the use of questionnaires and discussions with the start-up representatives. The respondents were notified beforehand about the purpose of the study and their privacy assured. Information was gathered

within a certain period in order to ensure reliability.

3.6 Tools and Techniques of Data Analysis

Data analysis was done using descriptive statistics like percentages and frequency distributions. Tables and graphical representations in the form of bar charts were used to make the interpretation of data easier. Comparison was made with the intention to understand the trends of awareness, adoption, barriers, and climate vulnerability of start-ups based on sectors. Since this research is based on purposive sampling and uses descriptive analysis, the findings can be considered exploratory in nature.

4. Results and Discussion

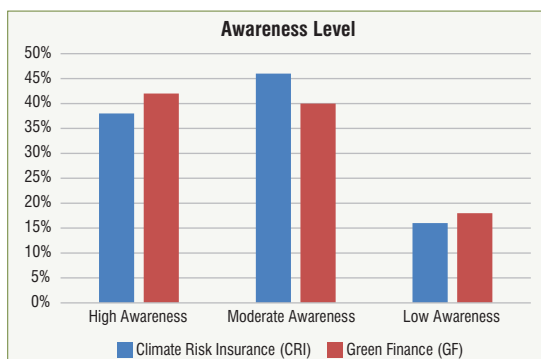
These results show a significant awareness-adoption gap for Climate Risk Insurance (CRI) and Green Finance (GF) amongst start-ups in the state of Uttar Pradesh. While awareness is medium to high, adoption is not very high, primarily due to cost considerations, difficulty, lack of expertise, and lack of institutional support. Agricultural and manufacturing start-ups are more climate vulnerable than IT and service start-ups.

4.1 Awareness of Climate Risk Insurance and Green Finance

Table 4.1 shows the levels of awareness for CRI and GF among start-up companies as high, medium, and low.

Table 4.1: Level of Awareness of Climate Risk Insurance and Green Finance among Start-Ups in Uttar Pradesh

Awareness Level	Climate Risk Insurance (CRI)	Green Finance (GF)
High Awareness	38%	42%
Moderate Awareness	46%	40%
Low Awareness	16%	18%



Source: Author's Own Compilation

Figure 2: Graphical Representation of Level of Awareness of Climate Risk Insurance and Green Finance among Start-Ups in Uttar Pradesh

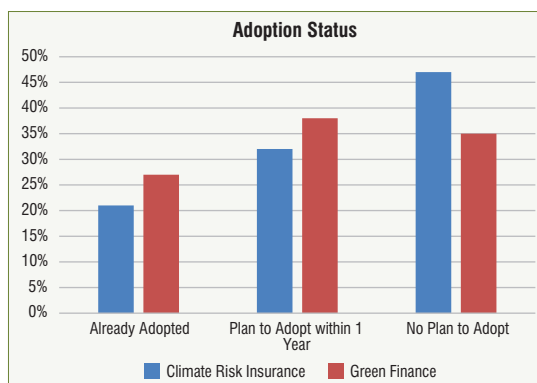
The findings indicate relatively high awareness of both tools. High and medium awareness constitute 84% for CRI and 82% for GF. High levels of awareness for GF are higher (42%) compared to CRI (38%). But 16% of the participants have low awareness of CRI while 18% have low awareness of GF, indicating the need for targeted awareness and capacity-building measures.

4.2 Adoption of CRI and GF

Table 4.2 below shows the current and desired use of CRI and GF.

Table 4.2: Adoption Status of Climate Risk Insurance and Green Finance among Start-Ups

Adoption Status	Climate Risk Insurance	Green Finance
Already Adopted	21%	27%
Plan to Adopt within 1 Year	32%	38%
No Plan to Adopt	47%	35%



Source: Author 'Own Compilation

Figure 3: Graphical Representation of Adoption Status of Climate Risk Insurance and Green Finance among Start-Ups

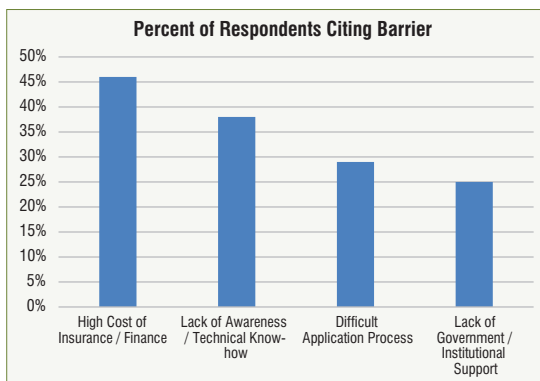
Adoption is still rare, as only 21% of firms have adopted CRI, while 27% have adopted GF. Another 32% will adopt CRI and 38% will adopt GF within one year from now. But 47% of companies will not be adopting CRI, while 35% will not be adopting GF. Hence, awareness has not turned into adoption in equal proportion, especially for CRI, highlighting the need for affordable products, simpler procedures, and supportive policies.

4.3 Main Barriers to Adoption

Table 4.3 shows the main barriers that hinder the application of CRI and GF.

Table 4.3: Major Barriers to the Adoption of Climate Risk Insurance and Green Finance

Barrier	Percent of Respondents Citing Barrier
High Cost of Insurance / Finance	46%
Lack of Awareness / Technical Know-how	38%
Difficult Application Process	29%
Lack of Government / Institutional Support	25%



Source: Author's Own Compilation

Figure 4: Graphical Representation of Major Barriers to the Adoption of Climate Risk Insurance and Green Finance

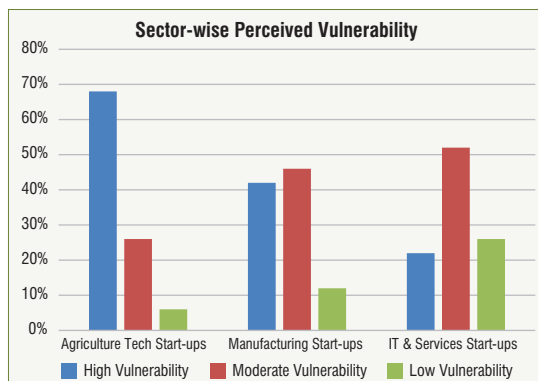
Expensive insurance/finance constitutes the main hindrance, being pointed out by 46% of the respondents. The next one is lack of awareness and technical skills, with 38%. Application complexities and lack of institutional backing account for 29% and 25%, respectively. The results above show that reduction in cost, simplification, better technical capacity, and institutional support are necessary for greater adoption.

4.4 Sector-wise Vulnerability to Climate Risk

Table 4.4 illustrates perceived climate vulnerability among Agriculture Tech, Manufacturing, and IT & Services start-ups.

Table 4.4: Sector-wise Perceived Vulnerability of Start-Ups to Climate Risks in Uttar Pradesh

Sector	High Vulnerability	Moderate Vulnerability	Low Vulnerability
Agriculture Tech Start-ups	68%	26%	6%
Manufacturing Start-ups	42%	46%	12%
IT & Services Start-ups	22%	52%	26%



Source: Author's Own Compilation

Figure 5: Graphical Representation of Sector-wise Perceived Vulnerability of Start-Ups to Climate Risks in Uttar Pradesh

The vulnerability of Agriculture Tech is highest at 68% of companies indicating high exposure to risk. The vulnerability of manufacturing is more diverse, with 46% having moderate and 42% high vulnerabilities. IT and Services have comparatively lower vulnerability at 52% moderate and 26% low levels. These findings support sector-specific climate-risk policies, particularly stronger CRI and GF measures for agriculture and manufacturing.

Percentage and Frequency distribution is the best way to analyses data since the research is an exploratory study that used purposive sampling. Inferential statistics was not employed because the study aims at identifying patterns as opposed to finding causation.

4.5 Discussion of Findings

Results show there is indeed a difference between awareness and adoption of sustainable business practices. Where awareness of CRI stands at 84% and of GF at 82%, the adoption rate is at 21% for CRI and 27% for GF. It can be seen that the major barriers are high costs, lack of technological know-how, and complicated procedures.

AgTechs and manufacturing start-ups experience greater climate risks compared to IT and service start-ups; thus, they need accessible insurance, simplified financing, sector-specific offerings, and institutional backing. It is also clear from the results that there are limitations in terms of implementation and policy due to issues such as

affordability, process, and sector-specific requirements.

4.6 Policy Implications

The results reveal four main policy priorities, which include affordability of CRI products, ease of application and eligibility requirements, awareness and capacity building programs, and financial instruments that target the highly vulnerable agriculture and manufacturing sectors. It is important that coordination between all stakeholders be increased in order to enhance access, translate awareness into adoption and build financial resilience.

4.7 Limitations of the Study

The cross-sectional method does not allow any study of change over time. The study's Uttar Pradesh focus prevents its generalization to other states, while purposive sampling hinders sample representativeness.

The use of descriptive statistics prevents any causality from being studied as well. In future studies, there is need for using longitudinal designs and probability samples, comparative state-level studies, and inferential methods.

5. Conclusion

The current research thus shows that Climate Risk Insurance and Green Finance are two areas that have tremendous potential in improving financial resiliency among start-ups in Uttar Pradesh; however, their adoption has been poor in spite of the existing moderately high to high awareness about them. This has been the case mainly due to high costs, complicated procedures, lack of technical knowledge, and institutional support. The other important findings show sectoral variation in that the start-ups in agriculture and manufacturing sectors experience more climatic risk than those in IT

and services. To overcome these hurdles, government departments need to develop subsidized and streamlined climate risk insurance programs, financial organizations need to broaden the availability of green finance with relaxed eligibility requirements, and startups need to include climate risk assessments in their financial planning processes for greater resilience. It is necessary to have better coordination between the government departments, financial organizations, and startup development organizations in order to create a sustainable financial environment that can cope with climate risks and encourage entrepreneurship in the state. Future studies might consider extending this study using longitudinal and comparative designs at the state level, and advanced statistical methodologies to better capture causal relationships and evolving adoption patterns. 

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Prospect of Health Insurance Industry in India- A Study



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Abstract

Public health expenditure contributes nearly about 1.5% of total GDP in India. Present study highlights the prospect of health insurance industry in India over the years 2015-16 to 2024-25. From the study, we have observed that percentage of government health expenditure has been increasing over the years. Total real premium growth rate of health insurance in India has been increasing significantly over the years compared with other advanced and emerging economies. Insurance penetration and density are increasing over the years. Collection of total health insurance premium in India has been increasing over the years. Regarding financial performance of health insurers, it has been observed that additional capital infused over the years has been increasing. Both commission and operating expenses have been increasing over the years. Private insurers have been suffered by underwriting losses. Profit after tax of all the private insurers have been decreasing over the years. Most of the private health insurers are able to

meet the number of incurred claims to the customers out of the total collection of premiums.

Keywords

Public Health Insurance, Insurance Penetration & Density, Real Premium, Net Incurred Claim, Insurance Claim Ratio.

Introduction

Health insurance is an important product that covers human life. Public health expenditure contributes nearly about 1.5% of total GDP in India. 30% of the total health expenditure has been controlled by central and state Government and 70% of national spending on healthcare is out of pocket expenses (OOPE). Over the years, we have seen that public health expenditure has come down and as a result people do heavily depend on private health insurance schemes. Public funded health insurance schemes like Ayushman Bharat Yojana, Central Government Health Scheme (CGHS), health schemes available in different States should be more applicable to the people. Present study highlights the

prospect of health insurance in India over the years.

From the above table 1, we have noticed that total health expenditure as a percent of GDP deflates over the years 2013-14 to 2021-22. It signifies that amount of public health expenditures contributed by both the Central and State Governments is decreasing over the years. Developed nations like European Countries contribute as more public health expenditures to GDP over the years. In most of the cases health expenditures are fully subsidized by the Government. Total health expenditures per capita both at current and constant prices have increased over the years. It shows that people do heavily suffer from diseases and they rely on health insurances. Share of Government health expenditures has gone up over the years but not significant. Out of pocket expenditures over the years has gone down which signifies that both Central as well as State Government introduces some flagship health insurance schemes at a minimal amount of insurance per

Table 1: Key health financing indicators for India across NHA rounds

Sl. No.	Indicators	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
1	Total Health Expenditure (THE) as percent of GDP	4.0	3.9	3.8	3.8	3.3	3.2	3.3	3.7	3.8
2	Total Health Expenditure (THE) per capita (Rs.) at current prices	3638	3826	4116	4381	4297	4470	4863	5436	6602
3	Total Health Expenditure (THE) per capita (Rs.) at constant prices	3174	3231	3405	3503	3333	3314	3516	3752	4205
4	Current Health Expenditure (CHE) as percent of THE	93	93.4	93.7	92.8	88.5	90.6	90.5	89.7	87.3
5	Government Health Expenditure (GHE) as percent of THE	28.6	29	30.6	32.4	40.8	40.6	41.4	42.8	48
6	Out of Pocket Expenditure (OOPE) as percent of THE	64.2	62.6	60.6	58.7	48.8	48.2	47.1	44.4	39.4
7	Social Security Expenditure on Health as percent of THE	6.0	5.7	6.3	7.3	9.0	9.6	9.3	8.6	8.7
8	Private Health Insurance Expenditures as percent of THE	3.4	3.7	4.2	4.7	5.8	6.6	7.0	7.3	7.4
9	External/ Donor Funding for Health as percent of THE	0.3	0.7	0.7	0.6	0.5	0.4	0.5	0.7	1.1

Source: NHA Estimates for various years, NHSRC, MoHFW, MoSPI & Registrar General of India.

month from the people. Human life is uncertain, so, social security expenditures on health has come up over the years. Private health insurance schemes are introduced largely. So, share of private health insurance expenditures has gone up over the years.

Table 2: All Public Health Insurance Schemes in Union Government and State Governments

Sl. No.	Health Insurance Scheme	Central/ States	Coverage	Empaneled Hospital	Amount of Coverage	Coverage of disease under the scheme
1	Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY) (2017)	Govt. of India	55 crore beneficiaries cater 40% of population	Government Hospital-19491 Private Hospital-16599	5 Lakh per family per year	Primary, secondary and tertiary levels
2	Central Government Health Scheme (CGHS)	Govt. of India	40 Lakhs beneficiaries (Central Govt. employees, pensioners) are covered around 80 cities	Private Hospitals & Diagnostic Centers- 2940	10 Lakhs Cashless and reimbursement of indoor treatment	Primary, secondary and tertiary levels

Sl. No.	Health Insurance Scheme	Central/ States	Coverage	Empaneled Hospital	Amount of Coverage	Coverage of disease under the scheme
3	West Bengal Health Scheme (WBHS) (19.09.2008)	Govt. of West Bengal	2,37,561 beneficiaries (Govt. employees, Grant-in-aid College and University teachers)	Private Hospitals- 234	2 Lakhs Cashless and reimbursement of indoor treatment subject to the approval of DDO/PSA	Primary, secondary and tertiary levels
4	Swasthya Sathi (30.12.2016)	Govt. of West Bengal	Universal health insurance covering 2.42 crores families	Public and Private Hospitals- 2888	5 Lakhs per annum per family and entire premium is borne by the Govt. of West Bengal	Primary, secondary and tertiary levels
5	Assam Arogya Nidhi	Govt. of Assam	Below Poverty Line (BPL) families having monthly income of Rs. <10,000	Private Hospital outside the State- 30 Private Hospital inside the State- 07	1,50,000 per family being 50% shares by Govt. of India	General and specialized treatment of diseases
6	Dulari Kanya (15.08.2016)	Govt. of Arunachal Pradesh	Born of Girl Child	Govt. and Govt. recognized Private Hospital	Rs. 20,000 is deposited in minor Bank Account and maturity amount can be withdrawn by the beneficiaries on attaining the age of 18 years.	Delivery cases.
7	Chief Minister comprehensive Health Insurance Scheme (July, 2009)	Govt. of Tamil Nadu	Economically vulnerable families	Govt. and Private Hospital	Cashless Rs. 5,00,000 per family per year. Total coverage 1.48 crore as of 2024.	Secondary and tertiary levels.
8	Sruthitharangam (Cochlear implantation scheme)	Govt. of Kerala	Auditory verbal habilitation (AVH) for children in the Age group 0-5 years.	Govt. and Private Hospitals	Rs. 50,000 per beneficiary per financial year.	Hearing impairment.
9	Mukhya Mantri Himachal Health Care Scheme (HIMCARE)	Govt. of Himachal Pradesh	Total 8.6 lakhs patients have been enrolled	Govt. and Private Hospital	Rs. 5,00,000 per family per year	Primary, secondary and tertiary levels
10	Su-Swastha Yojana (April, 2021)	Govt. of Sikkim	State Govt. employees and dependent families	Govt. and Private Hospital	Rs. 10,00,000 per family per year	Primary, secondary and tertiary levels.
11	Nirmala Health Insurance Scheme	Govt. of Tripura	Physical with disabilities (PWDs)	Govt. and Private Hospital	Rs. 1,00,000 on reimbursement basis	Primary and secondary levels.

Sl. No.	Health Insurance Scheme	Central/ States	Coverage	Empaneled Hospital	Amount of Coverage	Coverage of disease under the scheme
12	Janani Suraksha Yojana (12.04.2005)	Govt. of India	Poor pregnant Women in all States and UTs	Govt. Hospitals	LPS in Rural area- Rs. 1400 LPS in Urban area- Rs. 1000 HPS in rural area- Rs. Rs. 700 HPS in urban area- Rs. 600	Delivery cases.
13	State Employee Health Insurance Scheme	Govt. of Jharkhand	Govt. employees and dependents	Govt. and Private empaneled hospitals	Rs. 5,00,000 cashless and total coverage is 6,22,946	Primary, secondary and tertiary levels
14	Jharkhand Rajya Patrakar Swastha Bima Yojana	Govt. of Jharkhand	Journalists and their families	Govt. and Private empaneled hospitals	Rs. 5,00,000 per year for accredited journalists	Primary, secondary and tertiary levels

Source: National Health Authority (NHA), www.pmjay.gov.in, <https://cghs.mohfw.gov.in/>, Ministry of Health and Family Welfare, Different States

Table 2 depicts the different public funded health insurance schemes that available to the lower middle-class, middle-class families around the country. Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY) has been started for the sake of very poor and marginalized section in our country. In this scheme around 55 crores catering 40% of Indian population are benefited from this scheme. Amount of coverage under this scheme is 5 lakhs per family and cover primary, secondary and tertiary level of disease. 19491 govt hospitals and 16599 private hospitals are empaneled under this scheme. Central Government Health scheme (CGHS) is the health insurance scheme exclusively for central govt. employees and pensioners having 40 lakhs beneficiaries around 80 cities. Amount of coverage under this scheme is 10 lakhs cashless and reimbursement of indoor cost.

West Bengal Health Scheme is the health insurance scheme for the govt. employees, grant-in-aid college teachers and universities of Govt. of West Bengal. Amount of coverage under this scheme is cashless Rs. 2,00,000 and reimbursement of indoor treatment. Swasthya Sathi is the flagship universal health insurance scheme of Govt. of West Bengal. Beneficiaries are other than Govt. employees covering 2.42 crores families. Amount of coverage is Rs. 5,00,000 per family per annum. Moreover, other public funded health insurance schemes in different states cover Govt. employees and lower marginalized section of the society.

Objectives of the Study

- To show the growth of Indian Health Insurance Industry in the Global scenario over the years 2015-16 to 2024-25.

- To highlight the collection of total Health Insurance premium in India over the years 2015-16 to 2024-25.
- To highlight the financial performance of Health Insurance Industry over the years 2015-16 to 2024-25.
- To show the claims paid (Gross) under Health Insurance business in India over the years 2015-16 to 2024-25.

Methodology

The entire study is exploratory and empirical in nature. Data regarding private health insurance companies and public health insurance schemes have been gathered from the National Health Authority (NHA), Ministry of health and family welfare and annual reports of Insurance Regulatory Development Authority (IRDA) over the years 2015-16 to 2024-25.

Data analysis, Presentation and Findings

1. To show the growth of Indian Health Insurance Industry in the Global scenario over the years 2015-16 to 2024-25

Growth of Health Insurance industry in India as well as in the World is measured in terms of growth in real premium by region in the World and premium volume by region in the World. So, we have mentioned the growth of health insurance industry in the following tables.

Table 3: Total Real Premium Growth Rate over the years 2015-16 to 2024-25

Region	Non-Life (In %)									
	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Advanced Market	2.6	2.3	1.9	1.9	2.7	1.5	2.9	0	3.6	4.5
Emerging Market	7.8	9.6	6.1	7.1	7.7	1.3	1.5	2.8	5.3	5.8
Asia-Pacific	9.2	8.9	5.8	6.4	7.6	3	0.8	2.9	3.6	3.6
India	8.1	12.9	16.7	14	5.7	-3.1	5.8	6	7.9	0.2
World	3.6	3.7	2.8	3	3.5	1.5	2.6	0.5	3.9	4.7

Source: Swiss Re, Sigma Reporting

The above table depicts the total amount of real premium of health insurance industry in India along with other advanced markets, emerging markets, Asia-Pacific and World as a whole over the years from 2015-16 to 2024-25. Health contributed to 48% of the total non-life insurance premiums. In Indian context, total real premium growth rate in health insurance rose from 8.1% in 2015-16 to 16.7% in 2017-18. In 2023-24 total real life premium in health insurance came to 7.9 % as in this year India organized global G-20 business summit. If we see the World scenario, we have seen that total real life premium in health insurance declined over the years. It signifies that real premium in health insurance has gone up over the years. Growth of real life premium in health insurance in Asia-Pacific exceeds the real life premium in health insurance in advanced market and emerging market.

Insurance Penetration and Insurance Density

Insurance penetration and Insurance Density are the two indicators of development of health insurance industry. Insurance penetration signifies the total amount of premium which is measured as a percentage of GDP whereas Insurance Density is measured as a percentage of insurance premium to population (per capita premium)

Table 4: Insurance Penetration and Insurance Density of Health Insurance in India and other Countries in the World

Country		2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
USA	Insurance Penetration (%)	4.2	4.29	4.28	4.26	8.51	9	9.1	9	9.3	9.4
	Insurance Density (USD)	2377	2449.2	2542	2672	5580	5754	6356	6868	7504	7995
Canada	Insurance Penetration (%)	-	-	-	-	4.6	5.2	4.8	4.6	4.7	4.8
	Insurance Density (USD)	-	-	-	-	2128	2243	2520	2552	2507	2580

Country		2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
UK	Insurance Penetration (%)	2.4	2.58	2.36	2.29	2.31	2.3	2.2	2.4	2.6	2.6
	Insurance Density (USD)	1067	1030.5	938	971	978	949	1039	1111	1294	1359
India	Insurance Penetration (%)	0.7	0.77	0.93	0.97	0.94	1	1	1	1	1
	Insurance Density (USD)	12	13.2	18	19	19	19	22	22	25	25

Source: Swiss Re Sigma Reporting.

Health insurance penetration and density of all the Countries have been shown in table 4. It has been observed that both insurance penetration and density in India are increasing over the years. Developed nations like USA, Canada and UK have more insurance penetration and density rate over the other countries. It signifies those advanced nations still believe in contributing more funds in health insurance premium.

2. To highlight the collection of total Health Insurance premium in India over the years 2015-16 to 2024-25

Total health insurance premium in India over the years have been discussed. It indicates the amount of total premium collected over the years 2015-16 to 2024-25 for all the registered private health insurers. There are as of 2024-25 financial year, there are 10 registered private health insurers are operating in India.

Table 5: Total Health Insurance Premium in India over the years 2015-16 to 2024-25

Total Health Insurance Premium (Rs. In Crore)										
Standalone Health Insurers	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Aditya Birla Health Insurance Co. Ltd.	-	54.04	496.8	243.17	872.04	1300.64	1726.67	2717.03	3701.32	4821.7
Care Health Insurance Ltd.	-	-	-	-	2388.99	2559.75	3880.91	5141.53	6864.46	8318.25
Galaxy Health and allied Insurance co. Ltd.	-	-	-	-	-	-	-	-	-	16.95
Manipal signa Health Insurance co. Ltd.	-	-	-	-	576.19	755.49	986.18	1359.79	1691.49	1797.56
Narayana Health Insurance Co. Ltd.	-	-	-	-	-	-	-	-	-	2.37
Niva Bupa Health Insurance Co. Ltd.	476.01	593.93	947.02	754.47	1242.89	1750.78	2809.97	4073.03	5607.57	6762.23
Reliance Health Insurance Ltd.	503.32	726.07	4.09	-	5.99	0.01	0.02	-	-	-

Total Health Insurance Premium (Rs. In Crore)										
Standalone Health Insurers	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Star Health and Allied Insurance Co. Ltd.	2007.34	2960.05	5401.29	4161.11	6865.14	9388.54	20867.18	26243.85	15254.45	16716.2
Stand Alone Health Insurers (Total)	2986.67	4334.09	6849.2	5158.75	11951.24	15755.21	20867.18	26243.85	33119.3	38435.25

Source: IRDA Annual Reports (2015-16 to 2024-25)

Total health insurance premium collection (gross) has been shown in table 5. It has been observed from the table that total gross premium collection over the years 2015-16 to 2024-25 has increased. Total 35438.25 crore has increased from 2015-16 which signifies that people do spend more money in health insurance premium. Regarding the private players, Star Health and Allied Insurance Co. Ltd. ranks first over the other insurers.

3. To highlight the financial performance of Health Insurance Industry over the years 2015-16 to 2024-25

Financial performances of different private health insurers have been discussed over the years 2015-16 to 2024-25. Financial performance includes capital infusion, amount of operating and commission expenses, investment income and underwriting losses.

