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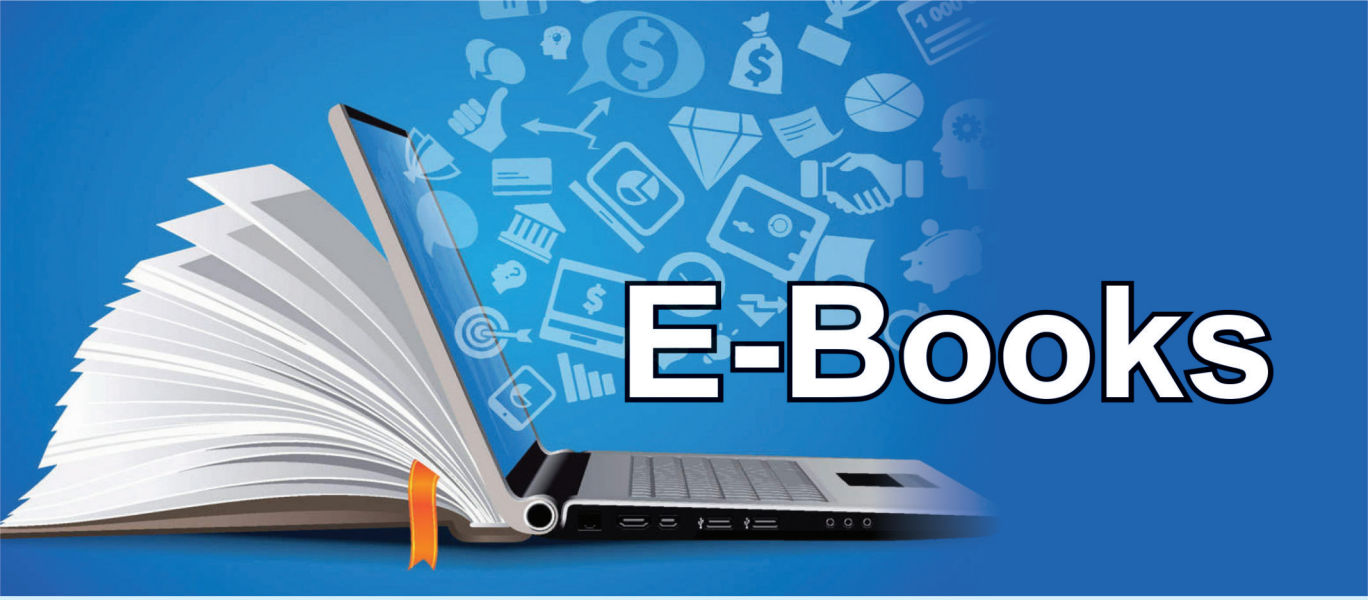
Challenges of Reducing Protection Gap in the Hinterland



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EDITORIAL

This issue of the journal is devoted to a vital subject - the insurance protection gap and its dynamics. During the last few years a host of studies, particularly pioneered by Swiss Re and other international institutions, have sought to measure and identify the driving forces behind this gap. Their findings are rather alarming. For instance, the life insurance protection gap is found to be quite high even in most advanced countries like the US and European Nations. Factors that have resulted in this gap go much beyond lack of awareness and literacy - they point towards serious issues like lack of trust and questions about value for money, pointing towards customer disenchantment with insurance.

With millennials and the members of gen Z all poised to take over the markets of tomorrow, insurance companies are going to find it increasingly difficult to engage their customers and win their trust and interest, if they continue doing the things they have been doing so far. With technological innovation and disruption staring them in the face, insurance companies would need to revisit their fundamental premises. They would need to unlearn a lot.

Those who dare to look beyond 'the routine' and think afresh, would be able to see a vast blue ocean waiting to be conquered.

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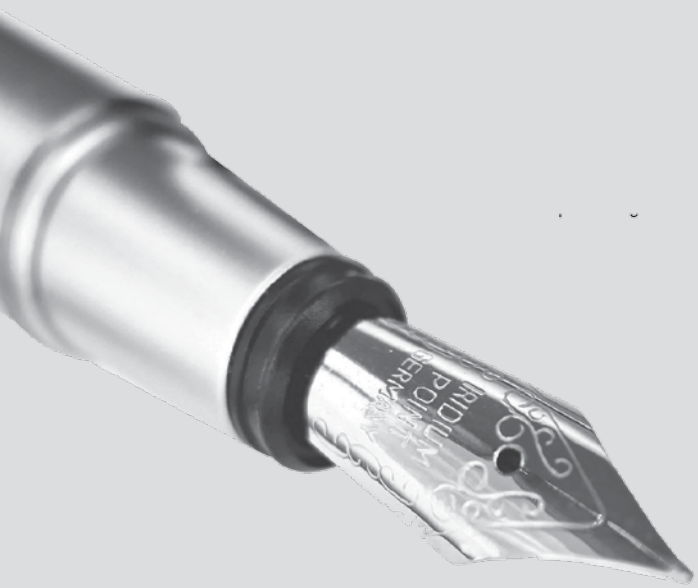