Table 6: Financial Performances of Health Insurers (Rs. In Crore)

Particular Segment	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
1. Paid up capital of Health Insurers										
At the beginning of the FY	2052	2357	2615.4	2831.9	3472.97	3971.92	4235.06	4639.33	5080	5885
Addition during the year	305	258.4	216.5	641.07	498.94	263.14	442.7	440.77	805	281
End of the FY	2357	2615.4	2831.9	3472.97	3971.92	4235.06	4639.33	5080.1	5885	6166
2. Commission Expenses	456.75	664.08	987.82	1411.45	1821.59	2134.87	2758.69	3486.64	5940	7365
3. Operating Expenses	1396.79	1696.18	2292.04	3065.65	3620.04	3662.86	4925.24	5955.18	5765	6218
4. Underwriting Experience	-272.25	-86.15	-435.73	-568.22	-651.2	-2373.7	-3263.34	-528.8	723	-1635
5. Investment Income	241.34	312.32	386.93	515.19	740.71	805.4	1277.19	1551.59	2137	2691
6. Profit After Tax	-177	27	-102.19	-298	-331.07	-1359.7	-1808	447.21	915	762
7. Dividend paid	0	0	0	0	0	0	0	0	0	0

Source: IRDA Annual Report (2015-16 to 2024-25)

Financial performance of health insurers comprises of the amount of capital infused during the years, amount of commission, operating expenses, underwriting losses, investment income, profit after tax and dividend paid during the years 2015-16 to 2025-26. From the above table, we have seen that the amount of capital infused in health insurance industry over the years 2015-16 to 2024-25 has been increased at 161.06% from 2015-16 to 2024-25 with an average of 16.16%. The amount of commission and operating expenses also increase during the years 2015-16 to 2024-25 at the rate of 1512.42% and 345.16%. Underwriting losses in health insurers have also increased over the years 2015-16 to 2024-25 at a percentage of 500.55%. Profit after tax has come down till the year 2021-22 and it increases from 2022-23 onwards. No private health insurers paid dividend during the years 2015-16 to 2024-25.

4. To show the claims paid (Gross) under Health Insurance business in India over the years 2015-16 to 2024-25

It signifies the amount of claim paid by health insurance company to any customers out of the total premium received. Insurance claim ratio (ICR) denotes the amount of obligations of an insurance company to any customer from whom premium is received.

$$\text{Insurance Claim Ratio (ICR)} = \frac{\text{Amount of Insurance Claim paid}}{\text{Total Insurance Premium collected}}$$

Table 7: Net Incurred Claims and Incurred Claims Ratio of Health Insurers

Particular Segment	Net Incurred Claims and Incurred Claims Ratio									
	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Net Incurred Claims (Rs. In Crore)	1769.75	2392.05	3382.67	4750.43	6435.43	6779.09	12719	12787	16631	21182
Incurred Claim Ratio (%)	58.2	56.47	59.58	60.68	64.13	75.43	79.06	61.44	63.63	68.06

Source: IRDA Annual Report (2015-16 to 2024-25)

Table 7 exhibited the amount of net incurred claims paid over the years 2015-16 to 2024-25. Net incurred claims showed an alarming increase of Rs. 19412.25 over the years 2015-16 to 2024-25. It signifies that private health insurance companies paid the number of claims for the customers. On the other hand, incurred claim ratio shows an increasing rate from 58.2% to 68.06% over the years 2015-16 to 2024-25. It signifies that more than 50% of the premium has paid the claims to the customers.

Conclusion

The Indian health insurance industry experienced substantial growth during the period 2015–16 to 2024–25, supported by sustained economic expansion, rising healthcare expenditure, and increasing awareness of financial protection against medical emergencies. The growth in gross domestic product (GDP) and changing consumer preferences have significantly increased the demand for health insurance products, resulting in a

steady rise in premium collections among private health insurers. Despite this growth, the financial performance of health insurance companies continues to face challenges arising from increasing claim costs and operational complexities. However, private health insurers have maintained net incurred claims at manageable levels, indicating their ability to meet policyholder obligations effectively. Regulatory initiatives introduced by the Insurance Regulatory and Development Authority of India (IRDAI), particularly the vision of “Insurance for All by 2047” and the mandatory provision of indemnity-based health insurance products for senior citizens, are expected to improve insurance penetration and inclusivity. Going forward, accelerating digital transformation through comprehensive electronic health records, improved data management in small and medium-sized healthcare facilities, and innovative technologies such as speech-to-text systems and blood

bank locators will be critical for enhancing efficiency, accessibility, and customer experience in the Indian health insurance ecosystem. **T**

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Climate Change and the Global Insurance Industry: Emerging Risks and Adaptation Strategies



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Abstract

Climate change has emerged as one of the most significant challenges facing the global insurance industry. This study examines the impact of climate-related risks on insurance markets worldwide by analyzing data from 25 countries and insights from 315 insurance professionals. According to Munich Re (2024), global natural catastrophe losses exceeded \$280 billion in 2023, marking the third consecutive year above \$200 billion. The insurance protection gap has widened to \$185 billion as per Swiss Re Institute (2024). Through mixed-methods research combining quantitative loss trend analysis with qualitative case studies from eight major insurers including Allianz, AXA Climate, and Swiss Re, this paper identifies key adaptation strategies - advanced climate modeling (adopted by 82% of respondents), parametric insurance solutions, risk mitigation partnerships, and public-private

collaboration models. The findings highlight the urgent need for regulatory modernization, enhanced risk assessment capabilities, and innovative products to ensure insurance availability and affordability while maintaining commercial viability in a climate-changed world.

Keywords

Climate Change, Natural Disasters, Insurance Protection Gap, Parametric Insurance, Risk Mitigation, Public-Private Partnerships.

Introduction

The Climate Challenge Facing Insurance Industry

The global insurance sector is experiencing unprecedented challenges from climate change. Natural catastrophe losses have reached alarming levels - Munich Re's NatCatSERVICE database shows 2023 losses at \$280 billion globally, continuing an upward trajectory that has persisted since 2020. What

makes this particularly concerning is that these aren't isolated incidents but reflect a fundamental shift in climate patterns affecting insurance operations worldwide.

Climate change manifests through multiple risk channels:

- **Physical risks** - Increasing frequency and severity of hurricanes, floods, wildfires, droughts and heatwaves driving unprecedented claims costs
- **Chronic trends** - Rising sea levels, changing precipitation patterns, temperature increases reshaping long-term risk assessments
- **Model uncertainty** - Historical data becoming less predictive of future conditions, challenging actuarial assumptions
- **Transition risks** - Policy changes and technological shifts toward low-carbon economy affecting investment portfolios

The Growing Protection Gap

The insurance protection gap - difference between economic losses and insured losses from natural catastrophes - has widened dramatically. Swiss Re Institute (2024) estimates this gap reached \$185 billion in 2023. This is

particularly acute in emerging economies where insurance penetration remains below 15%, but even developed markets face affordability challenges as premiums rise and insurers withdraw from high-risk areas.

According to IRDAI's annual report 2023-24, India's general insurance penetration stands at just 1.0% of GDP despite robust premium growth. Climate-related events are already impacting Indian insurance markets, with monsoon floods, cyclones and agricultural losses creating significant claims volatility.

Research Objectives

This research aims to:

- Analyse global trends in climate-related insurance losses across regions
- Examine industry adaptation strategies and their effectiveness
- Evaluate public-private partnership models addressing protection gaps
- Provide actionable recommendations for building climate-resilient insurance systems

Literature Review

Climate Science Foundation

The Intergovernmental Panel on Climate Change (IPCC, 2023)

Sixth Assessment Report provides comprehensive evidence of anthropogenic climate change. The report projects continued intensification of extreme weather events under all emissions scenarios, with global temperatures likely to exceed 1.5°C above pre-industrial levels by 2030-2035. This scientific consensus forms the foundation for insurance industry risk assessments.

Insurance Market Dynamics

Botzen and van den Bergh (2022) analysed flood insurance markets across multiple countries, identifying significant market failures driven by information asymmetries, behavioural biases, and regulatory constraints. Their research demonstrated that voluntary insurance markets consistently underinsure flood risks, particularly in developing nations, necessitating public-private partnership models.

Kousky and Cooke (2021) examined insurance market withdrawals in high-risk areas, documenting how California wildfires and Florida hurricanes prompted insurers to reduce exposure through non-renewals and premium increases. They highlighted the tension between actuarially sound pricing and social objectives of maintaining insurance availability.

Regulatory Framework Evolution

The Network for Greening the Financial System (NGFS, 2023), comprising 127 central banks and supervisors, published comprehensive guidance on climate-related financial risks for insurers. Their framework emphasizes forward-looking climate scenario analysis, stress testing, and

disclosure requirements aligned with Task Force on Climate-related Financial Disclosures (TCFD) recommendations.

Product Innovation

Parametric insurance solutions have emerged as innovative approaches to addressing climate risks. Collier et al. (2023) evaluated parametric products in agricultural and catastrophe insurance contexts, finding these instruments provide rapid payouts, reduce moral hazard, and extend coverage to previously uninsurable risks, though challenges remain regarding basis risk and customer understanding.

Research Methodology

This research employs a comprehensive mixed-methods approach combining quantitative analysis of insurance market data with qualitative investigation of industry practices.

Data Sources

Primary Data:

- Structured surveys administered to 315 insurance professionals across 25 countries
- Response rate: 71.4% (225 complete submissions)
- Respondent profile: Underwriters, actuaries, risk managers, claims professionals, senior executives from primary insurers, reinsurers, and brokers
- Geographic coverage: North America, Europe, Asia-Pacific, Latin America, Middle East, Africa

Secondary Data:

- Munich Re NatCatSERVICE Database (2000-2025)

- Swiss Re Institute Sigma reports
- Lloyd’s of London climate risk assessments
- IRDAI annual reports and regulatory circulars
- National insurance association publications

Case Studies:

Eight organizations representing diverse business models:

1. Allianz SE (Germany) - Integrated climate risk management
2. AXA Climate (France) - Climate adaptation services
3. Swiss Re (Switzerland) - Parametric solutions and reinsurance
4. Sompo Holdings (Japan) - Natural disaster resilience
5. Prudential plc (United Kingdom) - Long-term climate strategy
6. State Farm (United States) - Wildfire and hurricane adaptation
7. InsuResilience Solutions Fund - Emerging market solutions
8. ICICI Lombard (India) - Indian market climate initiatives

Analytical Framework

- Time series analysis of 25-year loss data (2000-2025)
- Regression models testing relationships between climate variables and market dynamics
- Comparative analysis of regulatory frameworks and public-private partnership models
- Systematic coding of qualitative data to identify strategic patterns and innovations

Research Findings

1. Accelerating Climate-Related Losses: A Global Trend

The analysis of natural catastrophe data reveals dramatic acceleration in climate-related insurance losses. Annual insured losses from weather-related events increased by 157% when comparing 2015-2024 period to 2000-2009, significantly outpacing economic growth and insurance market expansion.

Regional Loss Patterns

North America experienced the largest absolute increase, driven by:

- Hurricanes: 2023 Atlantic season generated \$65 billion in insured losses
- Wildfires: Western US and Canada exceeded \$30 billion (2020-2023)
- Convective storms: Increasing frequency of severe thunderstorms, hail, tornadoes

Europe faced escalating flood losses, with 2021 European floods alone generating \$13 billion in insured damages. Asia-Pacific saw significant typhoon and flood impacts, while emerging markets suffered disproportionate uninsured losses.

Table 1: Climate-Related Insured Losses by Region (Annual Average, USD Billions)

Region	2000-2009	2010-2019	2020-2024	Growth Rate (%)	CAGR
North America	\$32.4	\$58.7	\$95.3	194%	5.6%
Europe	\$8.2	\$14.6	\$23.8	190%	5.5%
Asia-Pacific	\$12.5	\$21.3	\$34.7	178%	5.3%
Other Regions	\$3.8	\$6.4	\$11.2	195%	5.6%
Global Total	\$56.9	\$101.0	\$165.0	190%	5.5%

Source: Munich Re NatCatSERVICE Database, Author’s Analysis

Industry Perspective on Climate Impact

Survey results indicate strong awareness among insurance professionals:

- 89% believe climate change materially impacts their organization’s risk profile and financial performance
- Climate-related losses account for 42% of total property catastrophe claims (up from 28% a decade ago)
- 76% expect climate impacts to intensify over next decade, requiring fundamental changes to underwriting and pricing

2. The Widening Insurance Protection Gap

The insurance protection gap - representing uninsured economic losses from natural catastrophes - has expanded significantly alongside rising total losses.

Global Protection Gap Trends

- 2000-2009 average: \$125 billion annually
- 2010-2019 average: \$152 billion annually
- 2020-2024 average: \$198 billion annually

Factors Contributing to Protection Gaps

In Developing Economies:

- Low insurance awareness and financial literacy
- Limited affordability - premiums exceed household budgets
- Insufficient distribution infrastructure in rural areas
- Lack of enabling regulatory frameworks

In Developed Markets:

- Insurer withdrawals from high-risk areas (California wildfires, Florida hurricanes)
- Coverage restrictions and exclusions
- Affordability crisis as premiums increase 25-40% in high-risk zones
- Regulatory constraints limiting risk-based pricing

3. Industry Adaptation Strategies: Survey Findings

The survey of 225 insurance professionals reveals diverse adaptation strategies being implemented across the industry.

Table 2: Regional Insurance Penetration and Protection Gap Analysis (2020-2024)

Region	Total Economic Losses (\$B)	Insured Losses (\$B)	Protection Gap (\$B)	Insurance Penetration (%)
North America	\$195.2	\$95.3	\$99.9	49%
Europe	\$51.7	\$23.8	\$27.9	46%
Asia-Pacific	\$125.8	\$34.7	\$91.1	28%
Latin America	\$42.3	\$5.8	\$36.5	14%
Middle East & Africa	\$47.1	\$5.4	\$41.7	11%
Global Total	\$462.1	\$165.0	\$297.1	36%

Source: Swiss Re Institute, World Bank, Author's Compilation

Table 3: Climate Adaptation Strategies - Implementation and Effectiveness

Strategy	% Currently Implementing	Change vs 5 Years Ago	Effectiveness Rating (1-10)	Investment Required
Advanced climate catastrophe modelling	82%	+37 pts	7.8	High
Granular geographical risk rating	74%	+29 pts	7.2	Medium
Portfolio concentration limits	76%	+22 pts	7.4	Low
Dynamic pricing adjustments	71%	+33 pts	6.8	Medium
Coverage exclusions/sub-limits	68%	+24 pts	6.1	Low
Risk mitigation partnerships	63%	+41 pts	8.1	High
Parametric insurance products	58%	+49 pts	7.6	High
Enhanced reinsurance structures	69%	+18 pts	7.3	High

Source: Author's Survey (N=225)

Key Observations

1. Advanced Climate Modeling (82% adoption):

Enhanced catastrophe models now integrate climate change scenarios from IPCC and regional climate models. Leading reinsurers like Munich Re

and Swiss Re have developed proprietary climate-adjusted models, though significant uncertainty remains regarding appropriate adjustment factors and time horizons.

2. Risk Mitigation Partnerships (63% adoption, 8.1 effectiveness rating):

Insurers are collaborating with policyholders, communities and governments to reduce underlying exposures. Examples include:

- Building code improvements and retrofit programs
- Infrastructure hardening (flood defences, wildfire barriers)
- Nature-based solutions (mangrove restoration, wetland preservation)
- Early warning systems and disaster preparedness

AXA Climate exemplifies this approach - their dedicated climate risk consulting subsidiary provides adaptation services alongside insurance products, helping clients build resilience and reduce long-term risk profiles.

3. Parametric Insurance Growth (+ 49 points increase):

Parametric products trigger payouts based on predefined physical parameters (rainfall levels, wind speeds, earthquake magnitude) rather than actual loss assessments. Swiss Re and Munich Re report parametric solutions now constitute 12-15% of climate-related underwriting

portfolios, up from negligible levels a decade ago.

Advantages include rapid payouts, reduced moral hazard, lower administrative costs, and ability to cover previously uninsurable risks. Challenges involve basis risk (index doesn't perfectly match actual losses) and customer education needs.

4. Public-Private Partnerships: Comparative Analysis

Survey results show 91% of respondents believe government involvement is necessary to ensure adequate climate insurance availability. However, partnership structures vary significantly across jurisdictions.

Table 4: Public-Private Partnership Models - International Comparison

Country/Region	Model Type	Structure	Penetration Rate	Year Established
USA (NFIP)	Government-provided	Federal program with recent private market reforms	~52%	1968
UK (Flood Re)	Reinsurance pool	Industry-funded pool with govt backstop	~87%	2016
France (CatNat)	Mandatory inclusion	Coverage in property policies, govt reinsurance	~95%	1982
Spain (CCS)	Public consortium	Consorcio de Compensación de Seguros	~78%	1954
Caribbean (CCRIF)	Regional risk pool	Parametric sovereign insurance pool	~35%	2007
Africa (ARC)	Regional risk pool	African Risk Capacity - parametric drought/flood	~28%	2012
India (PMFBY)	Subsidized scheme	Crop insurance with govt premium subsidy	~36%	2016
InsuResilience Global	Development partnership	G7-backed, multiple country programs	Varies	2017

Source: Various National Programs, OECD, World Bank, Author's Compilation

Model Effectiveness Analysis

High-Penetration Models (France, UK, Spain):

- Achieve 75%+ penetration through mandatory coverage or risk pooling
- Balance risk-based pricing with social solidarity principles

- Provide clear government backstop for extreme events
- Maintain private market competitiveness for standard risks

Emerging Market Models

(Caribbean, Africa, InsuResilience):

The InsuResilience Global Partnership, supported by G7 countries and development organizations, has facilitated climate risk insurance for over 500 million vulnerable people across Africa, Asia, Pacific and Latin America through:

- Parametric products providing rapid disaster payouts
- Index-based agricultural insurance protecting smallholder farmers
- Sovereign risk pools (CCRIF, ARC) enabling governments to purchase coverage
- Premium subsidies and capacity building support

Discussion and Implications

Challenges to Traditional Insurability

Climate change tests the fundamental principles upon which modern insurance is built. Traditional insurability requires that risks be independently random, statistically calculable, and capable of being pooled across large numbers of policyholders. Climate change undermines each of these conditions. The non-stationarity of climate risk means that historical loss data is becoming a progressively less reliable guide to future outcomes, challenging the actuarial foundations

of underwriting and pricing. The systemic and correlated nature of extreme weather events — where a single climate episode may simultaneously affect entire regions or sectors — limits the risk diversification that makes insurance viable. Uncertainty over long-term climate trajectories, which depend on future emissions pathways and policy responses, further complicates prospective risk modelling. Finally, the growing accumulation of insured assets in climate-vulnerable coastal and wildfire-prone regions amplifies exposure concentrations in ways that strain private market capacity.

Regulatory Challenges and Trade-offs

Regulators face difficult balancing acts in responding to climate-related insurance market pressures. The tension between risk-based pricing and affordability is particularly acute: premiums that accurately reflect climate-adjusted risks may prove unaffordable for households in high-risk areas, yet rate suppression — as illustrated by California's recent experience — can cause insurers to withdraw from markets entirely, leaving communities even more exposed. Maintaining market sustainability while simultaneously protecting consumers requires nuanced regulatory design that goes beyond blunt rate controls. Equally challenging is the need to promote innovation in climate risk products — such as parametric and index-based instruments — while ensuring that policyholders understand what they are purchasing and when payouts will or will not be triggered.

California's recent insurance crisis illustrates these tensions. State regulations limiting premium increases contributed to major insurers (State Farm, Allstate, Farmers) pausing new homeowners insurance in high-wildfire-risk areas, leaving residents struggling to find coverage.

The Role of IRDAI and Indian Context

IRDAI has taken progressive steps toward climate risk management:

IRDAI has taken progressive steps toward embedding climate risk considerations within the Indian regulatory framework. The Authority has introduced climate risk disclosure requirements for insurers, provided regulatory support for the development of parametric and index-based products, and overseen the Pradhan Mantri Fasal Bima Yojana (PMFBY), which has extended government-subsidised crop insurance to approximately 36 per cent penetration among Indian farmers. These measures reflect a recognition that climate adaptation and insurance market development are interlinked policy objectives, and IRDAI has sought to encourage product innovation as a means of extending protection to underserved segments of the economy.

However, challenges remain. India's general insurance penetration at 1.0% of GDP lags global averages. Climate events - monsoon variability, cyclones, agricultural losses - create significant volatility. Expanding protection requires addressing affordability, distribution infrastructure, and awareness gaps.

Recommendations and Action Plan

Based on research findings, the following strategic priorities are recommended:

The strategic recommendations arising from this research can be organized across seven priority areas, each addressing a distinct dimension of climate resilience in the insurance sector.

First, enhanced risk assessment is an immediate and ongoing imperative. Insurers must integrate forward-looking climate scenarios into catastrophe models, drawing on IPCC projections and regional climate science. This requires sustained investment in climate expertise and the formation of collaborative research partnerships with academic institutions and climate modelling agencies. Leading reinsurers such as Munich Re and Swiss Re have already developed proprietary climate-adjusted models, and the broader industry must follow suit to maintain actuarial relevance.

Second, product innovation must be accelerated over the near term, within a one-to-two-year horizon. Parametric insurance solutions should be extended across a wider range of climate perils, while microinsurance and index-based products can expand access for underserved and vulnerable populations. Digital distribution channels offer a cost-effective means of reaching markets where traditional insurance infrastructure remains limited, and regulators, insurers, and InsurTech firms must collaborate to enable this transition.

Third, the strengthening of public-private partnerships is essential within a two-to-three-year timeframe. Governments must provide reinsurance backstops for extreme climate events and actively support the development of insurance markets in underserved regions. Public investment in risk-mitigating infrastructure — including flood defences, wildfire management systems, and climate-resilient urban planning — directly reduces insured exposures and creates the conditions for sustainable private market participation. Development banks and multilateral institutions have a critical role to play in financing these initiatives, particularly in emerging economies.

Fourth, regulatory modernization is required across a one-to-three-year horizon. Frameworks must be updated to permit appropriate risk-based pricing that reflects current and projected climate exposures, while complementary social safety nets protect lower-income policyholders from unaffordable premiums. Climate risk disclosure requirements, aligned with international standards such as those of the NGFS and TCFD, should be strengthened to improve market transparency. International regulatory coordination, particularly through bodies such as the IAIS, can facilitate knowledge exchange and help address cross-border climate risks.

Fifth, risk mitigation must be repositioned as a central strategic priority rather than an ancillary function. Insurers should actively partner with policyholders, communities, and governments to reduce underlying climate exposures through improved building

codes, nature-based solutions such as mangrove and wetland restoration, and community resilience programmes. Premium incentives and underwriting conditions can encourage risk-reduction behaviours, while claims analytics can inform targeted mitigation investments. This shift — from reactive risk pricing toward proactive risk reduction — is central to long-term market sustainability.

Sixth, responsible investment strategies should be integrated into insurers' asset management practices on an immediate and ongoing basis. Capital allocation toward climate solutions — renewable energy, green infrastructure, and adaptation finance — can reduce systemic risk while offering competitive risk-adjusted returns. ESG integration and portfolio decarbonisation should be pursued in partnership with asset managers, with investment approaches grounded in evidence rather than simplified exclusions.

Finally, international cooperation must be deepened on an ongoing basis. Industry associations, multilateral organisations, and development institutions should facilitate the exchange of knowledge and best practices, support capacity building in emerging markets, and work toward the standardisation of climate risk data and catastrophe modelling methodologies. Open-source data initiatives and collaborative research platforms can accelerate collective learning and improve the global insurance industry's resilience to climate change.

Source: Author's Analysis and Recommendations

Conclusion

Climate change represents a fundamental challenge requiring transformation of insurance business models, risk management practices, and stakeholder relationships. The research demonstrates that:

The research demonstrates that climate-related losses are accelerating globally, with annual insured losses increasing by approximately 190 per cent over two decades. The insurance protection gap has widened to an estimated \$185 billion, posing a serious threat to economic stability and social welfare in both developing and developed economies. At the same time, meaningful industry adaptation is underway: 82 per cent of respondents are now employing advanced climate modelling, and 63 per cent are engaged in risk mitigation partnerships, reflecting a sector that is actively, if incrementally, reconfiguring its practices. Public-private partnerships have demonstrated their importance, with well-designed models achieving penetration rates above 75 per cent in countries such as France and the United Kingdom. Finally, product innovation — particularly parametric solutions and microinsurance — holds considerable promise for extending meaningful climate risk coverage to populations currently outside the reach of conventional insurance markets.

The path forward requires coordinated action across multiple stakeholders. Organizations that proactively adapt, innovate, and collaborate will be best positioned to navigate this transition while continuing to fulfill insurance's

vital societal function of providing financial security.

For India specifically, expanding climate insurance coverage requires addressing affordability through government subsidies, building distribution infrastructure in rural areas, and enhancing climate risk awareness. IRDAI's progressive regulatory approach provides a foundation, but sustained commitment from industry, government, and development partners is essential.

The alternative - gradual market failures and expanding protection gaps - would impose severe costs on vulnerable populations globally. Effective climate adaptation is not merely a commercial imperative but a social and economic necessity. The insurance industry has the tools, knowledge, and resources to build more resilient systems. What we need now is sustained commitment and willingness to fundamentally rethink how insurance works in a climate-changed world. **TI**

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Cybersecurity Insurance in the Age of Digital Vulnerabilities: A SWOT Analysis and Roadmap for Risk Mitigation



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Abstract

The financial industry has been experiencing substantial disruption due to the digital revolution for some time. The insurance sector, which has remained largely unchanged for an extended period, is also undergoing this transformation. The phenomenon known as “insurtech,” which leverages new technologies to revolutionize the traditional insurance industry, warrants further investigation to fully understand its potential and associated risks. Cyber insurance policies vary widely depending on coverage terms, industry requirements, and organizational risk profiles.