Unlocking The Potential of India's Hinterlands to Address the Challenges of Reducing Insurance Protection Gap

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Abstract

Insurance penetration in India (both life and non-life) remains woefully inadequate despite the massive growth of financial services sector in the last decade. The need for educating the population about the importance of an insurance cover as a risk-mitigating tool has always been highlighted but efforts in this direction have not really borne fruit. The Covid-19 pandemic has deeply affected people across the globe leading to economic uncertainty, financial risks, death and devastation. The hinterlands have also not been spared from the cruel fangs of the pandemic adding to the vulnerability of the population. This research effort attempts to address the research question of how the protection gap in the hinterlands can be reduced. This is a conceptual study based on available, secondary sources of published information. The paper highlights the challenges in reducing the protection gap in hinterlands but also identifies the opportunities for insurers to penetrate this market that has been a source of attraction for manufacturers of fast moving consumer goods.

Insurance industry must understand that livelihood generation and protection in hinterlands is a crucial starting point for strengthening the financial services like banking and insurance in these areas. Educating the population about the need for an insurance cover, designing insurance policies

that are simple and address the specific needs of the population and a simplified buying process are essential steps to reduce the protection gap in hinterlands. Trust is a significant factor in financial services. So, the ease of making a claim will strengthen the future prospects of insurance. Enhancing distribution effectiveness through adept use of technology and creative exploration of varied channels of distribution will play a defining role in the penetration of insurance in hinterlands.

Keywords

Insurance Penetration, Hinterlands, Regulator, Protection Gap.

Introduction

Hinterland refers to the remote or less developed parts of a country that are far away from a city, a port, the coast or the banks of major rivers. It also refers to the remote and undeveloped areas of a country or an untapped market. India's hinterlands contribute more than 50% of GDP but do not receive as much developmental support that they deserve. Hinterlands need robust infrastructure, skill development and developmental agenda. This will pave the path for the growth of insurance sector in the hinterlands.

Life insurance penetration in India is among the lowest across the globe at 2.74%. Insurance penetration in India is 3.7% of GDP whereas the world average is 6.31%. The protection gap is the difference between economic and insured losses. In India, the mortality protection gap is highest in the Asia Pacific region at 92.2% as per a Swiss Re report. The protection gap in India (life or non-life) is around 70-80% which is quite substantial. A Lloyd's of London report in 2019 claimed that India has the second largest insurance gap in the world amounting to $27 billion after China. China's insurance gap is over $76 billion.

The social and economic cost of under penetration in insurance can be devastating. The mortality protection gap increases due to lack of understanding by people about what an adequate life insurance cover is. Individuals undermine the adverse impact of increasing inflation and tend to underestimate retirement needs. This makes them vulnerable to unexpected crisis situations. Families realize the perils of being uninsured only when the earning member of the family passes away all of a sudden. This is the singular reason why insurance penetration must improve. From the insurer's perspective, increase in penetration of insurance will increase volumes and bring down claims ratio. The protection gap in India is a huge opportunity for insurers. To reduce the protection gap, insurance industry must introduce innovative products that cater to the needs of the masses. They must also strengthen the distribution network and seek the support of technology to enhance penetration levels.

Protection Margins

Growth in savings and life insurance in India has lagged behind economic and wage growth. The protection gap is estimated to grow at 4% per annum.

India	92.2%
China	88.3%
Indonesia	73.3%
Japan	56.3%
Australia	33.4%
Taiwan	16.4%

Source: Mortality Protection Gap Report Asia Pacific, 2015, Swiss Re

Protection Gap South Asia 2019

India	83%
China	70%
South Korea	53%
Australia	54%
Indonesia	76%
Thailand	71%
Malaysia	74%
Singapore	55%
Hong Kong	41%

Source: https://brandsite-static.hdfclife.com/media/documents/apps/HDFC%20Life%20-%20Morgan%20Stanley%20Virtual%20India%20Summit%20Jun%202021.pdf

Considering the above statistics, it is clear that increasing the penetration of insurance in the country must be the top agenda for the sector.

Need for Insurance Protection in Hinterlands

India is one of the largest insurance groups in the world but penetration of insurance continues to remain abysmal. Lack of awareness about the value proposition of insurance adds to the complexity of the buying process. Insurance, by its very nature, is a push product and is characterised by complex terms and conditions. But for hinterlands, this has to change. The terms and conditions have to be simple.