Importantly, insurers often assess an organization’s cybersecurity posture before offering coverage, creating a positive feedback loop where better cybersecurity practices can lead to more favourable insurance terms. Therefore, cybersecurity insurance has become increasingly important in company risk management plans. This study examines several aspects of cybersecurity infrastructure, such as sophisticated threat detection systems, advanced data protection techniques, and through a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis, this examines the strategic significance of

cybersecurity insurance and how well it can protect businesses in the face of growing cyber threats. In addition to addressing issues such as excessive premiums and a lack of policy uniformity, the report highlights important advantages, including improved risk management frameworks, legal assistance, and financial protection. It examines the benefits of insurance in terms of paying for response expenses and reducing regulations. The findings of legal, monetary, and reputational harm caused by cyber events highlight the importance of implementing flexible security frameworks and incorporating

cutting-edge technologies while preserving operational effectiveness and regulatory compliance. By offering insights into practical risk mitigation techniques and highlighting areas for further study and advancement in the cybersecurity environment of the insurance industry.

Keywords

Cybersecurity, Insurance, Digital Technology, SWOT, Risk Mitigation.

Introduction

Over the past ten years, cybercrime has rapidly expanded into a global epidemic affecting companies in all major industries. The financial and reputational costs of sophisticated cyberattacks, which range from ransomware, malware, and phishing attempts to data breaches and system compromises, are extremely high (Rajvanshi et al., 2022). A recent estimate states that the average cost of a single data breach is \$4 million. Simultaneously, stringent data security regulations impose penalties for noncompliance. As digital transformation initiatives an extraordinary cybersecurity problem has been brought about by the insurance industry's fast digitization, as insurers rely more and more on digital infrastructure to handle, store, and analyse enormous volumes of sensitive financial and personal data (Singh & Akhilesh, 2020). While improving customer service and operational efficiency, this digital revolution has also made the industry more vulnerable to sophisticated cyberthreats, including ransomware attacks and data breaches that might

jeopardize millions of consumer records. According to a recent IBM analysis, in 2021, the data breach insurance industry an average was \$9.23 million, much higher than the global average in all industries. (Djotaroeno & Beulen, 2024). The current market provides businesses of all sizes with a large selection of insurance products. Camillo ends by pointing out forecasts that the market would reach more than \$20 billion by 2025 (Adriko & Nurse, 2024). Given the insurance industry's unique position as a target for cyberattacks and a source of cyber risk solutions, this alarming number highlights the urgent need for strong cybersecurity standards in the sector. It is now essential for insurance companies to propel the widespread adoption of cloud services and remote work, and cybersecurity has taken center stage; Seethala, 2025).

The state of cybersecurity in 2024 is very different from that of five years ago. Although mass phishing efforts are still used by threat actors, they no longer throw large nets to capture unsuspecting victims (Sayeed et al., 2025). Corporate risk and insurance purchasers believe that the cyber insurance market is still a specialized field that lacks the scale and capability they need. This article discusses the advantages of cybersecurity insurance and why it has become vitally necessary in light of increasing threats. Current risk trends are examined, focusing on the technical and legal factors that influence insurance acceptance. The repercussions of underinsurance are cited as another crucial element of risk management. (Adriko & Nurse, 2024)

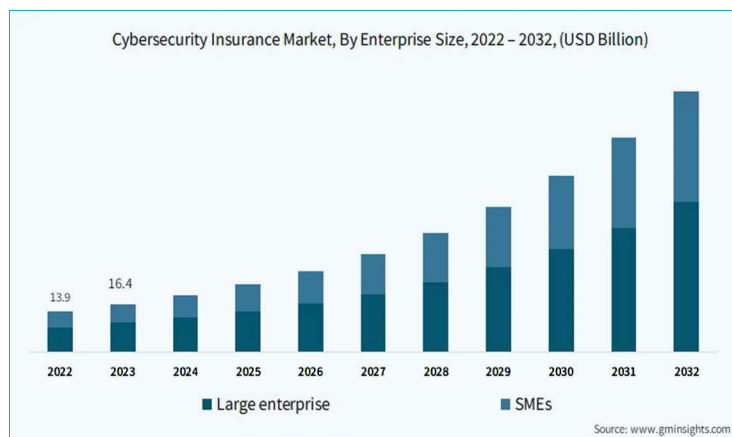


Figure 1 Cybersecurity Insurance market 2022-2032

Source: www.statista.com

The market is bifurcated into two segments: major corporations and small and medium-sized enterprises (SMEs), based on the size of the enterprise. In 2023, the market share of the large enterprise sector exceeded 61%. Large corporations are increasingly adopting cybersecurity insurance due to the

expanding threat landscape in cyberspace, characterized by the rising frequency and sophistication of cyberattacks (Rangu et al., 2024). Data breaches, ransomware attacks, and other cyber incidents pose significant financial risks to large organizations; thus, insurance coverage is essential for mitigating potential damages (Singh & Akhilesh, 2020). (Hung et al., 2025).

Meaning of Cybersecurity

Cybersecurity encompasses a range of technologies, processes, practices, and measures for response and mitigation, all designed to ensure the confidentiality, integrity, and availability of networks, computers, programs, and data, protecting them from attacks, damage, or unauthorized access. As the insurance sector increasingly relies on digital processes for underwriting, claims management, and customer interactions, it becomes an attractive target for cyber attackers (Lemnitzer, 2021). The capacity to safeguard personal and financial information, mitigate fraud, build trust, and maintain compliance is fundamentally supported by cybersecurity measures. Furthermore, insurers play a critical role in offering cyber insurance policies to businesses, aiding them in managing and mitigating financial losses resulting from cyber incidents. Consequently, cybersecurity in (re)insurance encompasses the protection of the insurer's own infrastructure, as well as the support it provides to its clientele through cyber risk coverage (Kaswan et al., 2022).

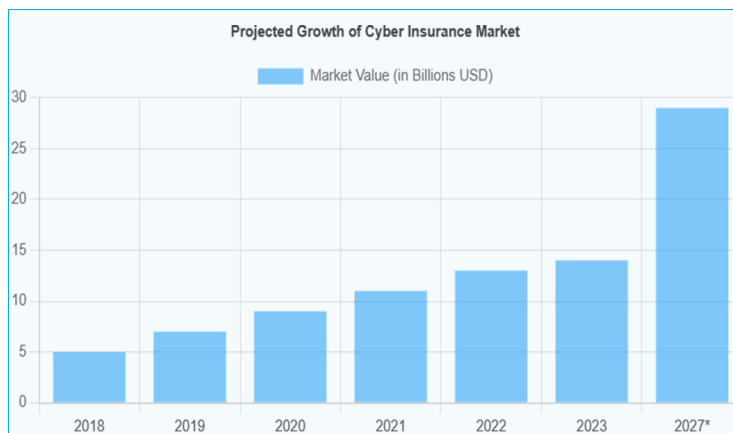


Figure 2 projected growth of cyber–Insurance Market

Source: www.statista.com

Literature Review

It is argued that insurance contracts should be established to cover damages resulting from actual breaches that exceed organizational risk tolerance, as IT security is a dynamic field that creates technological vulnerabilities (Aziz et al., 2020). A recent paper suggests that effective way of internet security necessitates the support of an insurance framework alongside technology and process controls. An event analysis examining the impact of data breach on stock prices get affected companies includes that there is an overall negative impact. It is evident that security breaches involving unauthorized access to private information have a more significant adverse economic effect than those that do not (Gai et al., 2016). (Elnagdy et al., 2016) examines the effects of cyberattacks on businesses, categorizing the resultant losses. The limited adoption of cyber insurance contracts by organizations has been a subject

of scholarly investigation. analyse the evolution of the cyber insurance market and discuss how traditional challenges, such as moral hazard and adverse selection, have impeded the industry's growth. (Tsohou et al., 2023) investigate the influence of correlations in cyber risk on the cyber insurance market. Their research identifies that correlated cyber risk, such as the spread of viruses and worms, occurs on two levels: within multiple systems of a single enterprise and across similar systems in various organizations. These scenarios are employed to elucidate the complexities of demand and pricing for cyber insurance contracts, collectively accounting for the market's sluggish growth. (Gai et al., 2016) propose a model for asymmetric cyber insurance contract valuation to explain the diminished interest of insured firms in cyber insurance, resulting in reduced indemnity pay outs. The utilization of cyber insurance is negatively impacted by the ex-post contract behaviour of a minority of rogue

users, which diminishes the efficiency of insurers in monitoring the IT security status of their clients (Bodin et al., 2018)

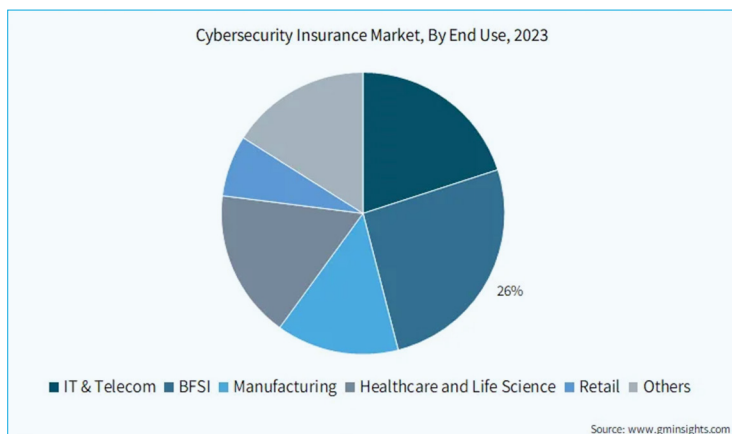


Figure 3 Sectors of cyberinsurance

Source: www.statista.com

The market is segmented according to end-use categories, including manufacturing, retail, healthcare, information technology and telecommunications, and banking, financial services, and insurance (BFSI). In 2023, the BFSI segment accounted for 26% of the market share. Due to the high-value transactions and sensitive consumer data inherent in the BFSI industry, there is an increasing demand for cybersecurity insurance. Cybercriminals, motivated by data theft or financial gain, particularly target the BFSI sector. Notable cyber incidents, such as the 2017 Equifax data breach, have demonstrated the potential financial losses and reputational damage that can result from cyberattacks within this industry. Consequently, an increasing number of BFSI institutions are opting for cybersecurity insurance to mitigate potential losses, protect client trust, and ensure business continuity in the face of these threats.

Current Cybersecurity Threats

Ransomware

A harmful assault known as ransomware encrypts an organization's data and demands payment (ransom) to unlock it. According to assessments, ransomware was the biggest danger for 2020–2021, with multiple high-profile and widely reported occurrences. In addition to the increase in ransomware attacks, the desired ransom sum continues to increase. (Romanosky et al., 2019) Additionally, the Ransomware-as-a-Service (RaaS) business model has been booming in 2020 and 2021.

Business email compromise (BEC)

A BEC attack occurs when a malevolent actor gains access to an employee's email account and uses that access to carry out additional illegal activities (also known as posing as an authorized user). As

a result, BEC may ultimately result in a variety of damages, such as ransomware attacks, data breaches, and fraudulent money transfers. BEC instances increased as a result of the COVID-19 pandemic's conditions, which included a lack of in-person interaction and interpersonal connection, which was often replaced by e-mail. (Aleksandrova et al., 2023)

Funds transfer fraud

Attacks that attempt to influence authorized users or actions to wire money to unapproved receivers are referred to as FTF breaches. FTF is frequently discovered after other assaults, such as social engineering and ransomware. FTF is frequently carried out through BEC and social engineering, making it easier to execute than other advanced attacks, such as ransomware, which require more complex methods, resources, and expertise. The average loss per FTF attack in 2021 was 326 thousand dollars, which is substantially greater than the 124-thousand-dollar loss in 2020, indicating that FTF can cause large losses. (Farao et al., 2024)

Supply chain attacks

Organizations have undergone digital revolutions in recent years, which have been made possible by outsourcing services such as cloud computing providers' hosting. These service providers, in turn, depend on other service providers, and so on. Because of the development of intricate supply chains that sustain the modern market, a successful cyber-attack might impact numerous firms simultaneously, converting individual cyber risks into supply

chain risks. Given that many enterprises depend on software suppliers and service providers for their infrastructure, malicious attackers are increasingly targeting these companies to cause multiple casualties in a single strike.

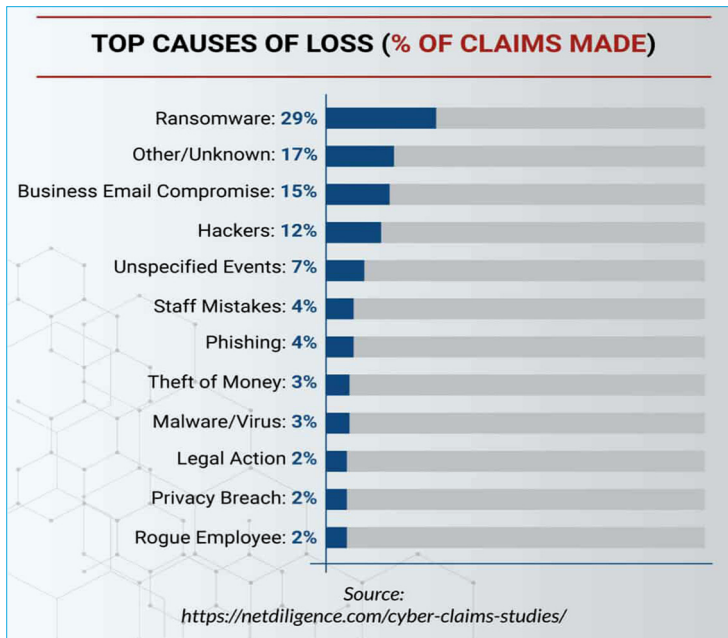


Figure 4 Percentage of claims made

Source: www.netdiligence.com

Global Cyber Insurance Market Trends (2015–2025)

- The cyber insurance market has grown significantly over the past few years, from \$2.0 billion in 2015 to an estimated \$20.56 billion by 2025.
- In 2016, the market grew at its fastest rate ever, rising by 74.6% over the year before.
- The market experienced tremendous growth from 2015 to 2017, increasing from \$2.0 billion to \$4.75 billion.
- 2019 saw an uncommon slowdown in growth, with the total contracting by -4.5% to \$5.25 billion.
- The recovery was swift; in 2020, it reached \$7.01 billion, growing at a rate of 33.5%.
- The market continues to grow gradually between 2021 and 2025, with anticipated numbers reaching www.statista.com

Cyber Insurance Techniques

Identification and Evaluation of Risks

Effective cyber insurance begins with a thorough assessment of an organization's exposure. In the Cyber Risk Profiling area, insurers conduct penetration tests, vulnerability scans, and security audits to identify weaknesses in networks, applications, and configurations.

Techniques for Underwriting

Cyber Risk Scoring Models analyze potential loss exposures and modify premiums during the underwriting phase using AI-driven analytics and historical claims data. By completing questionnaire-based risk questionnaires, underwriters can obtain detailed information about an applicant's policies, practices, and past incidents. By evaluating the actual loss history of a business and comparing risk profiles across similar enterprises, insurers can use industry benchmarking to improve pricing and coverage.

Techniques for constructing policies

Modular Coverage gives policyholders the option to select stand-alone modules for data breaches, ransomware, cyber extortion, and business disruption, resulting in protection tailored to their needs. Each module's sub-limits and deductibles help maintain premium sustainability and overall exposure under control. Insurers commonly employ co-insurance agreements, retentions, and claims-made policies, which only cover claims made during the active policy period, to align incentives and share risks.

Benefits of Cyber Insurance

Data breaches and other cyberthreats are undoubtedly here to stay, and so is cyber insurance. Cyber insurance will pay for losses suffered as a direct result of ransomware, identity theft, or fraud. Information obtained from breaches can be used by criminals to perpetrate fraud and commit identity theft. Cyber insurance can assist in recovering stolen data and

preventing its use in future identity theft, even if it cannot stop breaches from occurring. Cyber insurance assists people in recovering from a wide range of cyberattacks, including cyberbullying, in contrast to identity theft insurance, which only aids in recovery from identity theft. Certain cyber insurance policies cover reimbursements for lost income, legal bills, or private tutoring costs resulting from cyberbullying.

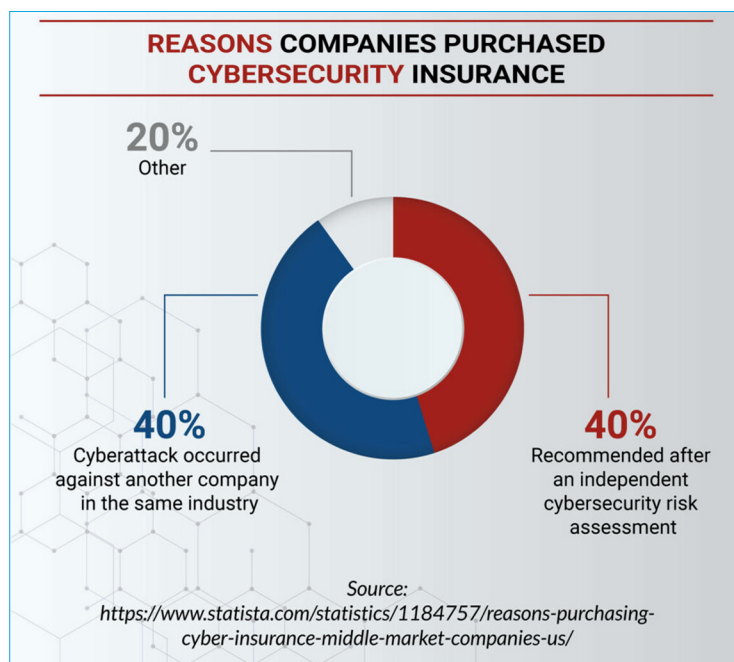


Figure 5 Cybersecurity insurance

Source www.statista.com

SWOT Analysis of Cybersecurity Insurance

Strengths	Weakness	Opportunities	Threats
- Acts as a financial shield against cyber threats and data breaches. - Encourages organizations to strengthen cybersecurity practices. - Supports regulatory compliance and risk management strategies.	- Lack of standardized policy terms and coverage clarity. - High premiums, especially for high-risk industries. - Limited actuarial data and experience in underwriting cyber risks.	- Expanding demand due to increasing digital transformation and cyber incidents. - Potential for innovation through AI-based risk assessment and monitoring. - Growth in underinsured sectors, especially SMEs and emerging economies.	- Rapid evolution of cyber threats outpaces policy updates. - Aggregated risk from simultaneous large-scale attacks. - Legal and regulatory uncertainties in cyber risk liability.

Policy Integration with Existing Security Frameworks

Instead of operating as a distinct risk management silo, cyber insurance should smoothly interact with current security processes to optimize value. The Secure framework offers organized methods for this integration in several areas.

- Domains where current restrictions and insurance needs coincide;
- Possibilities to use insurance needs to support security budget requests;
- Gaps requiring further control implementation.
- **Incident Response Plan Integration**

The following standards for cyber insurance should be included in incident-response plans:

- Timelines and procedures for notifying insurance
- Approvals are necessary for emergency response expenses.

- Business interruption claim documentation procedures
- **Security Metric Alignment**
Businesses should create security KPIs that show internal stakeholders and insurance underwriters how effective they are.
- Manage the percentage of implementation of important insurance regulations.
- In the interim, fix important vulnerabilities
- Completion rates of security awareness training

Challenges in Cyber Insurance Adoption

• Stakeholders' ignorance and lack of comprehension

Despite the increasing frequency of cyberattacks, many organizations, particularly small and medium-sized enterprises (SMEs), are unaware of the presence or advantages of cyber insurance. Decision-makers frequently do not fully comprehend what cyber insurance covers, how it operates, or how it fits into current cybersecurity plans.

• A Complicated and Changing Risk Environment

It is challenging for insurers to evaluate and price risks effectively. The dynamic nature of cyber risks, including ransomware, phishing, and supply chain attacks, creates uncertainty in terms of policy

and underwriting. This intricacy discourages businesses from investing in policies with ambiguous benefits and insurers from providing comprehensive coverage.

• Expensive premiums and inadequate coverage

Due to the increase in claims and cyberattacks, the price of cyber insurance has been increasing. High premiums, deductibles, and exclusions are common features of insurance contracts, particularly for businesses in high-risk sectors. Some insurers deny coverage for significant events, such as state-sponsored attacks or systemic dangers, which lowers the perceived worth of insurance in the eyes of prospective customers.

Roadmap for Risk Mitigation

Dynamic risk Modelling:

Threat intelligence, behavioural analytics, and real-time data feeds are included in underwriting models. This would result in better risk management and more

Unified regulations:

Standardize policies and insurance definitions to build trust among policyholders and avoid interpretation discrepancies.

Public-Private Partnership:

Governments can also help by exchanging threat intelligence, offering reinsurance support, and offering tax benefits to encourage investment in cybersecurity.

Conclusion

cyber insurance is considered a risk management tactic. It is becoming a crucial tool for defending businesses against losses caused by cyberattacks. To describe the current situation and offer insights and future directions, we thoroughly reviewed the pertinent literature on the field, research, and practice of cyber insurance. ICT professionals considering cyber insurance services as an additional risk management alternative will find the conclusions and recommendations in this study useful. Ransomware, (the growing) remote working, supply chain and third-party attacks, business email intrusions, and money transfer fraud are some of the current threats propelling the cybersecurity market. The cyber insurance market is expanding, but several features remain unclear.

Future Directions and Recommendations

As we look to the future, cybersecurity advancements present both opportunities and difficulties for the insurance sector. New technologies, especially artificial intelligence and quantum computing, provide both opportunities for improved security protocols and possible risks to existing cryptographic systems. Creating flexible regulatory frameworks that can keep up with technological advancements while upholding strong security requirements is becoming an increasingly important policy proposal. Best practices in the industry are moving toward a more

integrated strategy that combines cutting-edge solutions, such as smart contracts for automated policy management and blockchain for safe transactions, with more conventional security measures. **TJ**

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Improving Consumer Perception by Upskilling the Agency Distribution Channel through Digital Fin-Tech Partnerships - A New Paradigm Shift across Health Insurance Distribution Platforms Existing In India



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Abstract

Purpose - Hybrid insurance distribution model is the new upcoming and the ultimate reality distribution channel that will pick up momentum in the near future. Predictions are that hybrid insurance distribution channel will be the be all and end all of all distribution channels which are being nurtured up right now. Basing on the above reality, this study will try to bring out and study the consumer perceptions towards hybrid health insurance distribution channels.

Design/Methodology-This study is intended to study the various factors which has improved consumer perception in hybrid health insurance distribution channel.

Findings- An important finding is that the trust factor improves when insurance distribution is tech driven as the customer values technology

greater than individual skills. Trust and decision making factors are truly addressed when health insurance distribution is technology driven.

Originality—This study will make a comprehensive study of various factors affecting consumer perception towards hybrid health insurance distribution channels/platforms when multiple different competing channels coexist.

Research limitations /Implications

-This research will throw light on the factors that govern the buying behaviour of individuals. Across the globe and across all global distribution platforms, hybrid model has brought up efficiency and convenience for customers. The upcoming new age online distribution channel is more preferred by youngsters as they rely more on online social interactions than the physical mode. So, this study will basically reflect the acceptability and

benefits of tech driven tools used by hybrid agents across all age groups

Practical Implications- There is a new found preference now to digitalize all transactions, but the agent based channels cannot be obliterated either. So, the middle path is to bring in a hybrid distribution channel where a live agent will work along with the digital platform in an assisted distribution model.

Social implications-Insurance distribution is now technology driven and the benefits of technology has to reach all sections of society so that the power of digital enablement can be harnessed. This study will highlight the effect of technology on all sections of society.

Keywords

Fin Tech, Digital Enablement, Assisted Distribution, Hybrid Distribution Channel, Omni Channel, Customer Engagement.

1. Introduction

Adaptation is key for any kind of transformation that is expected for any kind of progress. Digital transformation is expected to ensure convenience and personalization coupled with enhanced consumer experience. Hybrid distribution will also bring in close knit integration of traditional and modern distribution channels. Multiple intermediaries are involved in health insurance distribution which are involved in meeting sales goals and fulfilling the strategic vision of the company. Alignment of mission goals are important. Various intermediaries help in broadening of product portfolios. By selection of a proper distribution channel, the channel objectives can be met. Hybrid distribution channels bring in flexibility to the company and consumers at the same time. Hybrid channels bring in more improved consumer experience and increased market access. Hybrid insurance distribution channels help in optimizing distribution strategies and bring in enhanced market retention through continuous customer engagement. To implement hybrid distribution, collaboration and longtime partnerships with Fintech companies are essential which will improve consumer experience. Technological investment will enable data driven analytics allowing high visibility and ensuring proper control over the distribution process.

Challenges of hybrid distribution include channel conflicts where same customer base is being followed up and harnessed by different channels. Hybrid channels are used in situations where both physical and online mode is essential. Price sensitivity is a

major issue in choice of distribution channel and consumers definitely take up this issue. Price differentiation allows to choose alternate preferred low cost channels.

The younger generation want greater comfort level while handling things. Hybrid channel offers empowered business opportunities. Assimilating new ideas and increased business opportunities can be made possible through a hybrid distribution model. Adaptation to new and changing business opportunities is made possible through hybrid channel.

Section 2 of the research studies the objectives of the research study. Section 3 of the research studies literature review. Section 4 of the research studies methodology of the study. Section 5 of the research has general discussions, Section 6 of the research studies conclusions and Section 7 of the research study has limitations and scope of future research

2. Objectives of the study

- 1) To introduce a new concept of Hybrid insurance distribution model
- 2) To study the problems with existing insurance distribution model
- 3) To study the areas where the Hybrid distribution model will be introduced
- 4) To study the technicalities and difficulties involved in introduction of Hybrid insurance distribution model

3. Literature Review

Sasi Koyaloth (2015) studied that the message of "The Insurer Cares"

will be sent out when insight driven customer experience coupled with continuous customer engagement, multichannel and hybrid channel strategy is reinforced which will result in high customer satisfaction and retention. Customer advocacy will take place and customer need alignment will more likely happen. **C2LBIZ(2024)** studied that hybrid insurance distribution models should be driven in a way that leads to sustainable transformation. Network reach can be improved through the holistic mixture of digital technology and physical agent. Proper implementation along with removal of inconsistency in channel experience coupled with proper unified digital integration will pave the way for a highly satisfied customer experience. **Maciej WIR, Konas (2024)** has analysed that instead of following a mutually exclusive approach, an interactive technology and in person approach should be followed which are complementary to each other. Technology experience will improve the hybrid experience. **Sasi Koyaloth(2024)** studied that certain visible gaps in the customer journey will be bridged by the hybrid model. Continuous customer engagement will bring confidence in the customer. The trust and decision making factors can be truly addressed by the hybrid distribution model. **Oliver Hechler (2022)** studied that standalone digital sales alone will not solve the purpose though SaaS or Software as a service will definitely lead to digital integration. Man- machine integration will give an enlightening and new customer experience. **NASSCOM-UNEARTH INSIGHT(2023)** studied about access, adoption and affordability through technology

driven interventions. Exploiting and aligning business partnerships along with technology will enable mass access. Insurtech companies, Insurtech web aggregators, Insurtech service providers, Brokers, Hybrid and traditional agents can operate through a digital public infrastructure.

4. Methodology

This is a qualitative study based on both primary and secondary data obtained from IRDAI and from various other different sources.

5. Contribution of agent based channels

Agent based channels contribute to the majority of workforce and their contribution has been phenomenal towards the insurance industry. Though other channels co-exist, agency channel plays a dominating factor in the distribution eco-system.

5.1 Analysis of agent based Channels

Agent based channels contribute to a majority of the workforce and business sourcing. All other modes of business along with agency force will only lead the way in improving business.

5.1.1 Situations where presence of agents can be most beneficial

Live presence of agents or assisted distribution is most beneficial in the following situations

- Complexity of products can be addressed by live agents who can deal personally with the customer and explain specific product attributes
- Agents are required where digital literacy is absent and there is

lack of customer specific skills in digital handling

- Personal relationship matters and HNIs matter most for insurance business where agent customer relationship improves business sourcing
- Guidance, product and price differentiation can be made by a live agent even when a customer is engaged in online research.
- Explaining the need gap and complex products that are difficult to understand can be done by the physical presence of an agent

5.1.2 Major problems with agent based channels

The various problems faced with agent based channels are:

- Lack of a unified appealing customer experience
- Absence of continuous customer engagement
- Lack of prompt service vis a vis on line sales and
- Lack of skill expected from an experienced agent

5.1.3 Problems addressed by online distribution channels

There are various problems in effective functioning of insurance distribution channels. Online distribution channels take the lead in addressing the problems by identifying and taking steps to clear the bottlenecks by

Charting out a digital roadmap to improve digitalization and introduction of self-service digital apps and

platforms which will develop online sales

- Understanding and identifying the customer needs which will enhance the customer journey and clearly bring in robust changes in consumer perception towards service parameters of distribution channels.
- Charting out an effective online clear communication channels which will clear the mistrust surrounding the products and services and will serve better customer engagement
- Ensuring continuous customer engagement
- Online channel helps in better positioning of insurance distribution channel
- Involving in continuous customer engagement which will bring in a host of better consumer experiences.
- Customer need alignment should be the primary focus and can be achieved through digitalisation
- Ensuring a better customer journey can be etched out through digitalization, and through omni or multichannel strategy.
- Clearly defining product and price differentiation which can be achieved online.

The agent can throughout the customer journey help by explaining the nitty gritty of insurance products. The customer can also reassure and crosscheck the same thing online through chat bots, virtual assistants etc. The assisted distribution model will work in favour of the customer as he will have the upper hand being assisted by a live agent.

5.1.4 How the Hybrid distribution model will work

In hybrid model, communication of market trends through online data analysis and giving specific client based information to agents will help to further improve sales during face-to-face customer interactions. Product preferences can be shared through data analysis. Big Data and Artificial Intelligence will help the hybrid agent in analysing specific needs of customers. Highly personalized interactions can result in a satisfying customer experience.

The hybrid health insurance distribution model will help gaining the trust factor and at the same time help in gaining or improving the customer experience. Personalized product offering can also be made. The other areas where the hybrid distribution system will work are:

- It will help create digital partnerships
- Create value based customer data analytics
- Usage of customer click analysis
- Use of Chat bots, AI
- Customer segmentation
- Usage of social networking and analytics
- Create a high degree assisted distribution model
- Transfer of client specific data to live agents
- Optimization of the insurance distribution channel
- Improving the scalability of business
- Improving speed and efficiency
- Improving customer experience

- Hybrid distribution will bring in convenience and ease of use
- Hyper personalization by providing need based and tailor made solutions of best fit
- Flexibility to interact with multiple channels resulting in cross verification of product and pricing

5.1.5 Introduction of new features of Hybrid Model

The hybrid system of insurance distribution will result in introduction of new and added features which will help in developing:

- Application Programming Interface (API) ecosystem
- Unified customer interface
- Integration of Omni channel experience
- Digital enablement of agency workforce
- Introduction of data analytics and AI integration
- Investment in technology
- Aligning with Fin Tech firms which will bring in a high level of digitalization ranging from policy issuance to claims servicing
- Allocating optimum resources
- Capitalization of emerging opportunities on a real time basis

Hybrid distribution will create a long term and sustainable business model. Full scale changes are required in the system and mere eyewash changes will not serve the purpose.

5.1.6 Expected problems to be faced with Hybrid distribution model

AI integration and tie ups with Fin Tech firms will create problems.

Companies that are introducing digitalization may not be tech ready in terms of available technology and support team. The tech team might not have up skilled themselves. Also, Application Programming Interface (API) integration may cause a major bottleneck in operation. Application Programming Interface helps different software applications in communicating with each other among disparate systems and also for exchange of information. Disparate systems may lose parity and may cause trouble. Other associated problems include

- Issues regarding integration of traditional and digital channels
- Training and skilling up of agents
- Data sharing across various channels which will provide a unified customer view

When hybrid distribution models are improperly integrated where there are varying processes in the system, inconsistency crops in resulting in customer dilemma. Different sales processes might exist in live agency channel and digital method which might cause problems.

5.1.7 Benefits of the hybrid model

The various benefits accruing to the hybrid distribution models include providing a unified and fully integrated satisfying experience of a customer. This results in achieving a technology driven and real time service parameter backed by consistency with full data driven business insights. The other benefits mostly include:

- Adaptability in doing business
- Optimizing distribution strategy

- Creating a resilient business ecosystem and ensuring and fostering loyalty towards the brand.
- Flexibility ensures a distinct comfort level while shopping for a health insurance policy.
- Personalized and improved communication
- Improving customer reach by adding new segments
- Flexibility to strategise and improve cost efficiency
- Ensuring adaptability to new and emerging situations
- Resulting in a satisfying and enhanced customer experience
- Data integration and analysis on customer preferences will help to explore new and improved marketing strategies
- Improves efficiency by reduction in manual processes
- Improves scalability by increasing the customer base
- Continuous customer engagement

Helps gather customer insights through continuous customer engagement by use of social media platforms etc.

5.1.8 Improving consumer perception through Hybrid Insurance distribution channel model

Hybrid insurance distribution channel model will improve consumer perception by chalking out a clear cut sustainable growth strategy which will improve productivity. Prioritisation of personalized services

will improve consumer perception. Better positioning of hybrid distribution channel will happen if trends and business analytics are better studied. A optimum change management where traditional and modern distribution channels with digital innovation models is integrated is required. Adaptation in an evolving and changing business landscape is also to be brought about. Personalisation and continuous customer engagements with customer will usher in a host of differentiation in services related to services in claims, policy issuance and sales.

5.1.9 Strategy to implement Hybrid distribution channel and building a futuristic distribution model

- To implement Hybrid distribution channel, the strategies to be adopted in stages include driving a sustainable growth pattern where a life time value creation is established through customer loyalty and continuous customer engagement.
- Channel evaluation- Assesses the effectiveness in how consumer experience is enhanced while ensuring a widening of outreach and its effectiveness in brand positioning
- Channel integration – Multi channel integration will bring in market consolidation of different distribution channels leading to a unified seamless customer experience
- Technology investment- Adaptation to changes in market place will further the cause of business growth

- Training and empowering of agency workforce
- Integration of data and improved technology footprints
- Leveraging data and ecosystems- Leveraging data will drive growth, value and innovation .Data ecosystem can be developed through developing a data infrastructure coupled will good governance
- Bringing in innovation and banking on Traditional distribution systems for a seamless value added consumer experience
- Developing an ecosystem where partners work hand in hand and in a more collaborative manner
- Digital ambitions and revenue models should be aligned so that a robust system is in place
- A digital enabled hybrid distribution channel having proper governance process and right kind of people in the system will ensure success
- Conversion rates from lead to sale should be improved so that data accountability is taken care of
- Improving customer conversion through a personalized and automated system
- Improving value proposition through a seamless, holistic digital experience

5.1.10 Customer experience and hybrid model

Introduction of a hybrid distribution system will result in an enhanced customer experience providing a blend of traditional and digital retail

platform. Customer loyalty will be improved through an enriching experience. Flexibility and a seamless experience will further enhance the visibility of hybrid distribution model.

Developing a new ecosystem will give value for money and act as an engine for growth which will open up and give access to new markets. Data gathering and intelligence will help study behavioural insights and improve product offerings. Leveraging of data through collection of behavioural insights will further the cause of product augmentation through an ever developing ecosystem of continuous customer engagement, price adaptation, diversified product offerings, creating long term relationships and creating a high growth potential for developing new vistas. The hybrid model provides a long term vision in envisioning speed of performance where partnering with Insurtech firms will help build a crust of loyalty coupled with customer centric approach ensuring a seamless and hyper personalized experience. This hybrid model will help build a resilient and sustainable distribution channel based on an adaptable and flexible approach.

5.1.11 What hybrid agent has to do

For ensuring success of a Hybrid agent, he/she should engage in:

- Data analytics and Integration
- Gain customer insights
- Adapt to the evolved business environment
- Improve the customer experience
- Dispel the concerns of technological apprehensions

- Data privacy issues be sorted out
- Perception of complexity should be removed from him/her
- Creating a positive comparative perception towards a hybrid agent
- Bring about a change in behavioural pattern in adopting technology in hybrid model

5.1.12 Transforming the insurance industry

A new think tank is emerging to transform insurance industry by improving internal capabilities, up skilling the sales force with newly acquired digital capabilities and creating new and innovative digital products. The very basic sales process will not undergo a drastic change involving prospecting, lead generation, need analysis, proposal, underwriting and issuance. But digital interactions will definitely fine tune the various processes and will help gain customer insights through personal engagements.

Self service digital apps with digital capabilities will be key differentiators with digital process integration across various channels. Customers have channel switching behaviour and they should be able to achieve this seamlessly in an omni channel setting. The technological shift is providing a strategic advantage in terms of broad basing of digital ecosystem.

Automatic customer on boarding, Straight through processing coupled with data analytics and AI driven machine learning, Natural language processing will improve capabilities not only across Hybrid Channel but

across all distribution channels. Digital transformation through an API ecosystem will act as an enabling technology.

Hybrid distribution ultimately

- Brings in assisted personalized customer experience
- Enhanced consumer perception
- Improves customer service by bringing in efficiency and
- Seamless communication

5.1.13 Building customer trust through Hybrid distribution

Human touch aligned with technology will give synergy and allow adaptability where customer experience is prioritized leading to a holistic approach. In hybrid distribution customer choice is enhanced to a level where he can use traditional or modern or a mixture of both. This will help build customer trust as the customer can verify the credentials online.

5.1.14 Challenges of Hybrid models that needs to be addressed

- Data integration and management across multiple channels remains a major challenge as customers prefer to interact at different touch points having a cohesive character .Unifying and managing data is a major challenge that needs to be addressed
- Bringing traditional and digital channels across a unified and common platform will definitely bring in a host of benefits especially for customers where POS or Point of sales will not work as insurance products might be a bit complex

- Providing training based support to agents is essential having come from diverse social and educational background.
- Success of this Hybrid approach is more challenging than it seems to as it involves a process of integrating technology, abiding consumer expectations, complying with regulatory and compliance requirements and weaving traditional distribution channel with technology centred approach.

5.1.16 Agents and EKYC process

Agents will benefit by skipping the cumbersome process of physical KYC and they can go through the E KYC process which will be easy and less time consuming. This will also help them in digital on boarding, automated underwriting and claims.

5.1.17 Recent developments

BIMA ASBA or Bima Applications Supported by Blocked Accounts are designed to ensure transparency and trust in premium collection. Only after the submitted proposal has been accepted and policy accepted after underwriting, the premium can be collected by insurer.

6. Conclusions

For the success of hybrid channel, a clear objective for implementation of hybrid channel should be defined. Leveraging on technology will bridge the physical and online distribution channel divide. For implementation of hybrid channel, technological upgradation along with improving the skill set of distributors in data handling and online channel is required. Identifying of the key target consumers while implementing

technological solutions remain the key to success. Resource allocation in training also has to be done. Leveraging on both physical and online sales will bring in a hybrid distribution model. The hybrid distribution model can work on business analytics while improving customer insights and at the same time working as a responsive and effective model with a clear and unhindered established line of communication. Customer need alignment can be ushered in through hybrid model. Providing tailor made offerings along with improved customer experiences and leveraging customer data will help the hybrid agent to provide tailor made offerings. A hybrid distribution model will help in the business evolution from a direct agent to a hybrid agent. Also, thriving in this new hybrid business model will provide a host of opportunities in an evolved marketplace where competition and adaptation to a changing environment is key.

Continuous engagement with customers and the hybrid model of insurance distribution will make the customer journey more adaptable while aligning the customer needs more fruitfully. Consumer interaction reinforced through use of virtual agent, chat bots and a digitally equipped and skilled agent will improve business and create a lively customer journey. The digital journey will lead to product differentiation and the distributor will stand out as "ease of doing business".

7. Limitations and scope of further research

There are various limitations in this research as technology introduction is a new, emerging and evolving field of study and sufficient research and market experience has not been obtained so far. Only time will define how things will move but the scope of tech based intermediaries will only improve in the coming days. **TJ**

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What Makes a Business ‘MOAT’ for Life Insurance? - Understanding Sustainable Competitive Advantage



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Abstract

“In business, a “MOAT” refers to a company’s sustainable competitive advantage—factors that makes it hard for competitors to replicate and win customers or replicate its profitability—such as strong distribution networks, superior risk-pricing data, trusted brand, or long-term customer relationships. The term “MOAT” refers to a competitive advantage that protects a company from rivals and serves as a barrier against attackers.

In life insurance, a competitive ‘MOAT’ is the bundle of reinforcing capabilities that protects market share and profits. This paper develops a practitioner-led framework for ‘MOAT’ sustainability in India and synthesizes evidence across FY2020–FY2025. Five pillars—brand trust, regulatory capability, distribution depth, data/technology, and scale–cost economics—are mapped to three hypotheses on dynamic advantage, embedded distribution, and experience-led stickiness. Descriptive

benchmarking of leading insurers and case evidence on digital underwriting/claims suggest that faster, fair claims and personalized journeys, together with multi-bank partnerships and large agency networks, are associated with stronger growth and retention. Regulatory digitization and open-data initiatives may compress static barriers, implying that continuous innovation is required to sustain advantage. The paper closes with managerial actions and a research agenda for measuring and widening the ‘MOAT’ in practice.

Keywords

Business ‘MOAT’; Life Insurance; Distribution Strategy; Bancassurance; Customer Experience; Data and AI.

1. Introduction

The economic ‘MOAT’ concept, popularized by Warren Buffett, frames durable advantage as the ability to resist competitive erosion and earn returns above the cost of capital over long horizons. Life insurance intensifies this logic

because promises are long-dated and trust-sensitive; regulation governs solvency and conduct; information asymmetry is material in underwriting and claims; and distribution intermediation is complex. In India, the paradox of low penetration alongside rising financialization creates headroom but also exposes incumbents to new entrants and digital business models. Against this backdrop, the central managerial question is not whether a ‘MOAT’ exists, but which capabilities actively widen it year after year. This paper proposes a structured, evidence-informed view of ‘MOAT’s in Indian life insurance and evaluates whether observable operating proxies comport with the theory of sustainable competitive advantage.

2. Conceptual Background and Literature

Classic strategy emphasises structural barriers—scale economies, network effects, switching costs, brand capital, and regulatory licenses—that translate into

persistent abnormal returns. For insurance, canonical industry analysis foregrounds high capital and compliance requirements, limited intrinsic product differentiation, and consequently a tilt toward distribution power and service quality as loci of rivalry. Contemporary views caution that 'MOAT's decay unless widened through customer experience, cost discipline, and innovation: in other words, the 'MOAT' must be dynamic rather than static. In life insurance, a data-centric, omni-channel operating model—automated underwriting rules, reflexive medicals, straight-through processing, and analytics-enabled claims—creates a second trench around legacy strengths in brand and regulatory capability.

2a. Literature Review: Insurance 'Moat's in Practice

A dynamic-capabilities lens clarifies why 'MOAT's erode unless actively widened. Technological and regulatory shocks (e.g., real-time KYC, e-sign, account aggregators, consent managers) reduce search and switching frictions over time. Incumbents sustain their edge by reconfiguring processes around the new rails: for example, underwriting rules that ingest verified data sources to accelerate issuance, and claims journeys that combine instant document validation with risk-based triage. The strategic challenge is to compound learning—measured by rules coverage and straight-through rates—faster than rivals can copy.

Barriers to imitation in life insurance include (i) regulatory capability—the ability to navigate evolving product rules, conduct expectations, and solvency requirements; (ii) data assets—longitudinal policyholder, medical, and behavioural data captured with consent; (iii) institutional relationships—anchors with universal banks and employers; and (iv) talent in actuarial science, underwriting, and claims, supported by codified workflows and decisioning tools. These assets are path-dependent and take time to accumulate, creating intertemporal advantages that newer entrants must overcome through focused innovation and niche positioning.

We synthesise insights from strategy and insurance operations to ground a practical definition of life-insurance 'MOAT's. Scale economies operate in policy administration, actuarial modelling, IT infrastructure, and compliance, lowering unit costs as volumes grow. Network effects are weaker than in social platforms but emerge indirectly through embedded partner ecosystems—large banks and digital platforms—that prefer carriers with proven capacity and reliability. Switching costs arise for customers (policy portability frictions, documentation, perceived risk of disruption) and for partners (systems integration, training, incentive harmonisation, and co-governance of risk). Brand trust accumulates through visible claims conduct and complaint resolution, reinforcing willingness to purchase protection

products where quality is assessed ex-ante and realised ex-post.

3. Research Questions and Hypotheses

This study addresses three questions:

- Q1: Is the life-insurance 'MOAT' best understood as a dynamic capability rather than a fixed barrier?
- Q2: Do deep, multi-channel distribution networks, especially embedded bancassurance partnerships—correlate with premium momentum and market share resilience?
- Q3: Do superior claims experience and personalisation strengthen persistency and reduce churn?

Correspondingly, we posit three hypotheses:

- H1 (Dynamic "MOAT"): Sustainability depends on continually reinforcing brand trust, regulatory expertise, and data/technology while adapting to disruption.
- H2 (Distribution "MOAT"): Deep agency networks and embedded banca/ecosystem partnerships create switching costs and support durable growth.
- H3 (Experience "MOAT"): Faster, hassle-free claims and personalised journeys increase loyalty and lift persistency.

4. Industry Context: India's Life Insurance Landscape

India's insurance penetration and density trends point to structural headroom for life insurance. Despite intermittent declines in aggregate penetration, household risk awareness and formal savings have deepened, aided by financial inclusion and digital public infrastructure. New business premiums have exhibited resilience, with rebounds following regulatory and macro shocks. From the vantage point of competitive advantage, the most salient datapoints are those tied to trust (claims performance), reach (agency and banca scale), and speed (issuance and payout turnaround times). These are precisely the levers through which 'MOAT's manifest for customers and partners.

5. Data, Measures and Method

We adopt a descriptive-analytical design suitable for practice settings. Benchmarks cover leading insurers using FY2019–20 to FY2024–25 public sources. Proxies map to four pillars: (i) trust/retention—13th- and 61st-month persistency and claim settlement ratios (CSR) and settlement timeliness; (ii) distribution depth—active agents and bancassurance breadth/share; (iii) data/technology—presence of automated underwriting and digitised claims; and (iv) scale/cost—solvency and expense ratios where consistently disclosed. Given heterogeneous disclosure practices,

we triangulate regulator handbooks, company investor documents, and trade releases. The analysis surfaces patterns rather than causal effects and informs managerial implications.

5a. India Sector Trends and Operating Proxies

Technology posture: The spread of automated underwriting rule engines and digitised claims indicates that data-driven decisioning is becoming table stakes. Firms with robust solvency have more room to invest counter-cyclically in these capabilities, lowering issuance and claims unit costs while enhancing perceived service quality.

Experience proxies: Claims settlement ratios (CSR) at the individual level and the share settled within 30 days serve as visible trust signals. Timeliness is increasingly enabled by straight-through adjudication of non-early, document-complete claims. Persistency at the 13th and 61st month captures the durability of customer relationships; improvements typically track better suitability screening, onboarding education, and renewal UX rather than pricing alone.

Distribution structure: Private life insurers rely heavily on bancassurance for individual business, often through anchor relationships with universal banks and selective multi-bank tie-ups. Agency forces continue to grow in absolute terms, with public-sector incumbents commanding the largest proprietary networks. Together,

banca and agency determine not only reach but also the economics of new business—through lead origination costs, cross-sell rates, and persistency by cohort.

Penetration and density: India's overall insurance penetration has fluctuated in recent years, with life insurance comprising the majority share of premiums. Insurance density has trended upward as income formalisation and financial inclusion progress. These top-down indicators imply substantial headroom relative to advanced markets, but sustainable capture of this headroom depends on distribution access and customer experience rather than product novelty alone.

5b. Comparative Evidence and Measurement Framework

Measurement discipline also protects against false positives. For example, a rising headline claims-paid ratio may conceal elongating cycle times or higher reopen rates; similarly, a surge in bancassurance APE may mask deteriorating mix or early-duration lapses. The scorecard therefore must include counter-metrics: issuance speed alongside quality gates; growth alongside persistency; and automation alongside adverse-selection checks. Periodic back-testing—comparing automated decisions to subsequent loss emergence—keeps the "data MOAT" sound and auditable.

Case notes from Indian carriers illustrate how such a scorecard translates into action. Where

underwriting rule engines are deployed deeply in protection lines, straight-through issuance typically rises and medical requirements fall for low-risk profiles, compressing cycle times without diluting prudence. In claims, fast-pathing of non-early, document-complete cases frees up investigator capacity for complex claims, simultaneously improving customer satisfaction and fraud control. On distribution, anchor-bank journeys co-designed with bank product, risk and IT teams reduce drop-offs in KYC, mandate registration, and medical scheduling, leading to higher issuance per thousand leads and better persistency. None of these actions are one-off projects; their effects compound through learning, which is the essence of 'MOAT'-widening.

Comparative evidence across private carriers suggests that 'MOAT'-consistent behaviours are observable in operating metrics that the customer or partner directly experiences. A practical approach for managers is to construct a "MOAT' Scorecard" at two levels. At the customer level: (i) claims timeliness—share of claims paid within the same day, 3 days, and 30 days; (ii) fairness perception—complaint reopen rates and adverse-action explanation quality; (iii) onboarding quality—first-30-day service contacts and app adoption; and (iv) persistency by cohort—13th/25th/37th/61st month, cut by channel and ticket-size. At the partner level: (i) time-to-integration for new bancassurance partners;

(ii) straight-through issuance for bank-sourced leads; (iii) partner NPS; and (iv) economics—APE growth, protection mix, and early-duration lapse. By reviewing this monthly at the executive committee, insurers link strategy with the trenches of daily execution.

6. Findings

6.1 Experience and retention.

Industry-level claims performance has improved in both outcome (claims paid) and timeliness. Leading private carriers report very high individual claims-paid ratios and same-day settlements for uncomplicated cases, signaling process digitisation and analytics-driven triage. These outcomes coherently align with H3: experience quality and speed reinforce trust, which in turn is reflected in persistency cohorts. While causality cannot be asserted from descriptive proxies, the alignment across multiple carriers strengthens the managerial case for "claims-as-experience" design.

6.2 Distribution depth and embedded partnerships. Bancassurance has become the dominant private-sector channel, supported by multi-bank tie-ups and anchor partnerships (e.g., universal banks). In parallel, agency headcount has expanded, with LIC continuing to command the largest proprietary network. The convergence of a strong anchor bank and a productive

agency backbone correlates with premium momentum and geographic reach. These observations support H2: distribution is a first-order driver of defensibility in Indian life insurance.