Income volatility, hazardous work conditions and absence of old age benefits exacerbate risks for population in hinterlands. These risks can be reduced mainly through insurance. Employment opportunities for women in hinterland must increase and along with this, their knowledge about the importance of an insurance cover must be enhanced.

The pandemic and the associated devastation that it caused led to more and more Indians (particularly those from lower income group/ economically weaker section) buying term life insurance plans. The cover provided by term insurance plans is reasonably high compared to the amount of premium charged. So, there is an opportunity to introduce customized term plan along with a health insurance cover for the hinterlands.

Credibility and trust are the twin cornerstones of the insurance buying process. Technology must be used to make the buying process simpler and faster. Complexity in products needs to be reduced. Sachet insurance products that are affordable look ideal to sell in hinterlands. Improved smart phone penetration in hinterlands can increase customer touch points.

The three Es are important.

1. Ease of understanding what an insurance policy would offer
2. Ease of buying the insurance policy
3. Ease of making a claim

Challenges in Selling Insurance Products in Hinterlands

Limited infrastructure, limited transport facility, poor tele and internet connectivity, complicated on boarding procedures and complex products are some of the challenges faced by hinterlands. Lack of awareness, high premiums, cumbersome procedures, high costs of market penetration, under-utilization of available distribution channels - these affect distribution in hinterlands.

Other issues are:

1. Lack of surplus income (which impacts willingness to buy an insurance cover)
2. Erratic and cyclical flow of income
3. Absence of opportunities to earn livelihood on a sustainable basis
4. Affordability
5. Accessibility
6. Poor quality of services
7. Lack of trust
8. Lack of skills
9. High transaction costs

Indians are generally averse to buying insurance protection. There is a hesitancy to discuss about death

and disease. Indians are habituated to buy savings led insurance. Insurance was never considered an investment for the future. It was considered an expense or a waste of resources if a claim could not be made. It is therefore of consequence to introduce pure protection covers that are cheap and affordable by the underprivileged population in hinterlands.

Government and Regulatory Initiatives to Improve Penetration

An expert panel set up by IRDAI has suggested setting up of standalone micro insurance companies with a capital base of Rs 20 crore. There is a suggestion to amend the Insurance Act, 1938 so that the standalone micro insurance business can be brought under the purview of the statute. Capital requirements for such micro insurance companies have to be finalized too. Micro insurance companies, co-operatives and mutuals need to act as composite insurers to transact both life and non-life business through a single entity.

Other suggestions made by the panel

- Use of IT solutions to reduce transaction costs and bringing greater transparency.
- Setting up a Micro insurance Development Fund by regulator

The government has increased the FDI limit in insurance from 49% to 74% with the intent of increasing the insurance penetration in the country. Government schemes and initiatives to enable financial inclusion have resulted in penetration of some insurance verticals. The government's crop insurance scheme Pradhan Mantri Fasal Bima Yojana has resulted in better premium income growth for crop insurance. The Ayushman Bharat health insurance scheme has also benefited beneficiaries. On its part, IRDAI has taken steps to improve insurance penetration levels in India like conducting video-based KYC, launching of standardized insurance products and rewarding policyholders for low risk behaviour.

The nationalisation of life insurance in 1956 and that of general insurance companies in 1972 mark the beginning of India's tryst with financial inclusion. Pradhan Mantri Suraksha Bima Yojana (PMSBY) a renewable one- year accidental death cum disability cover and Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) are other insurance covers that are made available by the Government.

As per IRDAI advice all general and standalone health insurers have launched Aarogya Sanjeevani Policy, a standard health insurance policy with uniform features. The sum insured is Rs 5 lacs. Life insurance companies have introduced Saral Jeevan Bima from January 1, 2021. Standard policies are expected to reduce mis-selling and disputes during claim settlement.

Saral Jeeva Bima is a term insurance plan that is a regulator-mandated standard term life plan that offers basic protection to self-employed individuals and those who earn a lower income (Rs 5 lakhs a year). This is a plain vanilla term cover that pays the sum insured to dependents in case of the death of the policyholder within the policy term. Documentation is simple and easy and can be delivered in digital mode.

The KYC process has been simplified by IRDAI by allowing insurance companies and intermediaries to enrol new clients through Aadhar authentication. Video-based identification process, submission of documents (Aadhar, bank details) verified by Digilocker, authentication of purchase of policies through one time password or simply clicking the confirmation link before buying a term plan. New distribution channels have now evolved. For example – pharmacies, pathology labs, hospitals can distribute health insurance policies.