6.3 Data/technology and scale economics. Announcements of underwriting rule engines (URE), reflexive medicals, and digitised claims indicate rapid operational modernisation; leaders simultaneously report robust solvency—providing capacity to invest through cycles. Together, these suggest that a "data 'MOAT' " and scale efficiencies compress issuance/claims cycle time and reduce unit costs, consistent with H1. Regulatory digitisation and open-data initiatives, however, may narrow legacy information advantages—making continuous innovation a precondition for 'MOAT' sustainability.

7. Discussion

Customer-experienced advantages are the most defensible because they are the hardest for rivals to copy without replicating the underlying operating model. In life insurance, this means turning claims into a brand moment: clear documentation requirements, proactive communication, predictable timelines, and digitally verifiable status updates. Firms that institutionalise journey-level KPIs—same-day payout share, 30-day CSR on policies

and amounts, share of cashless/straight-through claims—tend to reinforce emotional loyalty, reduce complaints, and improve referral propensity. Persistency then follows as a downstream outcome.

Distribution-led ‘MOAT’ widening rests on two intertwined ideas. First, embedded flows from anchor banking partners create privileged access to customer demand, especially in protection and savings-cum-investment products. Second, a productive agency network provides resilience, particularly in non-metro geographies where relational selling and service support remain decisive. The resulting partner switching costs (IT integration, frontline training, incentive harmonisation, and compliance processes) raise barriers for rivals seeking to dislodge incumbents.

The data ‘MOAT’ complements these, but it must be governed. Consent-based data acquisition, robust model risk management, and transparent adverse-action explanations are strategic necessities. Underwriting rule engines increase straight-through issuance by automating low-risk pathways and focusing human attention on ambiguous cases. Reflexive medical protocols reduce unnecessary tests without compromising risk selection. In claims, predictive triage separates fast-path, document-complete cases from complex ones requiring investigation, balancing customer empathy with fraud control. Each capability compounds over time

as learning accrues—and that compounding is what ‘MOAT’-widening looks like in operations.

8. Managerial Implications

- Stand up a “claims control tower”: track same-day payout share, 30-day CSR (policies and amounts), reopen rates, and NPS by segment; publish to the frontline monthly.
- Institutionalise persistency design: pre-issuance suitability checks, premium-due nudges, and grace-period rescue journeys; set channel-wise cohort targets (13th/25th/37th/61st month).
- Treat bancassurance as a co-designed product–channel–journey stack; create joint squads with anchor banks to iterate journeys and MIS.
- Diversify partnerships: add selected small-finance/neo-banks and ecosystems (payroll, wealth platforms) to reduce concentration risk while protecting anchor relationships.
- Deploy an underwriting rule engine and reflexive medicals; aim for step-ups in straight-through rates without diluting prudence; monitor loss emergence tightly.
- Invest in claims digitisation and proactive communication cadences; ensure multi-language, mobile-first interfaces for nominees.
- Govern the data ‘MOAT’: implement model approvals, monitoring, and explainability; align with regulatory expectations on fairness and consent.
- Run an annual “‘MOAT’ audit”: assess which barriers are eroding (e.g., DPI-enabled portability) and where new trenches (e.g., wellness/prevention platforms) can be built.
- Pilot micro-journeys quarterly (e.g., medical waiver rules for low-risk profiles) with test-and-learn governance; scale only after loss-ratio validation.
- Institutionalise “table hygiene” in data: consent management, data lineage, and model monitoring; publish fairness tests and back-testing summaries to the risk committee.
- Design partner scorecards that blend growth and quality: APE, protection mix, early-duration lapse, and claims NPS; use scorecards to calibrate joint incentives.
- Codify a “persistency playbook” per channel: standardise welcome calls/messages, renewal nudges, and premium-holiday guidance; publish cohort dashboards to partners.

9. Limitations and Future Research

This inquiry is descriptive and relies on heterogeneous secondary sources; it does not make causal

claims. A promising extension is to assemble a panel with cohort-level persistency, channel contribution by product, and issuance/claims TAT by insurer to test mediation pathways from experience and distribution to growth. Another avenue is to operationalise the “data ‘MOAT’ ” through measures such as rules coverage by segment, straight-through processing rates, and model-approval lead times under

governance constraints. Finally, qualitative fieldwork with bank partners and agents could unpack how integration depth translates into partner switching costs.

10. Conclusion

‘MOAT’s in Indian life insurance are dynamic systems of reinforcing capabilities. Brand trust, regulatory expertise, distribution embeddedness, data/technology, and scale–cost

economics co-produce defensibility; among these, customer experience and distribution are the proximate engines of retention and growth, while data and solvency provide operating leverage. As regulatory and technological tides lower traditional barriers, sustained advantage will accrue to firms that keep widening the ‘MOAT’ through customer-centric design, analytics, and partnership strategy. 

Appendix A: ‘Moat’ Pillars and Practical Proxies

Table A1: Mapping conceptual pillars to observable proxies and example metrics (indicative).

Pillar	Proxy	Example metric
Brand & trust	Claims performance	% claims paid; 30-day CSR by policies and amounts; complaint reopen rate
Regulatory capability	Solvency & governance	Solvency ratio; time-to-approval for models/process changes
Distribution depth	Agency scale; banca breadth	Active agents; banca share; # anchor/multi-bank tie-ups
Data/technology	Underwriting & claims automation	Rules coverage; straight-through issuance; claims fast-path share
Scale–cost economics	Expense & throughput	Opex/APE; issuance and claims TAT; unit cost per policy

Appendix B: Illustrative Proxies for Select Insurers (Fy2023–24)

Table B1: Representative public metrics (indicative; periods vary). “NA” denotes non-uniform availability in public sources.

Insurer	Persistency (13th/61st)	Claim Settlement Ratio	Active Agents (Mar 31, 2024)	Distribution notes
LIC	NA	~96–97% within 30 days (industry)	14,14,743	Dominant agency; strong group single premiums
SBI Life	86.78% / 58.55%	98.25% (individual)	2,46,078	Embedded with SBI; high banca share
HDFC Life	~87% / NA	~99.5% (individual)	2,14,275	Deep banca with HDFC Bank; multi-bank tie-ups
ICICI Prudential Life	NA	NA	2,09,521	ICICI Bank + alliances (e.g., Ujjivan SFB)
Max (Axis Max) Life	86.6% / 58.3%	99.65% (FY24); ~99.70% (FY25)	1,02,693	Axis Bank-led banca; multi-channel

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An Analytical Study on Performance Evaluation of Pradhan Mantri Fasal Bima Yojana



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Abstract

This study uses secondary data from the official website to analyze the Pradhan Mantri Fasal Bima Yojana's Performance. Using key variables and derived ratios, the analysis focuses on coverage patterns, participation trends, claim distribution, and financial efficiency. The results show that although insured area and farmer involvement have recovered and grown over time, the gain is primarily due to higher application intensity rather than an increase in unique farmer coverage. Analysis of claim distribution shows that insured farmers' average pay is decreasing and their benefit coverage is limited, indicating problems with outreach and sufficiency. With a decreasing claim intensity ratio, financial metrics

demonstrate increased efficiency and less financial strain on insurers. On the other hand, the declining claim-to-sum insured ratio suggests that claim adequacy is deteriorating. Overall, the program shows increase sustainability and scalability, but it has trouble providing farmers with sufficient and equitable financial protection.

Keywords

PMFBY, Crop Insurance, Claim Distribution, Financial Efficiency.

Introduction

Historically, agriculture has served as the foundation of the Indian economy, playing an essential role in guaranteeing food security, generating employment, and fostering overall economic development.

Even in contemporary times, a considerable segment of India's population relies on agriculture and related activities for their livelihoods. According to the Agricultural Statistics at a Glance a (2024-25), a considerable segment of India's workforce is employed in agriculture, with approximately 54.6% of the total labour force involved in agricultural pursuits, which encompasses both cultivators and agricultural labourers. The report further emphasizes that India is home to around 118.8 million cultivators and 144.3 million agricultural labourers, underscoring the sector's pre-eminence in rural employment. Nevertheless, agriculture is notably susceptible due to its reliance on climatic conditions. The statistics reveal that from the total net sown area of 141.71 million

hectares, merely 79.31 million hectares are irrigated, suggesting that a significant fraction of agricultural activities is contingent upon rainfall. This substantial dependence on rain-fed agriculture heightens the vulnerability of farmers to production uncertainties and income variations.

In the light of these risks, crop insurance has become a crucial risk management instrument designed to safeguard farmers against financial losses. The Government of India has rolled out various crop insurance initiatives over the years to enhance agricultural resilience. The inception of crop insurance in India can be tracked back to the Comprehensive Crop Insurance Scheme (CCIS) established in 1985, which primarily covered borrower farmers. However, due to its limited scope and operational inefficiencies, it was replaced by the National Agricultural Insurance Schemes (NAIS) in 1999-2000, which sought to expand coverage and incorporate a broader range of crops and farmers. Following this, to rectify the deficiencies of NAIS, the Modified National Agricultural Insurance Scheme (MNAIS) was commenced in 2010-11, featuring enhancements such as actuarial premium rates and village level insurance units. Simultaneously, the Weather- Based crop Insurance Scheme (WBCIS) was initiated in 2007 to offer insurance based on climatic conditions rather than yield assessments.

Despite these efforts, previously crop insurance programs faced many obstacles that hindered their efficacy.

These challenges encompassed low participation rates among farmers, delays in the settlement of claims, insufficient risk coverage, a lack of awareness among the farming community, and administrative inefficiencies. For example, programs such as CCIS and NAIS experienced poor outreach and delays in claim disbursements, while MNAIS and WBCIS, although showing some improvements, continued to grapple with issues related to high premium costs and operational difficulties. Furthermore, many of these programs were limited to farmers with loans, thereby excluding a significant number of non-borrower farmers. Research has also indicated that slow claim processing, restricted risk coverage, and a lack of transparency have considerably diminished farmer's confidence in these insurance schemes.

In light of these ongoing challenges, there arose a significant necessity for more inclusive, farmer-centric, and technology-oriented crop insurance program. This necessity led to introduction of the Pradhan Mantri Fasal Bima Yojana (PMFBY) in 2016 by the Government of India. PMFBY was formulated as an enhanced and consolidated crop insurance initiative, superseding NAIS and MNAIS, while also incorporating the advantages of WBCIS. The objective of the scheme is to offer extensive risk coverage from the pre-sowing phase through to post-harvest stages, guarantee reduced premium costs for farmers, and facilitate quicker and more transparent claim settlements by leveraging modern technologies

such as remote sensing, GPS, and mobile applications. Additionally, it introduced features such as standardized premium rates, direct benefits transfers (DBT) to farmer's bank accounts, and broadened coverage to encompass all farmers on a voluntary basis.

Consequently, the Pradhan Mantri Fasal Bima Yojana (PMFBY) signifies a notable transformation in the agricultural risk management system of India, aiming to overcome the shortcomings of earlier programs while utilizing technological innovations. Assessing its success regarding farmer participation, efficiency in claim settlements, agricultural output, and financial viability is crucial for comprehending its efficacy and for proposing enhancements for potential policy measures.

Review of Literature

Literature on crop insurance in India has evolved through multiple phases which includes evolution of policy, behavioral aspects, empirical analysis, technologies introduced and different operational issues and inefficiencies.

Evolution of Crop Insurance in India-

Venkatesh (2008) in his study has traced the origin of crop insurance in India from Comprehensive Crop Insurance Scheme (CCIS) to National Agriculture Insurance Scheme (NAIS) with findings that these schemes were largely credit-linked and area-based having poor claim ratio and inefficient administration. Similarly, **Tiwary et. al. (2020)** based on his study found that even after

introduction of PMFBY, there were issues such as claim settlement delays, weak institutional support and uneven benefit distribution despite certain improvements like lower premium rates and wider risk coverage. In another study, **Kaur et. al. (2021)** found that PMFBY is an improvement over earlier crop insurance scheme but it still faces challenges like low awareness and operational complexity. Thus, referred literature shows that PMFBY is continuation of reforms rather than a transformation, still carrying structural issues from earlier schemes.

Demand and Behavioral Aspect for Crop Insurance -

Ghosh et. al. (2021) in his study using discrete choice experiment, found that farmers require timely settlement and payouts of claims more than premium cost. He also found that rather than voluntary participation in the crop insurance scheme large number of farmers has been enrolled compulsorily through credit linkage. **Rajeev and Nagendran (2023)** analyze adoption behavior of farmers using NSSO data and found that Social Class, Informal Credit Markets and education significantly influence insurance adoption. Their theoretical model suggests that farmers heavily rely on informal mechanisms unless insurance becomes economically attractive. **Sahoo and Behera (2025)** in their found that education, access to credit, non-farm income and insurance awareness as major determinants of adoption, while family dependency reduces participation. The literature suggests that rather

than pricing, it is behavior and socio-economic factors are more important than pricing, challenging traditional assumptions about insurance demand.

Empirical Evidences on Impact and Effectiveness -

Bharne et. al (2021) in their study used probit and propensity score matching models on 39000+ households and found that crop insurance significantly improves food security, farm income, and agriculture investment. In another study **Cariappa et. al. (2021)** and **Biswal and Bahinipati (2025)** found that even though crop insurance has positive effects on income stability and debt reduction, its overall impact is limited due to lower penetration rate. **Kaur et. al. (2021)** found that premium levels significantly influence farmer participation, whereas subsidies alone do not ensure higher enrolment. Literature shows that crop insurance has positively impacted farmers community but due to its limited reach macro level impact remains absent.

Operational Challenges and Inefficiencies -

Most of the literature shows operational inefficiencies in crop insurance. **Gulati et. al. (2018)** in their study has identified key issues such as delay in claim settlement, dependence on crop cutting experiments and lack of transparency and trust. **Kumari and Kumari (2025)** found out that only 31.6% of the total enrolled farmers received benefits, indicating a gap between enrolment and actual effectiveness.

Raghuvanshi (2007) also criticized Indian crop insurance schemes for financial inefficiency, adverse selection, and policy design flaws, arguing that many schemes fail to deliver intended benefits.

Role of Technology in Improving Crop Insurance -

Literature highlights the importance of technology in crop insurance for claim settlement, grievance redressal or loss assessment. **Jha et. al. (2021)** via their study has proposed a blockchain-based crop insurance system which can improve transparency, claim processing speed, trust among farmers. In a similar study, **Gulati et. al. (2018)** recommended use of remote sensing, drones and satellite imagery for faster and more accurate claim settlement. These studies suggest that technology can address many operational inefficiencies but the reach remains limited.

From the above literature it is evident that crop insurance in India has evolved significantly while the adoption remains low and uneven across regions and farmers categories. Behavior factors play a crucial role in adoption of crop insurance among farmers. Operational inefficiencies continue to undermine effectiveness and technology though has potential but is not fully implemented.

Objectives of the study

1. To analyze growth and participation trends of PMFBY.
2. To evaluate effectiveness of claim distribution under PMFBY.

3. To understand extent and depth of insurance coverage under PMFBY.
4. To analyze financial efficiency of the PMFBY scheme using premium and claims data.

Research Methodology

Research Design: Study is based on descriptive and analytical research in order to evaluate performance of Pradhan Mantri Fasal Bima Yojana in India.

Nature and Period of Study: Study is based on secondary Data for the period 2018 to 2025.

Source and Compilation of Data: Required Data were collected from the Official Pradhan Mantri Fasal Bima Yojana (PMFBY) Administrative Dashboard of Government of India. Additional Information was collected

from research articles, government reports and other related literature available. PMFBY Official Dashboard presents data separately for kharif and rabi seasons. In order to Facilitate year-wise analysis, data of rabi and kharif seasons were aggregated to derive at annual figure. Data were extracted from the state-wise reports available on the dashboard and national level figures were obtained from the consolidated state-wise totals reported by the portal.

Data Extraction: The data used in the study is extracted from PMFBY Administrative Dashboard on 02 July 2026. The PMFBY Administrative Dashboard is a dynamic administrative database that is updated periodically as revised information is received from different participating states and implementing agencies. Consequently, the figures

available on the dashboard may change over time due to data reconciliation, claim settlement, corrections and subsequent updates. Therefore, the analysis presented in this study is based on the data available on the date of extraction, and any subsequent revisions on the portal are beyond the scope of the present study.

Data Analysis and Discussions

For the purpose of study, secondary data pertaining to eight years i.e. from 2018 to 2025 has been considered in order to give correct trend analysis and accuracy of the outcomes. Data focusses upon participation trends, claim distribution, coverage patterns, and financial efficiency through selected indicators and ratios.

Table 1: Trend in Farmers Participation under Pradhan Mantri Fasal Bima Yojana (PMFBY)

Years	Farmers Insured			Loanee Farmers Applications			Non-Loanee Farmers Applications		
	Rabi Season (1)	Kharif Season (2)	Total Farmers Insured (1) + (2)	Rabi Season (3)	Kharif Season (4)	Total Loanee Farmers Applications (3) + (4)	Rabi Season (5)	Kharif Season (6)	Total Non-Loanee Farmers Applications (5) + (6)
2018	1,48,48,311	2,25,99,053	3,74,47,364	1,27,81,885	1,97,01,241	3,24,83,126	95,59,841	1,24,02,890	2,19,62,731
2019	93,25,947	1,98,62,742	2,91,88,689	1,24,91,389	2,20,34,509	3,45,25,898	50,22,008	1,67,29,684	2,17,51,692
2020	98,59,100	1,79,37,127	2,77,96,227	1,20,79,602	2,72,48,735	3,93,28,337	73,95,708	1,47,89,284	2,21,84,992
2021	97,08,272	1,55,08,670	2,52,16,942	2,38,02,686	3,73,58,365	6,11,61,051	84,21,507	1,24,19,426	2,08,40,933
2022	1,07,33,604	1,88,14,901	2,95,48,505	3,39,37,046	4,57,85,196	7,97,22,242	83,36,798	2,27,26,560	3,10,63,358
2023	1,30,01,180	2,32,30,623	3,62,31,803	3,54,07,114	5,21,65,051	8,75,72,165	1,93,14,238	3,40,61,158	5,33,75,396
2024	1,14,69,972	2,40,71,484	3,55,41,456	3,87,73,274	6,00,34,806	9,88,08,080	1,35,13,063	3,45,09,542	4,80,22,605
2025	98,03,217	1,98,29,624	2,96,32,841	4,22,78,049	6,44,39,850	10,67,17,899	84,79,044	1,92,11,491	2,76,90,535

Source: Pradhan Mantri Fasal Bima Yojana (PMFBY) Administrative Dashboard - Ministry of Agriculture & Farmers Welfare, Government of India. State – Wise Aggregate Report. Data extracted on 02 July 2026. Available at: <https://pmfby.gov.in/adminStatistics/dashboard>

Note: Annual figures were derived by aggregating Kharif and Rabi season data reported in the PMFBY Administrative Dashboard. The aggregated values have been used to facilitate year-wise analysis and for the computation of performance indicators presented in the study.

Table 1 represents the trend in farmer participation under PMFBY for the period 2018 to 2025 based on aggregated Kharif and Rabi season data. The number of insured farmers represents unique beneficiaries, whereas loanee and non-loanee applications represents insurance proposals submitted under the scheme. A farmer may submit multiple applications for different crops, seasons or insured farm lands and so the total number of applications may exceed the number of insured farmers. The total number of insured farmers was 3.74 crore in the year 2018, which declined to 2.52 crore farmers in 2021 and later on increased to 3.62 crore farmers in 2023 and currently stood at 2.96 crore farmers in 2025. Total Loanee farmers application increased from

3.25 crore in 2018 to 10.67 crore in 2025, while during the same interval non-loanee farmers application varied from 2.20 crore in 2018 to 2.77 crore in 2025. Overall, the table indicated year wise variations in farmer participation and insurance applications under PMFBY.

Table 2 represents the year-wise claims paid, farmers benefited and average claim amount under PMFBY during 2018-2025. The average claim amount represents the average compensation received per beneficiary farmers and is calculated by dividing the total claims paid by the total number of farmers benefited. Total claims paid were Rs. 20,658.76 crore in 2018 and Rs. 23,170.81 crore in 2019 after which the values varied across the subsequent years

and were Rs. 6,198.42 crore in 2025. The number of farmers benefited also varied during the study period ranging from 1,19,02,291 farmers in 2018 to 35,53,070 farmers in 2025. The average claim amount, calculated by dividing total claims paid by the total numbers of farmers benefited ranged from Rs. 13,697.78 to Rs. 20,996.98 during the period of study, with the highest value recorded in 2020. The table provides year wise summary of claim disbursement, beneficiary coverage and average claim amount under PMFBY.

Table 3 represents Benefit Coverage Ratio under PMFBY during 2018-2025. The benefit Coverage Ratio measures the percentage of insured farmers who received claim benefits during a particular year and is

Table 2: Claims Paid, Farmers Benefited and Average Claim Amount under PMFBY

Years	Claims Paid			Actual Farmers Benefitted			Average Claim Amount (₹) (3)/(6)
	Rabi Season (₹) (1)	Kharif Season (₹) (2)	Total Claim Paid (₹) (1) + (2) = (3)	Rabi Season (4)	Kharif Season (5)	Total Farmer Benefit Actual (4) + (5) = (6)	
2018	73,29,29,00,000	1,33,29,47,00,000	2,06,58,76,00,000	6,14,098	72,88,193	1,19,02,291	17,356.96
2019	43,27,52,00,000	1,88,43,29,00,000	2,31,70,81,00,000	19,82,853	91,85,101	1,11,67,954	20,747.59
2020	55,18,27,00,000	1,33,39,15,00,000	1,88,57,42,00,000	27,48,748	62,32,268	89,81,016	20,996.98
2021	44,75,91,00,000	1,34,17,11,00,000	1,78,93,02,00,000	28,37,563	77,42,613	1,05,80,176	16,911.84
2022	51,77,44,00,000	1,07,80,72,00,000	1,59,58,16,00,000	26,09,002	69,48,697	95,57,699	16,696.65
2023	37,45,76,00,000	1,26,70,91,00,000	1,64,16,67,00,000	25,59,166	90,89,966	1,16,49,132	14,092.61
2024	26,50,20,00,000	82,20,59,00,000	1,08,70,79,00,000	14,16,619	65,19,549	79,36,168	13,697.78
2025	3,34,11,00,000	58,64,31,00,000	61,98,42,00,000	2,06,235	33,46,835	35,53,070	17,445.25

Source: Pradhan Mantri Fasal Bima Yojana (PMFBY) Administrative Dashboard - Ministry of Agriculture & Farmers Welfare, Government of India. State – Wise Aggregate Report. Data extracted on 02nd July 2026. Available at: <https://pmfb.gov.in/adminStatistics/dashboard>

Note: Annual figures were derived by aggregating Kharif and Rabi season data reported in the PMFBY Administrative Dashboard. The aggregated values have been used to facilitate year-wise analysis and for the computation of performance indicators presented in the study.

Table 3: Benefit Coverage Ratio of Insured Farmers under PMFBY

Year	Actual Farmers Benefitted			Farmers Insured			Benefit Coverage Ratio (%) = (3)/(6)*100
	Rabi Season (1)	Kharif Season (2)	Farmers Benefitted (1) + (2) = (3)	Rabi Season (4)	Kharif Season (5)	Total Number of Farmers Insured (4) + (5) = (6)	
2018	46,14,098	72,88,193	1,19,02,291	1,48,48,311	2,25,99,053	3,74,47,364	31.78
2019	19,82,853	91,85,101	1,11,67,954	93,25,947	1,98,62,742	2,91,88,689	38.26
2020	27,48,748	62,32,268	89,81,016	98,59,100	1,79,37,127	2,77,96,227	32.31
2021	28,37,563	77,42,613	1,05,80,176	97,08,272	1,55,08,670	2,52,16,942	41.96
2022	26,09,002	69,48,697	95,57,699	1,07,33,604	1,88,14,901	2,95,48,505	32.35
2023	25,59,166	90,89,966	1,16,49,132	1,30,01,180	2,32,30,623	3,62,31,803	32.15
2024	14,16,619	65,19,549	79,36,168	1,14,69,972	2,40,71,484	3,55,41,456	22.33
2025	2,06,235	33,46,835	35,53,070	98,03,217	1,98,29,624	2,96,32,841	11.99

Source: Pradhan Mantri Fasal Bima Yojana (PMFBY) Administrative Dashboard - Ministry of Agriculture & Farmers Welfare, Government of India. State – Wise Aggregate Report. Data extracted on 02 July 2026. Available at: <https://pmfby.gov.in/adminStatistics/dashboard>

Note: Annual figures were derived by aggregating Kharif and Rabi season data reported in the PMFBY Administrative Dashboard. The aggregated values have been used to facilitate year-wise analysis and for the computation of performance indicators presented in the study.

Table 4: Claim Intensity Ratio based on Claims Paid and Gross Premium Collected

(₹ in Lakhs)							
Year	Claims Paid			Premium Collected			Claim Intensity Ratio (3)/(6)
	Rabi Season (1)	Kharif Season (2)	Total Claims Paid (₹) (1) + (2) = (3)	Rabi Season (4)	Kharif Season (5)	Gross Premium Collected (₹) (4) + (5) = (6)	
2018	7,32,929	13,32,947	20,65,876	7,07,077.3	14,96,168.06	22,03,245.36	0.94
2019	4,32,752	18,84,329	23,17,081	6,22,727.42	17,12,622.12	23,35,349.54	0.99
2020	5,51,827	13,33,915	18,85,742	10,03,315.01	18,45,850.12	28,49,165.13	0.66
2021	4,47,591	13,41,711	17,89,302	10,16,102.11	17,76,241.57	27,92,343.68	0.64
2022	5,17,744	10,78,072	15,95,816	9,70,441.83	18,70,097.94	28,40,539.77	0.56
2023	3,74,576	12,67,091	16,41,667	7,87,534.53	18,58,243.57	26,45,778.10	0.62
2024	2,65,020	8,22,059	10,87,079	6,59,688.11	17,92,212.74	24,51,900.85	0.44
2025	33,411	5,86,431	6,19,842	4,98,349.75	12,14,351.45	17,12,701.20	0.36

Source: Pradhan Mantri Fasal Bima Yojana (PMFBY) Administrative Dashboard - Ministry of Agriculture & Farmers Welfare, Government of India. State – Wise Aggregate Report. Data extracted on 02 July 2026. Available at: <https://pmfby.gov.in/adminStatistics/dashboard>

Note: Annual figures were derived by aggregating Kharif and Rabi season data reported in the PMFBY Administrative Dashboard. The aggregated values have been used to facilitate year-wise analysis and for the computation of performance indicators presented in the study.

calculated by dividing the total number of farmers benefitted by the total number of insured farmers. The ratio was 31.78% in 2018, increase to 41.96% in 2021, and declined to 11.99% in 2025. During the same period, the number of insured farmers benefitted ranged from 35,53,070 farmers to 1,19,02,291 farmers, while the total number of insured farmers varied between 2.52 crores farmers to 3.74 crores farmers.

Table 4 examines the financial efficiency of PMFBY using Claim intensity ratio, which is used as proxy measure in order to evaluate how much claims are paid in relation to premium collected i.e. for every Rs. 1 of premium collected, how much

is paid back as claim. The ratio was 0.94 in 2018, increased marginally to 0.99 in 2019 and subsequently ranged between 0.36 and 0.66 during the remaining reference period under study. During the same period, total claims paid and gross premium collected also showed year wise variations.

Table 5 represents the year wise area insured, sum insured and average sum insured per hectare under PMFBY during 2018-2025. The average sum insured per hectare shows the average insurance coverage available per unit of insured agricultural land and is calculated by dividing the total sum insured by total area insured. The total insured

area varied from 37,930.47 thousand hectares in 2025 to 49,844.34 thousand hectares in 2023, while the total sum insured ranged from Rs.173,72,148.46 lakhs in 2021 to Rs. 2,58,45,448.50 lakhs in 2023. The average sum insured per hectare ranged from 41.02 to 551.89 over the referenced study period.

Table 6 shows the Claim-to-Sum Insured Ratio under PMFBY during 2018-2025. The Claim to Sum Insured Ratio measured the proportion of the total sum insured that was paid as claims during a particular year and is calculated by dividing total claims paid by the total sum insured. The ratio was 0.105 in 2018, increased to 0.129 in 2019

Table 5: Area Insured, Sum Insured and Sum Insured Per Hectare under PMFBY

Year	Area Insured (Thousand Hect)			Sum Insured (₹ in lakhs)			Average Sum Insured Per Hectare (₹ lakh/ thousand hectare) (6)/(3)
	Rabi Season (1)	Kharif Season (2)	Total Area Insured (Thousand Hect) (1) + (2) = (3)	Rabi Season (4)	Kharif Season (5)	Total Sum Insured (₹ in lakhs) (4) + (5) = (6)	
2018	19,364.09	27,083.67	46,447.76	85,85,044.53	1,11,58,505.38	1,97,43,549.91	425.07
2019	15,261.70	28,403.67	43,665.37	66,02,835.99	1,13,01,133.04	1,79,03,969.03	410.02
2020	15,486.95	26,995.31	42,482.26	79,36,6940.00	1,07,13,530.48	1,86,50,224.48	439.01
2021	14,961.00	24,760.10	39,721.10	75,50,172.42	98,21,976.04	1,73,72,148.46	437.35
2022	15,086.48	26,343.52	41,430.00	82,69,974.52	1,23,03,010.95	2,05,72,985.47	496.57
2023	18,371.27	31,473.07	49,844.34	1,00,91,733.08	1,57,53,715.42	2,58,45,448.50	518.52
2024	16,210.98	31,024.19	47,235.17	92,59,733.97	1,60,63,622.23	2,53,23,356.20	536.11
2025	12962.54	24,967.93	37,930.47	78,62,097.36	1,30,71,667.31	2,09,33,764.67	551.89

Source: Pradhan Mantri Fasal Bima Yojana (PMFBY) Administrative Dashboard - Ministry of Agriculture & Farmers Welfare, Government of India. State – Wise Aggregate Report. Data extracted on 02 July 2026. Available at: <https://pmfbby.gov.in/adminStatistics/dashboard>

Note: Annual figures were derived by aggregating Kharif and Rabi season data reported in the PMFBY Administrative Dashboard. The aggregated values have been used to facilitate year-wise analysis and for the computation of performance indicators presented in the study

Table 6: Claims to Sum Insured Ratio under PMFBY

Year	Claims Paid			Sum Insured (₹ in lakhs)			Claim to Sum Ratio (3)/(6)
	Rabi Season (1)	Kharif Season (2)	Total Claim Paid (₹ in lakhs) (1) + (2) = (3)	Rabi Season (4)	Kharif Season (5)	Total Sum Insured (₹ in lakhs) (4) + (5) = (6)	
2018	7,32,929	13,32,947	20,65,876	85,85,044.53	1,11,58,505.38	1,97,43,549.91	0.105
2019	4,32,752	18,84,329	23,17,081	66,02,835.99	1,13,01,133.04	1,79,03,969.03	0.129
2020	5,51,827	13,33,915	18,85,742	79,36,694.00	1,07,13,530.48	1,86,50,224.48	0.101
2021	4,47,591	13,41,711	17,89,302	75,50,172.42	98,21,976.04	1,73,72,148.46	0.103
2022	5,17,744	10,78,072	15,95,816	82,69,974.52	1,23,03,010.95	2,05,72,985.47	0.078
2023	3,74,576	12,67,091	16,41,667	1,00,91,733.08	1,57,53,715.42	2,58,45,448.50	0.064
2024	2,65,020	8,22,059	10,87,079	92,59,733.97	1,60,63,622.23	2,53,23,356.20	0.043
2025	33,411	5,86,431	61,9842	78,62,097.36	1,30,71,667.31	2,09,33,764.67	0.029

Source: Pradhan Mantri Fasal Bima Yojana (PMFBY) Administrative Dashboard - Ministry of Agriculture & Farmers Welfare, Government of India. State – Wise Aggregate Report. Data extracted on 02 July 2026. Available at: <https://pmfbby.gov.in/adminStatistics/dashboard>

Note: Annual figures were derived by aggregating Kharif and Rabi season data reported in the PMFBY Administrative Dashboard. The aggregated values have been used to facilitate year-wise analysis and for the computation of performance indicators presented in the study

Table 7: Area Insured and Average Area Insured per farmer under PMFBY

Year	Area Insured (Thousand Hect)			Farmers Insured			Average Area Insured per Farmer (Thousand Hectares) (3)/(6)
	Rabi Season (1)	Kharif Season (2)	Total Area Insured (Thousand Hect) (1) + (2) = (3)	Rabi Season (4)	Kharif Season (5)	Total Number of Farmers Insured (4) + (5) = (6)	
2018	19,364.09	27,083.67	46,447.76	1,48,48,311	2,25,99,053	3,74,47,364	0.00124
2019	15,261.70	28,403.67	43,665.37	93,25,947	1,98,62,742	2,91,88,689	0.00149
2020	15,486.95	26,995.31	42,482.26	98,59,100	1,79,37,127	2,77,96,227	0.00153
2021	14,961.00	24,760.10	39,721.10	97,08,272	1,55,08,670	2,52,16,942	0.00158
2022	15,086.48	26,343.52	41,430.00	1,07,33,604	1,88,14,901	2,95,48,505	0.00140
2023	18,371.27	31,473.07	49,844.34	1,30,01,180	2,32,30,623	3,62,31,803	0.00138
2024	16,210.98	31,024.19	47,235.17	1,14,69,972	2,40,71,484	3,55,41,456	0.00133
2025	12,962.54	24,967.93	37,930.47	98,03,217	1,98,29,624	2,96,32,841	0.00128

Source: Pradhan Mantri Fasal Bima Yojana (PMFBY) Administrative Dashboard - Ministry of Agriculture & Farmers Welfare, Government of India. State – Wise Aggregate Report. Data extracted on 02 July 2026. Available at: <https://pmfbby.gov.in/adminStatistics/dashboard>

Note: Annual figures were derived by aggregating Kharif and Rabi season data reported in the PMFBY Administrative Dashboard. The aggregated values have been used to facilitate year-wise analysis and for the computation of performance indicators presented in the study

and thereafter varied between 0.029 and 0.103 during the remaining years of the study period. Total claims paid and total sum insured also exhibited year-wise variations. The table shows the relationship between claims paid and the corresponding insurance protection available under PMFBY.

Table 7 represents the year wise area insured, number of insured farmers and average area insured per farmer under PMFBY during 2018-2025.

The average area insured per farmer represents the average agricultural area covered under insurance for each insured farmer and is calculated by dividing the total insured area by the total number of insured farmers. The average area insured per farmer ranges from 0.00124 to 0.00158 thousand hectares during the study period. The table provides a year wise overview of the agricultural area insured per beneficiary under PMFBY.

Findings of the Study

1. Farmers participation under PMFBY exhibited year wise variations during the reference study period, with fluctuations observed in the number of insured farmers as well as loanee and non-loanee insurance applications, indicating changing participation levels across different agricultural seasons.
2. The amount of claims paid and the number of farmers benefitted varied across the years, while the average claim amount per beneficiary remained within relatively comparable range, reflecting consistency in the average level of compensation received by beneficiary farmers despite variations in total claim disbursement.
3. The benefit coverage ratio varied considerably over the study period, indicating that the proportion of insured farmers receiving claim benefits differed across years, reflecting variations in the extent of claim coverage among insured beneficiaries.
4. The claim intensity ratio fluctuated during the study period, indicating year wise changes in the relationship between claims paid and gross premium collected under PMFBY, thereby reflecting variations in claim outgo relative to premium collections.
5. Both the total area insured and the total sum insured showed year wise variations. The average sum insured per hectare exhibited an increasing trend over the study period indicating changes in the level of insurance protections



available per unit of insured agricultural land.

6. The Claim-to-sum Insured ratio varied across the study period, suggesting difference in the proportion of the insured amount that was disbursed as claims in different years under the scheme.
7. The average insured area per farmer remained broadly stable during the study period with only moderate year wise variations, indicating relative consistency in the extent of agricultural land covered for each insured farmer.
8. Overall, the analysis demonstrates that PMFBY experienced year-wise variations in farmer participation, insurance

coverage, claim disbursement and financial indicators, highlighting the dynamic nature of the scheme's operational performance over the study period.

Conclusion

The study examined the performance of the Pradhan Mantri Fasal Bima yojana during 2018-2025 using secondary data obtained from State wise report available at PMFBY Administrative Dashboard. The analysis revealed year wise variations in farmer participation, claim disbursement, benefit coverage, insurance coverage and financial performance of the scheme. While the average claim amount and insurance

protection remained relatively consistent, indicators such as Benefit Coverage Ratio, Claim Intensity Ratio and Claim-to-Sum Insured Ratio exhibited noticeable fluctuations across the study period. Overall, the findings suggest that PMFBY has played an important role in extending crop insurance coverage and providing financial support to farmers, although variations in participation and claim-related indicators highlight the need for continuous monitoring and strengthening of implementation. The study provides useful insights for policymakers and researchers in understanding the operational performance of PMFBY and identifying areas for further improvement. **IJ**

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Regulation of Dark Patterns in India and Their Implications for the FinTech and Insurance Sectors



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Abstract

The increasing digitization of financial and insurance services has transformed consumer interactions with markets, enabling convenience, accessibility, and innovation. However, this shift has also given rise to the use of “dark patterns”—manipulative design strategies embedded within digital interfaces to influence consumer behavior. These practices raise serious concerns regarding consumer autonomy, informed consent, and data protection.

India has responded to these challenges through the Guidelines for Prevention and Regulation of Dark Patterns, 2023, issued by the Central Consumer Protection Authority under the Consumer Protection Act, 2019. This article examines the regulatory framework governing dark patterns in India, analyses their implications for the Fin Tech and insurance sectors, and explores the need for ethical design practices. It argues that while regulatory intervention is essential, long-term sustainability in digital finance depends on trust,

transparency, and user-centric innovation.

Introduction

Digital transformation has fundamentally reshaped the financial and insurance industries. Consumers increasingly rely on mobile applications and online platforms to purchase insurance policies, manage investments, and access credit facilities. While these developments have enhanced efficiency and reach, they have also created new avenues for manipulation through interface design.

One of the most concerning developments in this context is the proliferation of dark patterns—design techniques that subtly nudge or coerce users into making decisions that may not align with their best interests. These patterns are often difficult to detect and exploit behavioral biases such as urgency, default preference, and cognitive overload.

The emergence of such practices has prompted regulatory scrutiny

worldwide. In India, the introduction of the Guidelines for Prevention and Regulation of Dark Patterns, 2023 represents a significant step toward addressing these concerns. For the insurance and Fin Tech sectors, where consumer trust and informed consent are paramount, these developments carry far-reaching implications.

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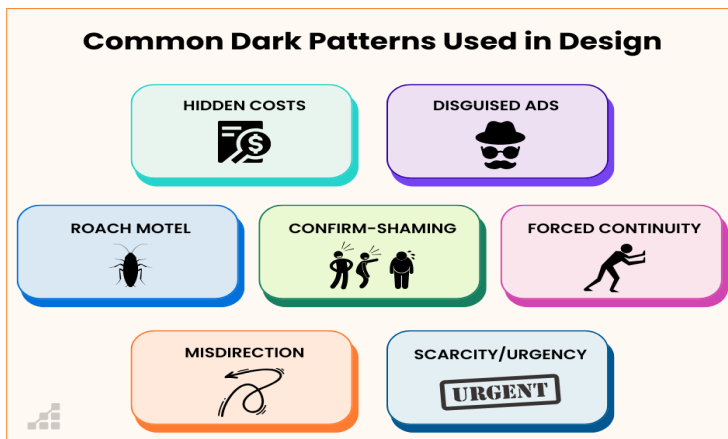


Source : viralbake.com

consumer trust and informed consent are paramount, these developments carry far-reaching implications.

Understanding Dark Patterns

The concept of dark patterns originated in the field of user experience design and refers to interface designs that intentionally influence users into making choices that primarily benefit the service provider rather than the user. Unlike straightforward misrepresentation or fraudulent conduct, dark patterns often operate subtly through the architecture of a website or application.



Source : empirestats.net

A consumer may, for instance, be encouraged to select a more expensive option through visual emphasis, persuaded to share personal information through confusing consent mechanisms, or prevented from cancelling a subscription due to unnecessarily complicated procedures. Such practices are designed to exploit predictable aspects of human decision-making.

Behavioral economics has long demonstrated that individuals do not always make decisions through a purely rational assessment of available information. Consumers often rely on mental shortcuts when making choices, especially in digital environments where information is presented rapidly and attention spans are limited. Dark patterns exploit these behavioral tendencies by creating artificial urgency, presenting misleading defaults, obscuring relevant information, or making certain options significantly more difficult to access than others.

In the context of insurance, where products are already characterized by complexity and information imbalance, the potential impact of such practices is particularly serious. A consumer purchasing health insurance, life insurance, or motor insurance online may not possess the expertise necessary to evaluate all policy features independently. Consequently, any manipulation of the decision-making process can undermine the principle of informed consent that lies at the heart of fair consumer transactions.

The Emerging Regulatory Response in India

India's approach to regulating dark patterns reflects a broader trend towards strengthening digital consumer protection. The Consumer Protection Act, 2019 marked a significant departure from earlier consumer legislation by recognizing the challenges posed by digital commerce and by establishing the Central Consumer Protection Authority as a dedicated enforcement body.



Source : Synergialegal.com

The Dark Pattern Guidelines issued by the CCPA in November 2023 represent the first comprehensive attempt to specifically identify and regulate deceptive interface design practices. The guidelines define dark patterns as practices or deceptive design patterns that are intended to mislead or trick users into undertaking actions that they did not originally intend or desire. Importantly, the guidelines apply not only to e-commerce platforms but also to advertisers, sellers, and service providers operating in digital environments. Their broad scope ensures that financial institutions, insurance companies, intermediaries, and technology platforms fall within their ambit.

The issuance of these guidelines also reflects a growing recognition among regulators that consumer harm can occur not only through the substance of a transaction but also through the manner in which choices are presented. Traditional consumer protection frameworks focused

primarily on false representations and misleading advertisements. Dark patterns, however, operate at a more subtle level, influencing consumer behavior through interface design rather than explicit statements.

Alongside the CCPA's intervention, sectoral regulators have also acknowledged the importance of addressing manipulative digital practices. The Insurance Regulatory and Development Authority of India (IRDAI) have emphasized transparency, policyholder protection and fair treatment of customers as central regulatory objectives. The Reserve Bank of India has similarly expressed concerns regarding deceptive practices in digital financial services and lending platforms. Together, these developments indicate a broader regulatory movement towards ensuring that technological innovation remains consistent with consumer welfare.

Most commonly-used deceptive patterns by e-commerce platforms in India are interface interference,

drip pricing, bait and switch and forced action. Basket sneaking is the most commonly used deceptive pattern by food delivery platforms. Around 83 per cent of the digital platforms use drip pricing, while 75 per cent have subscription traps and 67 per cent forced action dark patterns. Drip pricing refers to the practice whereby elements of prices are not revealed upfront. Nearly 50 per cent of 10,352 consumers who participated in a Local Circles survey reported frequent difficulty in cancelling subscriptions to apps, OTT platforms, or online services. In many cases, the cancellation option was not available or deliberately concealed within the interface. Around 53 per cent said they were not informed about additional rental charges when purchasing an OTT subscription. A study released last year by the Advertising Standards Council of India found that 98 per cent of mobile apps use at least one deceptive pattern designed to mislead users. Such deceptive patterns are not limited to India. According to the 2024 annual report of the US-based International Consumer Protection and Enforcement Network (ICPEN), more than 76 per cent of websites examined globally used at least one dark pattern, while nearly 67 per cent deployed multiple types.

Dark Patterns and Insurance Distribution

The insurance industry is particularly susceptible to concerns surrounding dark patterns because of the nature of the products involved. Unlike many

consumer goods, insurance products are intangible, highly technical, and often purchased for future contingencies. Consumers are therefore heavily dependent on disclosures made by insurers and intermediaries.



Source : <https://www.finowings.com/Finance/insurance-dark-patterns-india>
dated 16.04.2026

Several forms of dark patterns can emerge during the online insurance purchasing process. One common example is the automatic inclusion of optional riders or add-on covers during policy selection. Consumers may proceed through the purchasing process under the impression that these additional benefits are mandatory when, in reality, they are optional products that increase the overall premium.

Another area of concern relates to the presentation of pricing information. Digital platforms may initially display an attractive premium amount while disclosing additional charges, taxes, or service fees only at a later stage of the transaction. Such practices can distort a consumer's assessment of affordability and hinder meaningful comparison between competing products.

Similarly, digital interfaces may create a false sense of urgency through messages indicating that an offer is about to expire or that only a limited number of policies remain available at a particular premium. While urgency can be a legitimate marketing tool in certain contexts, its artificial creation may pressure consumers into making hasty decisions without adequately reviewing policy terms and conditions.

The issue becomes even more significant when considering policy renewals, cancellations, and claims servicing. A platform that makes purchasing a policy straightforward but renders cancellation or modification difficult effectively restricts consumer choice. Such practices not only frustrate consumers but may also undermine confidence in the insurance ecosystem as a whole.

Data Protection and Consumer Autonomy

The regulation of dark patterns is closely connected to the broader issue of personal data protection. Modern insurance companies increasingly rely on data analytics, artificial intelligence, and personalized marketing strategies to assess risk and target potential customers. While these technologies offer substantial benefits, they also create opportunities for misuse.

The Digital Personal Data Protection Act, 2023 seeks to address these concerns by establishing a framework based on informed consent, transparency, and accountability. The Act requires organizations to obtain clear and specific consent before processing personal data and grants individuals the right to withdraw such consent.

This framework is particularly relevant in situations where digital interfaces are designed to encourage excessive data sharing. Consumers may be persuaded to disclose information beyond what is necessary for underwriting or policy administration through confusing consent requests or misleading interface designs. By emphasizing meaningful consent, the DPDP Act complements the objectives of the Dark Pattern Guidelines and strengthens consumer autonomy in digital transactions.

For insurers, compliance with these requirements will necessitate a careful review of data collection practices, consent mechanisms, and

customer communication strategies. The emphasis is no longer merely on obtaining consent but on ensuring that consent is genuinely informed and freely given.

Implications for Indian Insurance Companies

The regulation of dark patterns presents both compliance obligations and strategic considerations for Indian insurers. From a regulatory perspective, companies will need to examine their digital platforms, marketing practices, and customer journeys to identify potential areas of concern. This may involve redesigning user interfaces, simplifying disclosures, and ensuring that optional products and services are clearly distinguished from mandatory features.

However, the significance of these developments extends beyond regulatory compliance. Insurance is fundamentally a business of trust. Policyholders purchase insurance not for immediate consumption but for future security. The willingness of consumers to enter into insurance contracts depends largely on their confidence in the integrity and reliability of the insurer.

Practices that create even a perception of manipulation can undermine this confidence. In an era where consumers increasingly share experiences through social media and online review platforms, reputational consequences can be substantial. Conversely, insurers that demonstrate transparency and fairness may

strengthen customer relationships and enhance brand value.

The increasing focus on environmental, social, and governance (ESG) principles also reinforces the importance of ethical digital practices. Fair treatment of customers, transparent communication, and responsible use of technology are increasingly viewed as indicators of good corporate governance. Consequently, addressing dark patterns should not be regarded solely as a legal necessity but also as part of a broader commitment to ethical business conduct.

Towards Ethical Digital Insurance

The debate surrounding dark patterns ultimately raises a broader question regarding the role of technology in financial services. Digital tools can be used either to empower consumers or to exploit behavioral vulnerabilities. The distinction often lies not in the technology itself but in the objectives guiding its deployment.

An ethical approach to digital insurance requires a commitment to transparency, clarity, and consumer welfare. Product information should be presented in a manner that facilitates understanding rather than obscures complexity. Consumers should be able to compare options, decline additional services, and exercise their rights without encountering unnecessary obstacles.

Such an approach is consistent with the long-standing insurance principle

of utmost good faith, which requires honesty and transparency from both parties to an insurance contract. In the digital age, this principle must extend beyond contractual disclosures to encompass the design of digital interfaces and customer journeys.

The challenge for insurers is therefore not merely to avoid regulatory violations but to build systems that genuinely support informed decision-making. As competition intensifies and consumer awareness grows, ethical digital practices may become an important source of differentiation within the market.

Conclusion

The introduction of the Guidelines for Prevention and Regulation of Dark Patterns, 2023 marks a significant development in India's evolving framework for digital consumer protection. Together with the Consumer Protection Act, 2019 and the Digital Personal Data Protection Act, 2023, the guidelines reflect a growing recognition that consumer autonomy can be undermined not only through misleading statements but also through manipulative interface design.

For the insurance industry, these developments carry particular significance. Insurance products involve complex decisions, long-term commitments, and significant financial implications. Consumers must therefore be provided with an environment that facilitates informed choice rather than one that exploits behavioral vulnerabilities.

As insurers continue to embrace digital transformation, the challenge will be to balance innovation with responsibility. Compliance with regulatory requirements is undoubtedly important, but the broader objective should be the cultivation of trust, transparency, and fairness in all aspects of

customer interaction. Institutions that successfully adopt this approach are likely to be better positioned to meet evolving regulatory expectations while strengthening their relationships with policyholders.

In the long run, sustainable growth in digital insurance will depend not on the sophistication of persuasive

technologies but on the ability of insurers to demonstrate integrity, accountability, and respect for consumer choice. These principles, rather than manipulative design practices, will ultimately determine the future trajectory of the insurance sector in India. **TJ**

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Bank Failure and Depositors' Insurance Claim: Analysing the Emerging Compensatory Jurisprudence



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Abstract

The bank failures in India, from time to time, reveal the weak financial management of the country, and the measures taken by the government to mitigate its impact are commendable but inadequate to grant real relief to the depositors or customers, who put faith and trust in the banking system. The measures adopted by the government are institution-centric, ignoring the interests of the general people. The remedy adopted to satisfy depositors' claims is ineffective, inadequate, shortsighted and does not take into consideration the mental and economic loss caused to the customer. Thus, there

is a need to adopt measures in line with the emerging compensatory jurisprudence to satisfy customer claims and meet the end of justice.

The article, thus, through a doctrinal method provide an analytical study to broaden the scope of depositors' insurance.

Keywords

Depositors' Insurance, Compensation, Customer.

Introduction

The economic advancement of a country is highly dependent on the systematic management of its financial policies, strategies and institutions. The governments

around the world take regulatory measures to deal with economic downturn and for the advancement of the economy, with the banks and financial institutions at the forefront of this fight. Earlier, people used to save their money with themselves at their homes, which used to cause a liquidity crunch in the market, leading to less flow or circulation of money in the market. This ultimately contributes to the instability in the market. Throughout the world, the banking system was revolutionised to encourage people to adopt saving habits, and India was also not an exception to this. The formal savings system in India began around 1834 with the establishment of the first

savings bank in India, namely the Post Office Savings Bank of India¹. The aim was to promote saving habits among the people, but the target was restricted to the well-off individuals in society, and only the rich were given the privilege of saving money with banks.

However, after independence in the year 1947, to achieve economic stability and development, the Government of India started a savings movement and encouraged the people to save their money with the savings banks. The government took these measures to promote saving habits among the people to achieve financial stability and development in the country and minimise volatile market conditions. However, the Banks after independence were largely private, maintained and run by a private entity. These Private entities were often driven by profit motives and not willing to advance loans to poor and marginalised people, such as farmers, small businesses, etc. Also, the citizens had very little saving capacity at that time. The government didn't have sufficient funds and proper planning to regulate the market, and there were a handful of government banks, which resulted in major bank failures in India. During the years 1947-58, there were 361 bank failures in India, due to various reasons². However, in the

year 1960, the failure of two major *Central Banks, Laxmi Bank and Palai Central Bank*, gave a major blow to the financial regulation and stability in India³, eroding the trust of the general public, whose hard-earned money was at stake, without any safeguards.

As a result of this, the Deposit Insurance Corporation Act, 1961, was passed by the Parliament, and the Deposit Insurance Corporation was established to safeguard the interests of Depositors and other bank customers. Since then, all measures have been taken by the Central Bank and the Government to maintain financial stability in India and safeguard the interests of the general public and their money. However, despite such measures, there is continual bank failure in India from time to time and also, from time to time, reforms were made, and measures were taken by the government and regulatory bodies to reduce the instances of bank failure. The Deposit Insurance Schemes are made more robust and concrete, but the emerging challenges in the economy, financial constraints in the market, Non-performing Assets of Banks and the absence of a proper mechanism to compensate the victims/customers make the situation even worse and call for more reform, considering the needs of the depositors.

The recent incident of bank failure - PMC, YES Banks and failure of many financial Corporations such as the Sahara, brings into light the systematic flaw in the approach taken by the government and raise question on the efficacy and effectiveness of these measures. The Depositors' money is at stake, putting them at a great risk of financial loss, and the absence of a proper and effective remedy makes this situation even worse, putting the poor people in financial disadvantageous position. The remedy available to the depositors is mainly restricted to the insurance administered by the Deposit Insurance and Credit Guarantee Corporation of India, but the systematic failure to provide compensation to the depositors for the loss they incurred due to such failure. The paper, thus, tries to evaluate the scope of compensatory jurisprudence in such a situation.

Major Bank Failure in India and its reasons

After the British left India, the economic system of India was completely destroyed, and there was no robust planning to strengthen and establish the economy. The time span can be divided into the following phases:-

- i. Pre-Independence Period: before 1947

¹ National Savings Institute of India. (n.d.). National Savings Institute. History of Saving in India. National Savings Institute of India. Retrieved April 15, 2026, from [https://www.nsiindia.gov.in/\(S\(5ayhuw45szfvealacx15ex\)\)/InternalPage.aspx?Id_PK=53](https://www.nsiindia.gov.in/(S(5ayhuw45szfvealacx15ex))/InternalPage.aspx?Id_PK=53).

² Singh, K. (July, 19, 2019). 50 Years of Bank Nationalization: A Peek into Social and Development Banking. State Bank of India. Retrieved April 15, 2026, from [https://www.madhyam.org.in/50-years-of-bank-nationalization-a-peek-into-social-and-development-banking/#:~:text=Sheer%20Neglect%20of%20Social%20and,%20D67%20\(Table%202\)](https://www.madhyam.org.in/50-years-of-bank-nationalization-a-peek-into-social-and-development-banking/#:~:text=Sheer%20Neglect%20of%20Social%20and,%20D67%20(Table%202).).

³ Reserve Bank of India. (n.d.). Brief History of Deposit Insurance in India. Reserve Bank of India. Retrieved April 15, 2026, from https://rbi.org.in/history/Brief_Fun_DepositInsurance.html#:~:text=It%20was%20in%201960%20that,functioning%20on%20January%201%2C%201962%20.

- ii. Post Independence Period: after 1947
- iii. Present time

Both phases have their own difficulties and reasons for the failure of banks. During the pre-independence period, the major problem was that banking was restricted to the elite class. In contrast, during the post-independence period, the major focus was on major structural reforms. The brief introduction of the reform brought an area focused on as follows:-

i. **Pre-Independence Period:**

The formal savings system in India began around 1834 with the establishment of the first savings bank in India, namely, the Post Office Savings Bank of India, Calcutta, in 1882, following the passage of the Government Savings Bank Act, 1873⁴. The aim was to promote saving habits among the people, but the target was restricted to the well-off individuals in society, and only the rich were given the privilege of saving money with banks. This led to the emergence of the banking divide

- ii. **Post Independence:** Post Independence period concerning the banking sector was more focused on providing economic

stability to the country, and for that matter, various measures were taken by the government. But, after the independence of India in the year 1947, to achieve economic stability and development the Government of India started a savings movement among people and took various measures, it established the National Savings Organisation, 1948 (NSO now known as NSI), the Post Office Saving Bank was inducted in the 7th schedule of the Union list under item number 39 of the Constitution of India and granted permission to open various saving banks to encourage a large number of people to save money⁵. The government took these measures to promote saving habits among the people as a way to achieve financial stability and development of the country. Further, in the year 1949, the Banking Regulation Act was brought to consolidate and amend laws relating to banking⁶, to regulate banks and encourage the general people to save their money with banks.

The Banks during this period were largely maintained and run by a private entity, which was often driven by profit motives and not advanced loans to poor and

marginalised people, such as farmers, small businesses, etc. As a result, before 1969, there were major bank failures in India. During 1947-58, there were 361 bank failures in India, either due to amalgamation or because it ceased to exist⁷. But, in the year 1960, the failure of two major banks, the Laxmi Bank and the Palai Central Bank, gave a major blow to the financial regulation and stability in India⁸. It eroded the trust of the general public, whose hard-earned money was at stake, without any safeguards. As a result, the Deposit Insurance Corporation Act, 1961, was passed by the Parliament, and the Deposit Insurance Corporation came into existence from 1st January 1962. There were major bank failures in India from 1913 to 1969⁹.

- iii. **Present time:** The present-day situation in India with regard to the banking sector calls for more robust measures to provide a better and more robust ecosystem. Where on one hand, earlier, people were not willing to deposit their money with the bank, in recently, the concern is related to the frequent failure of banks. The recent major bank frauds such as PMC Bank(2019), Yes Bank(2020), IDFC First Bank

⁴ (National Savings Institute of India, n.d.)

⁵ (National Savings Institute of India, n.d.)

⁶ Banking Regulation Act, 1949 (India).

⁷ (Singh, K. July, 2019)

⁸ (National Savings Institute of India, n.d.)

⁹ Agarwal, A. (n.d.). Learning from Crises: The Evolution of Indian Banking Regulation. The India Forum. Retrieved April 15, 2026, from <https://www.theindiaforum.in/article/crisis-crisis>.

(2026), PNB Bank crisis (2018), and ICICI Bank (2019), and scams like the Satyam Computer Scam(2009), ICICI Bank-Videocon fraud Case(2012), Sahara Scam(2012), etc., significantly brings into question the integrity of the financial system in India, which erode the trust of the general public.

The major reasons for such failure are non-compliance with the guidelines of the government and Central Banks, lack of control over the internal management and audit of the bank, late detection of defect in the management, bad loans, non-performing assets, etc¹⁰. According to a report released by RBI titled Report on Trend and Progress of Banking in India 2024-25, the number of bank frauds decreased to 23,879 in the year 2025 as compared to the previous year, which was 36,052, but the amount of fraud increased from 11261 to 34771 cr¹¹. These instances point out a very serious issue related to public money. Banks are no longer a safe place to keep all money, and people feel unsafe, but the measures of the government and the central bank give confidence to the general public.

The bank plays various important roles, such as advancing loans,

creating money, and maintaining economic stability by formulating rules and policies, and the Central Bank works as a regulator and guardian of all other banks. If we see bank works a business of the government and help the Government in maintaining a sound economic system. And thus, bank like other business can fail, but the failure of a bank can not only impact the individual depositor, but also the economic stability of the entire nation.

Thus, it is very important to keep the banks in good shape with a safe and sound regulation and management system. But, in India, we see that there are various instances of bank failure (both public and private) since independence. There are various reasons for bank failure, but the major reasons are short-term investment by the bank, low cash reserve ratio (CRR) and low capital to assets ratio¹². And as discussed, saving is very important for a sound and robust economic system. Bank failures adversely affect the customers, and their money is at stake.

Depositors' Insurance: Effectiveness and Challenges

The bank takes deposits from the customer, with some interest and advances those deposits as loans

to businesses, corporations and the general public at high interest rates, and in this way, the bank conducts its business and earns profit. Consumer protection is one of the prime considerations of the RBI, which instills faith of customer in the financial system¹³. Thus, the safety of the depositors should be of paramount importance to the bank, because the business and profit of the banks depend upon the money of the general people. Bank runs on confidence and trust of the customer and any breach of trust can lead to situation like panic withdrawal, attack on banks, etc. Bank failure and can make any institution insolvent for that matter, thus, many countries provide for Deposit Insurance to build the trust of the people on the system but, the deposit insurance advanced by Governments, or central Banks or any other regulatory body authorised by the government is not sufficient to meet the expectation of the creditors or depositors¹⁴. And also, do not take into consideration the hardship caused due to such a delay to the customer. It thus calls for more robust and inclusive steps to safeguard the interests of the people.

The Deposit Insurance Corporation Act, 1961 was passed by the Parliament, and the Deposit Insurance

¹⁰ SV India. (n.d.). Bank Fraud Cases in India: 8 Notorious Scams. Spring Verify Blog. Retrieve April 16, 2026, from <https://in.springverify.com/blog/bank-fraud-cases-in-india/>.

¹¹ Mishra, L. (December 29, 2025). Size of Bank Frauds seen rising through cases on a decline: RBI Report. The Hindu. Retrieve April 20, 2026, from <https://www.thehindu.com/business/size-of-bank-frauds-seen-rising-though-cases-on-a-decline-rbi-report/article70450129.ece>.

¹² Gobat, J. (March, 2019). What is a Bank?. International Monetary Fund. Retrieved April 20, 2025, from <https://www.imf.org/external/pubs/ft/fandd/2012/03/basics.htm>.

¹³ Reserve Bank of India. (2025, December 29). Report on trend and progress of banking in India 2024–25. Reserve Bank of India. Retrieved April 29, 2026, from <https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/ORTP291220258C89B9E5F3F240AEB82AC25A1707A8C6.PDF>

¹⁴ (Gobat, J. 2019)

Corporation came into existence from 1st January 1962, for the purpose of providing "insurance of deposits and guaranteeing of credit facilities"¹⁵. The government in the year 1967 introduced Social Controls over banks with a view to securing a better alignment of the banking system to the needs of economic policy¹⁶. Further, in 1969, the government adopted a socialist approach, nationalising fourteen major commercial banks to promote financial inclusion and effective mobilisation of credit and funds¹⁷.

The years from the 1960s to 70s marked a significant period of institutional development in the history of the Indian Banking System¹⁸. During this period, major institutional measures were taken to make the banking system more robust. On 01 Jul 1971, the deposit Insurance cover was extended to the cooperative banks, in the year 1978 the Deposit Insurance Corporation and Credit Guarantee Corporation of India Ltd. were merged to form the Deposit Insurance and Credit Guarantee Corporation (DICGC), and in the year 1984, the Government increased the authorised capital for it to 50 Crores. The DICGC became a nodal agency to cover deposit insurance for all commercial and cooperative banks.

In the years 2025, the insurance coverage for depositors is extended up to 5 lakh per depositor from the earlier 2 lakh for more than a thousand Banks, including both Co-operative and Commercial banks, to advance the depositors' interest. The deposit insurance is granted by the DICGC at the direction of the RBI in two cases, first, in case of the liquidation of banks and second, in case of merger or acquisition of a bank, if provided by the DICGC Act,

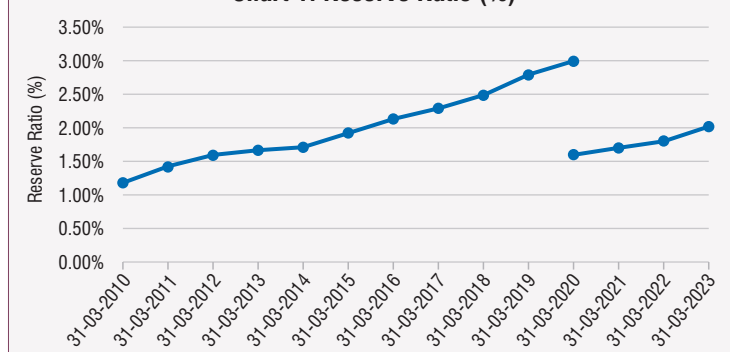
1961. Thus, the deposit insurance guaranteed is not provided for all cases but only in cases where the Act of 1961 provide so. The Deposit Insurance acts as a safety net for the customers, whose hard-earned money is deposited with the bank, and because of the bank failure, they incur a loss.

Table 1¹⁹: Deposit insurance in India from 1962-2020 Table 2²⁰: increase in Repo Rate per cent from 2010-2023.

Tabic 1: Deposit Insurance Coverage

Effective from	Insurance Cover (up to)
February 4. 2020	₹ 5,00,000/-
May 1. 1993	₹ 1,00,000/-
July 1, 1980	₹ 30,000/-
January 1, 1976	₹ 20,000/-
April 1, 1970	₹ 10,000/-
January 1, 1968	₹ 5,000/-
January 1, 1962	₹ 1,500/-

Chart 1: Reserve Ratio (%)



¹⁵ Deposit Insurance and Credit Guarantee Corporation Act, 1961, preamble.

¹⁶ Reserve Bank of India. (n.d.). Chronology of Events: Social Controls, the Nationalisation of Banks and the era of bank expansion - 1968 to 1985. Reserve Bank of India. Retrieved April 20, 2026, from https://rbi.org.in/history/Brief_Chro1968to1985.html.

¹⁷ K. Pavan, Narendra G., Krishna D. (2019). Nationalisation of the Commercial Banks. IJARSET, 6, 3-4.

¹⁸ <https://share.google/jgvC0XK2Irow49Akj>

¹⁹ Deposit Insurance Credit Guarantee Corporation. (2023). 61st Report of the Board of Directors Balance Sheet and Accounts for the year ended March 31, 2023. Retrieved April 20, 2026, from https://www.dicgc.org.in/sites/default/files/2024-09/AR2022_23.pdf.

²⁰ (Deposit Insurance Credit Guarantee Corporation, 2023).

Deposit insurance thus acts as a safety net for the customers in case of bank failure, and DICGC acts as a supervisor for the banks and ensures that the customer gets their money back in case of bank failure. It provides for the cancellation of membership of the banks, in case the bank does not pay or fails to pay the premium for three consecutive semesters²¹ and charges different premiums from different banks²². It mandates that every banking company shall be registered with the DICGC under Section 11 of the DICGC Act, 1961²³ and become an insured bank²⁴, and in case of "winding up and liquidation of an insured bank"²⁵, the DICGC is liable to insure the depositors of such bank, for up to 5 lakhs for principal and interest amount together, and it is uniform for all banks and all customers²⁶.

In the following cases, the deposit insurance is granted by DICGC²⁷:-

- In case the bank goes into liquidation
- In case of reconstruction, amalgamation, or merger of the bank with another bank.

As of March 2022, total 97.99 % of accounts have been secured under the DICGC Scheme²⁸. However, in case of an amount above 5 lakh, the DICGC is not liable, and recovery of such an amount can be made only through the liquidation process²⁹ within 90 days of the imposition issued by the RBI³⁰, and even in such cases, the depositor may or may not recover the money³¹ or may claim through the RBI's Integrated Ombudsman Scheme, 2021, which aims at addressing customer's

grievances³². The bank charged premium on the entire base amount from the customer, insurance cover is paid only up to 5 lakh³³. And thus, such depositors have no recourse and if the amount returned through the liquidation process, takes years, and do not consider, the mental and financial loss caused to the customer is not considered.

If a Complaint is filed before the Ombudsman under section 9 of the Scheme, 2021, it is filed only on ground of "customer aggrieved by an act or omission of a Regulated Entity resulting in deficiency in service may file a complaint under the Scheme personally or through an authorised representative as defined under clause 3(1)(c)"³⁴ and though there is no limit on the value of case being brought before

²¹ Deposit Insurance and Credit Guarantee Corporation Act, 1961, s 15A.

²² K. Nikhil. (2019). Deposit Insurance in Light with the Jasbir Singh Committee Report: An Analysis. IJIRL (3)4.

²³ Deposit Insurance and Credit Guarantee Corporation Act, 1961, s 11.

²⁴ Deposit Insurance and Credit Guarantee Corporation Act, 1961, s 2(i).

²⁵ Deposit Insurance and Credit Guarantee Corporation Act, 1961, s 18.

²⁶ Reserve Bank of India. (2008). A Guide to the Deposit Insurance and Credit Guarantee Corporation. Reserve Bank of India. Retrieved April 20, 2026, from <https://www.rbi.org.in/commonman/english/Scripts/FAQs.aspx?Id=272>.

²⁷ (Deposit Insurance Credit Guarantee Corporation, 2023).

²⁸ Ministry of Finance. (August, 8, 2022). Measures taken by the Government to protect the interest of investors/account holders in the bank. Press Bureau of India. Retrieved April 20, 2026, from <https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=1849973®=3&lang=2#:~:text=AID%20by%20RBI.-,In%20such%20cases%2C%20DICGC%20is%20liable%20to%20make%20interim%20payments,helped%20in%20strengthening%20financial%20stability.>

²⁹ The Fixed Income. (December 15, 2025). Is Your FD Safe? Complete Guide to DICGC Insurance & Deposit Protection. The Fixed Income. Retrieved April 20, 2026, from <https://www.thefixedincome.com/blog/fixed-deposits/is-your-fd-safe-complete-guide-to-dicgc-insurance-deposit-protection/#:~:text=If%20your%20total%20deposits%20in,Bank%20Fixed%20Deposits>

³⁰ Ministry of Finance. (December, 8, 2022). DICGC settles deposit insurance claims of 3,06,146 eligible depositors of 35 banks under AID, amounting to ₹ 4,055.10 crore since inception. Press Bureau of India. Retrieved April 20, 2026, from <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1882869®=3&lang=2#:~:text=Giving%20more%20background%20information%2C%20the,days%20after%20imposition%20of%20AID.>

³¹ (The Fixed Income, 2025).

³² The Reserve Bank – Integrated Ombudsman Scheme, 2021.

³³ <https://www.indiancooperative.com/co-op-news-snippets/dicgc-act-depositors-move-bombay-high-court/#:~:text=A%20group%20representing%20depositors%20of,exceeding%20Rs%201.5%20lakh%20crore.>

³⁴ Reserve Bank of India. (2021). The Reserve Bank – Integrated Ombudsman Scheme, 2021.

it, it can provide compensation up to 20 lakh and additional one lakh for loss of "complainants' time, expense incurred and harassment/mental anguish suffered by the complainant"³⁵. And even the insured amount of 5 lakh, which does not take into consideration the harassment caused to the customer, who showed faith in the Bank and deposited their money with the Bank for the breach of trust.

Effectiveness of Compensatory Jurisprudence in the Case of Bank Failure

The Trust and faith employed by the Depositors on Bank by saving their hard-earned money with the bank, and though the bank is free to make a profit from the money of the customer and make a profit, from time to time, we see the irresponsible behaviour of banks leading to loss of public exchequer. And this loss causes a public call for compensation and damages from the bank, but in case of the bank failing, becoming insolvent, or winding up, there are only a few resorts available to the customer, but the common law principle of *ubi jus ibi remedium* calls for resort in such cases. Social and

economic justice is one of the main aims provided by the Preamble³⁶, but it is not a fundamental right, thus not justiciable and cannot be enforced in the court of law. After a bank fails, the depositor and creditors can demand their money from the bank, but the process involves a tedious repayment process.

The Bank can be made liable in the following ways:-

- a. The Bank can be made vicariously liable to the depositor/customer for the act of its employee³⁷.
- b. The remedy for the bank customer against the bank lies before the Consumer Protection Authority under the Consumer Protection Act, as the relationship between the customer and the bank fiduciary relationship³⁸. The Bank under the Consumer Protection can be made liable for "deficiency of service"³⁹. In the case of *Ravneet Singh Bagga v. KLM Royal Dutch Airlines*⁴⁰, the Supreme Court held that the "deficiency in service" caused is different from tortious and criminal liability and thus is subject to summary proceedings

by the Consumer Protection Authorities⁴¹. And if the dispute involves fraud, or is complex in nature, the case shall be tried by the civil or criminal court as the case may be

- c. The remedy may also lie in Tort law⁴², where the customer can claim damages for the tort committed by the bank.

But, if we look closely, there is no provision related to depositors' insurance for the other loss, for example, the depositors are nowhere compensated for the loss caused to them, and the existing provisions do not take into account the unavoidable mental and economic distress caused by such delay. The harm suffered, such as psychological, financial and economic loss by the customer, needs to be addressed in case of bank failure. But, as mentioned, there is no direct provision to deal with such cases, so to bring the customer to justice, we have to understand the other resort to enforce the rights of the customer. Bank, such as the Regional Rural Bank, falls under the definition of the State under Article 12 of the Constitution, and it is an instrumentality of the State⁴³, thus

³⁵ Reserve Bank of India. (2021). The Reserve Bank – Integrated Ombudsman Scheme, 2021, s 8.

³⁶ The Constitution of India, preamble.

³⁷ Leelawati Devi & Anr. v. District Cooperative Bank Ltd., 2024 LiveLaw (SC) 346.

³⁸ Bhosale S. (2023). An Analytical Study of Banking Service under the Consumer Protection. IJLRA 2(7)

³⁹ (n.d.). Consumer issues in the Banking Sector. Manupatra. Retrieved April 20, 2026, from <http://student.manupatra.com/Academic/ReadyReckoner/Consumer-Laws/Consumer-issues-in-Banking-Sector.htm>

⁴⁰ Chairman and MD, City Union Bank Ltd. v. R. Chandramohan, 2023 INSC 299

⁴¹ Ravneet Singh Bagga v. KLM Royal Dutch Airlines, (2000) 1 SCC 66

⁴² Dijkstra RJ, Faure MG. (2011). Compensating victims of bankrupted financial institutions: a law and economic analysis. Journal of Financial Regulation and Compliance, 19(2).

⁴³ Prathama Bank v. Vijay Kumar Goel, AIR 1989 SC 1977.

writ under Article 226 and 32 of the Constitution can be filed in case of violation of fundamental rights.

The award of compensation of writ is not prejudicial to the claim in the civil court⁴⁴. But, as far as compensation is concerned, the Supreme Court in the case of *Sant Rohidas Leather Industries v. Vijaya Bank*⁴⁵, reiterated the above-mentioned rule and held that a matter involving complex legal disputes, including criminal or civil liability, the case must go to the civil or criminal court, as the Consumer Forum lacks jurisdiction on such cases. The compensatory jurisprudence under India marked a significant development after the *Nilabati Behera v State of Orissa* case⁴⁶, which provides that in case of violation of fundamental rights, compensation is granted as a Public law remedy.

But, despite the evolution of compensation mechanisms in cases of violation of fundamental rights, the resort available to the bank customers is very limited and confined to statutory remedies provided under the DICGC Act, 1961 and some other statutory remedies. It thus limits the remedy available to the customer,

and does not take into account the mental harassment, economic distress, etc., caused to the accused and restores only a limited amount of money⁴⁷.

Conclusion and Way Forward

The incident of bank failure is not new in India, and such incidence has overburdened the entire economic system of the country. From time to time, various Committees have formed, and measures have been taken to deal with the exigencies of the situation, but, as discussed above, the recourse available to the customers, who put their faith in the economic system of the country, is limited. The statutory relief the legislature intended to provide has done little good. There is a need to give compensation to the customers who suffer loss due to banks' negligence, such as advancing bad loans, non-performing assets, etc. Thus, a robust banking system with a customer-centric approach is needed at the hour to safeguard the interests of customers.

In light of the above facts and circumstances, the paper proposes the following measures to be taken to effectively deal with the bank failure

cases and mitigate the hardship caused to the customer :-

- i. Bringing the secure deposit provision in case of an interbank deposit, which right now is covered under the depositors' insurance of each bank in case of failure, to provide depositors with more security and safety⁴⁸.
- ii. Sections 9 and 10 of the RBI Integrated Ombudsman Scheme, 2021, which talk about the grounds of the complaint and grounds on which complaints cannot be filed, respectively. Section 9 allows the filing of a complaint in cases where the complainant is aggrieved by the act of the regulatory authority⁴⁹. Section 10 provides for restrictions on the grounds for bringing such a complaint, thus, there require to amend these provisions.
- iii. Promote awareness among the general public, especially depositors, with regard to insurance coverage⁵⁰ to discourage panic withdrawal, which further worsens the situation. Thus, the recommendation given by the

⁴⁴ Raghwan V. (1994). Compensation through Writ Petitions: An Analysis of Case Law. National Law School of India Review 6(1), 4.

⁴⁵ Sant Rohidas Leather Industries v. Vijaya Bank (2026 INSC 264)

⁴⁶ Nilabati Behera v State of Orissa, AIR 1993 SC 1960.

⁴⁷ M. L. Tannan, Tannan's Banking Law and Practice in India (LexisNexis, 24th edn., 2017).

⁴⁸ Reserve Bank of India. (2014). Master Circular on Maintenance of Deposit Accounts. Reserve Bank of India. Retrieved April 20, 2026, from https://www.jpnmorgan.com/content/dam/jpm/global/disclosures/IN/india_dicgc.pdf#:~:text=5%20Lakh%20or,to%20pay%20anything%20for%20the

⁴⁹ RBI Integrated Ombudsman Scheme, 2021, ss 9, 10.

⁵⁰ Deposit Insurance Credit Guarantee Corporation of India. (2023-24). Safety Net. Deposit Insurance Credit Guarantee Corporation of India. Retrieved April 21, 2026, from https://www.dicgc.org.in/sites/default/files/2024-10/SafetyNet_Oct23_Mar24.pdf

Technical Advisory Committee, adopted by DICGC, must be promoted⁵¹ to make people aware.

- iv. The RBI in its Master Circular on Customer Service in Banks, 2025, issued guidelines to the banks and mandated that the banks must communicate to the customer in tri-lingual format, i.e., in Hindi, English and the regional language⁵². Provide the leaflets and other bank documents to the customer in the regional language as well, so that customers can better understand them and assess the risk associated with the banks and their rights in case of bank failure.

- v. In India, the DICGC is only responsible for payment of insurance to the depositors, but is not liable for the "appointment of a liquidator or management of assets of the failed banks"⁵³, thus an integration is needed between both the mechanisms and DICGC to be empowered to deal with

the entire insurance procedure to provide an exclusive and consolidated system.

- vi. In the event of technological advancement and the coming of the internet and artificial intelligence, cryptocurrency is kept out of the purview of DICGC Scheme⁵⁴, causing loss to the public and a major drawback to India's vision of digitisation.

- vii. In the event of bank failure, when it is kept in (All Inclusive Directions)AID, such a bank must, within 45 days of such imposition of AID by RBI, give a list of depositors and their deposit and if the bank fails to furnish such data, then in such cases the Corporation can deny settlement of the claim⁵⁵ and in such case the mandatory statutory limitation of 90 days⁵⁶ period will not be satisfied and led to delay in repayment. In such cases, compensation or damages must be granted to the customer for the bank's fault.

- viii. In India, the premium charged for depositors' insurance from banks on a flat rate basis⁵⁷, which is not considered effective and criticised as it does not reflect the real risk that a bank possesses⁵⁸. Thus, a gradual shift should be made towards risk based premium to secure both the customer and the bank from unavoidable risks associated with the flat rate.

- ix. Rather than a complex legal procedure, ADR and especially Mediation must be promoted in cases of settlement of insurance claims. **II**

⁵¹ (Deposit Insurance Credit Guarantee Corporation of India, 2023-24).

⁵² Ministry of Finance. (August 12, 2025). RBI guidelines ensure multilingual customer communication and a quicker grievance redressal by banks. Press Bureau of India. Retrieved April 20, 2026, from [https://www.pib.gov.in/PressReleasePage.aspx?PRID=2155543®=3&lang=2#:~:text=Reserve%20Bank%20of%20India%20\(RBI,citizen%20satisfaction%20after%20grievance%20disposal.](https://www.pib.gov.in/PressReleasePage.aspx?PRID=2155543®=3&lang=2#:~:text=Reserve%20Bank%20of%20India%20(RBI,citizen%20satisfaction%20after%20grievance%20disposal.)

⁵³ Deposit Insurance and Credit Guarantee Corporation. (n.d.). Funding of Deposit Insurance System. Deposit Insurance and Credit Guarantee Corporation. Retrieved April 21, 2026, from <https://www.dicgc.org.in/sites/default/files/2024-09/Funding%20of%20Deposit%20Insurance%20Systems.pdf#:~:text=The%20DICGC%20has%20a%20pay%20Dbox,the%20Corporation%20in%20resolution%20of>

⁵⁴ Deposit Insurance and Credit Guarantee Corporation. (n.d.). A Guide to Deposit Insurance. Deposit Insurance and Credit Guarantee Corporation. Retrieved April 20, 2026, from <https://www.dicgc.org.in/guide-to-deposit-insurance>

⁵⁵ Deposit Insurance and Credit Guarantee Corporation Act, 1961, s. 18A.

⁵⁶ Deposit Insurance and Credit Guarantee Corporation Act, 1961, s. 18A.

⁵⁷ (K. Nikhil. 2019).

⁵⁸ R Gandhi. (2015). Financial consumer (depositor) protection – reflections on some lingering questions. Bank for International Settlements. Retrieved April 20, 2026, from <https://www.bis.org/review/r150916c.htm#:~:text=However%2C%20these%20systems%20were%20open,ceiling%20of%20%E2%82%B9%201%20lakh.>

Beyond Disclosure: Embedding ESG into the Risk Architecture of Life Insurance



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Introduction: ESG Has Arrived, but Integration Is Still Evolving

Over the last few years, ESG has become a familiar term across the financial sector. It now appears in annual reports, boardroom discussions, and regulatory conversations with increasing frequency. In many ways, it has moved from being a niche topic to something every institution acknowledges.

In life insurance, however, the journey has been more gradual. The nature of the business—long-term liabilities, actuarial assumptions, and investment stewardship—means that ESG risks are not always immediately visible. As a result, ESG

has often been approached more as a disclosure requirement than a business imperative.

That approach is beginning to shift. The focus is now moving towards whether ESG is actually influencing how insurers assess risk, allocate capital, and govern their operations.

Understanding ESG in the Context of Life Insurance

Applying ESG to life insurance requires looking at the business through a slightly different lens. The impact is rarely immediate, but it is deeply embedded.

Environmental factors, for instance, do not typically lead to sudden claims volatility. Instead, they influence long-term mortality and health trends.

Changes in climate, air quality, and disease patterns may gradually alter the assumptions on which life insurance products are priced. Even small changes, when spread over decades, can affect financial outcomes.

Investment exposure presents a more direct connection. Life insurers manage large portfolios, and as economies transition toward more sustainable models, certain sectors may face pressure. This introduces a layer of risk that needs to be understood and managed over the long term.

The social dimension is central to the business. Policyholder trust depends on fair claims settlement, efficient grievance handling, and responsible

data management. These are not peripheral issues—they define how the institution is perceived.

Governance, supported by strong regulatory frameworks, remains a relative strength. However, the presence of governance structures does not automatically ensure that ESG considerations are embedded within them.

Disclosure Is Not the Same as Integration

There is no denying that ESG disclosures have improved significantly. Insurers now provide more detailed insights into sustainability initiatives, governance practices, and social commitments.

However, disclosure can sometimes create the impression that integration has already been achieved.

In reality, ESG is often not fully reflected in core business processes. Climate-related considerations may not feature prominently in actuarial modelling. Investment strategies may not consistently apply ESG filters. Performance frameworks may not include sustainability-linked measures.

This creates a gap between what is communicated externally and what is practiced internally. From a compliance perspective, this gap can become increasingly important as scrutiny around ESG continues to grow.

Compliance as a Bridge Between ESG and Business Reality

One of the more practical ways to embed ESG into the organisation is through the compliance function.

Compliance teams already deal with areas that closely align with ESG themes. Monitoring sales practices, reviewing complaints, overseeing AML frameworks, and ensuring data protection are all part of routine responsibilities. These activities provide valuable insight into conduct, governance, and risk exposure.

Often, early signs of ESG-related issues appear in compliance data. A pattern of complaints may indicate deeper conduct concerns. Data breaches highlight governance weaknesses. Regulatory observations may reveal gaps in oversight.

By recognising these connections, organisations can use existing compliance frameworks to support ESG integration. This approach avoids duplication and ensures that ESG is grounded in processes that are already being monitored and controlled.

Moving ESG into Core Decision-Making

For ESG to become meaningful, it needs to move beyond reporting and into the areas where decisions are made.

In actuarial functions, this could involve considering how environmental changes might influence long-term assumptions.

Even without perfect data, scenario-based thinking can help bring these factors into focus.

In investment management, it requires a clearer understanding of how portfolios might respond to economic and regulatory shifts linked to sustainability. This is less about exclusion and more about awareness and preparedness.

At a broader level, integrating ESG into performance evaluation and board discussions ensures that it becomes part of the organisational mindset rather than a separate agenda.

Actuarial and Investment Implications: A Gradual Shift

The impact of ESG on actuarial and investment frameworks is not always immediate, but it is steadily becoming more relevant.

Actuarial models have traditionally relied on historical trends. However, changing environmental conditions introduce new variables that may not be fully captured by past data. Over time, incorporating these considerations can improve the robustness of long-term projections.

Investment portfolios are already experiencing the effects of changing market expectations. Transition risks, regulatory developments, and evolving investor preferences all play a role in shaping portfolio performance. Recognising these factors early allows for more informed decision-making.

Governance and Accountability: The Missing Link

Strong governance has always been a hallmark of the life insurance sector. However, ESG-specific accountability is still evolving.

Boards and senior management can play a more active role by ensuring that ESG considerations are part of regular discussions rather than occasional reviews. Including ESG indicators in risk dashboards, assigning clear ownership, and linking performance to sustainability outcomes can strengthen accountability.

From a compliance standpoint, it is equally important to ensure that disclosures are supported by actual practices. As expectations increase, consistency between what is reported and what is implemented will become critical.

Practical Challenges in ESG Integration

It is important to recognise that ESG integration comes with its own set of challenges.

Environmental risks are sometimes perceived as less relevant to life insurance, particularly in the short term. Data limitations make it difficult to quantify certain impacts. Different functions within the organisation may operate independently, making coordination more complex. At the same time, there is constant pressure to deliver short-term results.

Acknowledging these realities allows for a more practical and balanced approach to ESG implementation.

A Practical Way Forward

Rather than attempting sweeping changes, a phased approach can be more effective.

The starting point lies in identifying ESG factors that are most relevant to the organisation. These can then be mapped to existing risk and compliance frameworks. Over time, ESG considerations can be integrated into decision-making processes, supported by stronger internal reporting.

As these practices mature, external disclosures can be aligned to reflect actual integration rather than intention. This ensures credibility and reduces the risk of misalignment.

Conclusion: From Reporting to Resilience

In life insurance, ESG is not simply about meeting disclosure requirements. It is about strengthening the foundations of the business.

Environmental factors influence long-term assumptions. Social factors shape trust and customer outcomes. Governance ensures that risks are identified and managed effectively. These elements are interconnected and central to the sustainability of the institution.

The compliance function, given its role in overseeing conduct and governance, is well positioned to support this transition. By connecting existing processes with ESG objectives, it can help move the conversation from reporting to integration.

The shift may be gradual, but it is necessary. As the industry evolves, those who embed ESG into their risk architecture will be better prepared to navigate change while maintaining trust and stability. **TJ**



Guidelines for Contributors of the Journal

"The Journal" quarterly publication of Insurance Institute of India, Mumbai. It is published in the month of Jan/April/July/Oct every year.

"The Journal" covers wide range of issues related to insurance and allied areas. The Journal welcomes original contributions from both academicians and practitioners in the form of articles. Authors whose papers are published will be given honorarium and two copies of The Journal.

Guidelines to the Contributors:

1. Manuscript submitted to the Editor must be typed in MS-Word. The length of the Manuscript should be 2500-3000 words of the primary content (excluding bibliography).
2. General rules for formatting text:
 - i. Page size : A4 (8.27" X 11.69")
 - ii. Font: Times New Roman - Normal, black
 - iii. Line spacing: Double
 - iv. Font size: Title - 14, Sub-titles - 12, Body- 11 Normal, Diagrams/Tables/Charts - 11 or 10.
3. The first page of the Manuscript should contain the following information of the Author(s) –
 - i. Title of the paper

- ii. Name of the Author(s)
- iii. Email address
- iv. Photo
- v. Brief profile - The profile will include 2 to 3 lines about author's professional qualification and experience in the field.

4. **Abstract:** A concise abstract of maximum 150 words is required. The abstract should adequately highlight the key aspects or state the objectives, methodology and the results/major conclusions of analysis. The abstract should include only text.

5. **Keywords:** Immediately after the abstract, provide around 3-6 keywords or phrases.

6. **Tables and Figures:** Diagrams, Tables and Charts cited in the text must be serially numbered and source of the same should be mentioned clearly wherever necessary. All such tables and figures should be titled accurately and all titles should be placed on the top after the number. Example: Table 1: Growth Rate of Insurance Premium in India (1997-2010).

Heavy econometric article must be supported by NTS (non-technical summary). Contributor

of the article must also send working sheets of econometrics presented.

7. **Sample Size:** No restricted sampling is allowed. Minimum sample size should be 100 and above.
8. **References:** all the referred material (including those from authors own publication) in the text must be appropriately cited. All references must be listed in alphabetical order and sorted chronologically and must be placed at the end of the manuscript. The authors are advised to follow American Psychological Association (APA) style in referencing.

- **Reference to a Book:**

Author. (Year). *Title of book*. Location: Publisher.

Example: Rogers, C. R. (1961). *On becoming a person*. Boston: Houghton Mifflin.

- **Reference to a Journal publication:** Author(s). (Year). Title of the article/paper. *Journal name*, volume (issue), page number(s).

Example: Smith, L. V. (2000). Referencing articles in APA format. *APA Format Weekly*, 34(1), 4-10.

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Example: Landsberger, J. (n.d.). Citing Websites. In *Study Guides and Strategies*. Retrieved May 13, 2005, from <http://www.studygs.net/citation.htm>

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11. Once article is published in any particular issue (e.g. January-March issue) then next contribution of particular author will not be accepted for immediate issue of the Journal (i.e. April-June issue).
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13. Contribution(s) should reach the designated email address at IJI on or before 31st October (January-March issue), 31st January (April-June issue), 30th April (July-September issue) and 31st July (October-December issue).
14. Please send your manuscripts to <journal@iii.org.in> with subject line as “Contribution for “The Journal” January/April/July/October (Mention Year) issue.
15. All enquiries related to the submissions should be addressed only to the Editor.
16. Copyright of the published articles and papers would rest with “The Journal of Insurance Institute of India” and any further reproduction would require prior and written permission of the Editor.



Appendix I

Declaration by Authors

I/we (Full Name of **the Author(s)**)

1)

2)

3)

hereby declare that I/we are the author(s) of the paper titles “.....”

(Title of the paper), which is our original work and not the intellectual property of anyone else.

I/we further declare that this paper has been submitted only to the Journal of the Insurance Institute of India and that it has not been previously published nor submitted for publication elsewhere.

I/we accept responsibility for the statistics presented in the article, and the Institute may refer specific queries about the statistics to me/us as needed.

I/we have duly acknowledged and referenced all the sources used for this paper. I/we further authorize the editors to make necessary changes in this paper to make it suitable for publication.

I/we undertake to accept full responsibility for any misstatement regarding ownership of this article.

.....
 (Signature Author I)

Name:

Date:

Place:

.....
 (Signature Author II)

Name:

.....
 (Signature Author III)

Name:

Courses offered by College of Insurance (COI)

Post Graduate Courses in collaboration with University of Mumbai

- **Post Graduate Diploma in Health Insurance (PGDHI)**
 - The Post Graduate Diploma in Health Insurance (PGDHI) is a one year part time post graduate (two semesters) program.
 - The PGDHI Course comprises 7 *Papers and a Research Project*.
 - The Course covers all aspects of Health Insurance including health economics, product development, rating, risk evaluation, human anatomy, diagnostics, underwriting, claims processing, importance of data analytics, fraud prevention and functioning of Third Party Administrators (TPAs).
- **Post Graduate Diploma in Insurance Marketing (PGDIM)**
 - The Post Graduate Diploma in Insurance Marketing (PGDIM) is a one year part time post graduate (two semesters) program.
 - The PGDIM Course consists of 8 Papers and a Research Project.
 - The Course covers various topics relating to Insurance Marketing including Principles of Economics and Economic Environment, Risk Management and Underwriting of Life/ General/ Health Insurance lines, Understanding Buyer Behaviour, Marketing, Communication, Branding with specialization in Life Insurance or General Insurance.

Certificate Courses offered by College of Insurance (COI)

CC1 - Certificate course in Life Insurance Marketing

- **Duration of the course - 4 months**
- **Mode of Teaching** - Self-study + 3 days Online Contact Classes
- **Total hours of Teaching** - 18 hours for Online Contact Classes (to solve queries)
- **Exam pattern** - Assignments + MCQ Final Exam

CC2 - Advanced Certificate in Health Insurance – Virtual

- **Duration of the course - 4 months** [3 hours (morning) session on **Saturday** and **Sunday**]
- **Mode of Teaching** - Virtual Training
- **Total hours of Teaching** - 90 hours
- **Exam pattern** - Project Work + MCQ Final Exam

CC3 - Certificate Course in General Insurance

- **Duration of the course - 3 months** [full day session (6 hours) on **Saturday** and half day session in morning (3 hours) **Sunday**]
- **Mode of Teaching** - Virtual Training
- **Total hours of Teaching** - 100 hours
- **Exam pattern** - Weekly Exam + MCQ pattern

CC4 - Certificate Course in Investigation and Fraud Detection in Life Insurance

- **Duration of the course - 3 days** [full day session (6 hours)]
- **Mode of Teaching** - Virtual Training
- **Total hours of Teaching** - 15 hours for Online Contact Classes
- **Exam pattern** - MCQ pattern

CC5 - Certificate Course on Application of Artificial Intelligence and Generative Application AI in Insurance

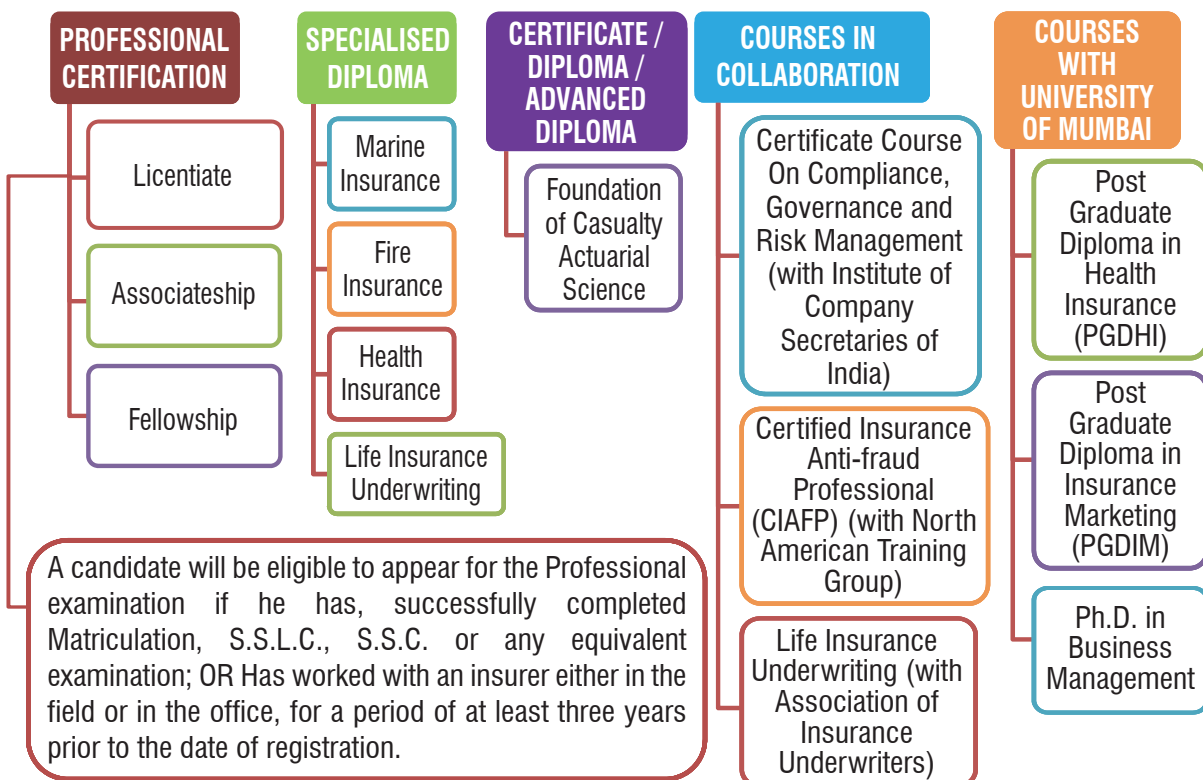
- **Duration of the course** - Basic Level – 2 days, Advanced Level – 3 days
- **Mode of Teaching** - Virtual Training
- **Total hours of Teaching** - Basic Level – 6 hours, Advanced Level – 9 hours



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The Institute conducts online trainings and examinations authorized by the Insurance Regulatory and Development Authority of India (IRDAI).

REGULATORY EXAMINATIONS	ONLINE TRAININGS	POSTAL LIFE INSURANCE
- Examination For Insurance Surveyors And Loss Assessors - Registration of Insurance Web – Aggregators - Registration of Insurance Marketing Firms - Pre-Appointment of Insurance Agents (Life, Non-life, Health) - Registration of Corporate Agents (Life, Non-life, Health) - Registration of Authorised Verifiers of Insurance Brokers	- Insurance Broker - Training (Fresh and Renewal) - BQP and PO - Insurance Agent - Training - Corporate Agent - Training (Fresh and Renewal) - Insurance Marketing Firm - Training (Fresh and Renewal) - Web-Aggregators - Training (Fresh and Renewal) - Authorised Verifiers of Insurance Brokers - Training - POSP/MISP - Training and Examination	The INSTITUTE provides Online training and conducts the licentiate online examination on behalf of the Postal Life Insurance Authority of India across the country in all 12 regional languages for POSTAL LIFE INSURANCE AGENTS.

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We invite articles/papers for the issues of 'The Journal' of Insurance Institute of India for the year 2027. "The Journal" is quarterly publication of Insurance Institute of India, Mumbai. It is published in the month of **January, April, July** and **October** every year.

"The Journal" covers wide range of issues related to insurance and allied areas. The Journal welcomes original contributions from both academicians and practitioners in the form of articles. Authors whose papers are published are given honorarium and two copies of the Journal.

We request you to send your articles/papers to journal@iii.org.in on or before the due dates.

THEMES FOR THE YEAR 2027

January – March

- Customer information security in Indian insurance industry
- Impact of medical inflation on health insurance sustainability in India
- *Last Date of submission of papers/articles will be 31st October, 2026*

April – June

- **Open Theme** - Any topic on insurance or allied areas.
- *Last Date of submission of papers/articles will be 31st January, 2027.*

July – September

- **Open Theme** - Any topic on insurance or allied areas.
- *Last Date of submission of papers/articles will be 30th April, 2027.*

October – December

- **Open Theme** - Any topic on insurance or allied areas.
- *Last Date of submission of papers/articles will be 31st July, 2027.*

We request you to send your articles/papers to journal@iii.org.in on or before the due dates.

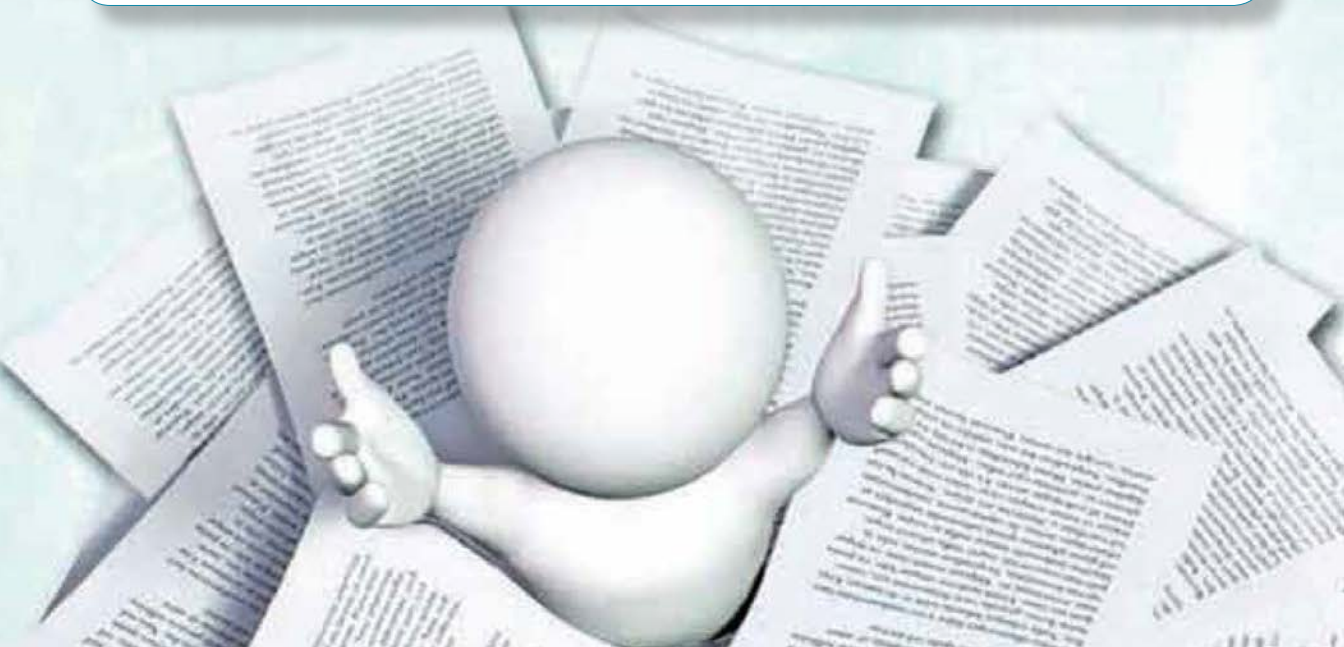
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