Suggestions and Recommendations

The protection gap leads to major societal costs when disasters occur. The cost of disasters is eventually borne by governments and individuals. Indian insurance industry has to build awareness on the need to close the protection gap. There is a need to highlight how insurance fills in the protection

gap rather than focusing solely on promoting insurance products. Information asymmetry between insured and insurers is often huge and this adds to the complexity. Convenience of buying an insurance policy by a customer in the hinterland is a challenge and needs attention. Creating mass awareness through media is vital. The agency model in insurance will need strengthening by shifting the focus from scale to productivity.

Hinterlands can be developed as potential rural ecotourism hubs. Development of hinterlands will lead to employment opportunities. Without developmental agenda in the hinterlands and livelihood generation, insurance sector cannot think of addressing the protection gap. Insurance sector needs to work with Government agencies and NGOs to create awareness about ability of insurance to offer protection to the local populace. The Government must ensure public-private participation model to launch developmental projects in hinterlands.

It is important to engage local people as spokespersons for promoting insurance. They will need training to sell insurance. History is replete with instances of local leaders like Sunderlal Bahuguna (leader of Chipko movement and noted environmentalist) who played a crucial role in educating the population in the hilly areas about their rights. Gaura Devi was a rural woman community leader who played a crucial role in Chipko movement. Selling insurance to address the protection gap in hinterlands needs the involvement of such local leaders who can take steps to educate the population to take measures to protect their livelihoods and insure their lives. These local leaders command huge respect and so they can act as influencers.

The hinterlands need to be connected with coastal areas as part of the development agenda. The bottom of pyramid concept was popularized by management expert C K Prahlad. The FMCG companies, inspired by this theory, launched products like shampoos, face creams, detergent powder etc. in sachets to address the aspirational needs of consumers in rural areas and hinterlands of cities. Therefore, insurance sector must introduce bit sized insurance products or sachet insurance.

Postmen/ women can be used as insurance agents in these areas. Insurance is a push product. To make it a pull product, it is important to understand the concerns of populations in the hinterlands and mofussil areas. Technology must be gainfully employed to sell insurance policies. The entire process of buying an insurance policy must be kept simple and hassle free. Claims administration must be simple as well. This will boost confidence and improve the credibility of insurance companies among the population in hinterlands. Insurers must enter into a strategic tie-up with regional rural banks, NGOs and Non Profit organizations.

Conclusion

The total mortality protection gap in India is $16.5 trillion (2019) with an estimated protection gap of 83% of total protection need. Life insurers have a huge business opportunity to penetrate the market. Government efforts apart, a supportive regulatory regime, product innovations and online distribution channels make the future prospects of insurance sector quite lucrative.

Access to livelihood and skill development remains key drivers for selling insurance in hinterlands. Skill development programs like National Rural Livelihoods Mission, Pradhan Mantri Kaushal Vikas Yojana must be deployed in an integrated fashion.

Customer centric approach for product design and delivery, focus on financial literacy and closing the protection gap through innovative products catering to the specific needs of hinterlands is needed. The National Center for Financial Education must be used to improve insurance literacy through audio-video content/ booklets etc. Bancassurance in hinterlands can be used to propagate insurance literacy. Banks are tying up with fintech firms, small shop owners and business correspondents to improve penetration and increase distribution

effectiveness. This is a progressive step and insurance sector can take a cue from this development.

The integral needs of the population in hinterlands need to be identified. Insurance schemes targeted at specific needs of the population can lead to inclusive financial growth in geographical areas that are economically underdeveloped. The flexibility in micro insurance can reduce poverty and inequality. India First Life Insurance Company introduced a Micro Bachat Plan. This is a non-linked, participating plan that offers benefits of security and savings. Even when a premium payment is missed, the policy benefits will continue. The policy also provides a loan facility. Such policies are needed for addressing the protection gap in hinterlands.

When businesses receive governmental support so that they can connect to global trade, it can improve standard of living in hinterlands through provision of employment opportunities. Addressing the developmental needs of hinterlands and enabling the hinterlands to reduce their protection gap is crucial for growth of our economy. The hinterlands cannot be developed in isolation. An inclusive approach considering both hinterlands and urban coastal areas is necessary. Hinterlands need access to latest technologies, knowledge and infrastructure to unlock their potential.

Most insurance products sold in India are not pure protection products but endowment products that offer protection and investment. It is important to introduce more protection products in the market.

90% workforce in hinterlands works in informal sector with no minimum wages and very low disposable income. An ILO report states that the Covid pandemic has resulted in pushing 40 crore informal sector workers deeper into poverty. These are the people who need insurance protection. For hinterlands, insurers need to launch simple and affordable products with better coverage and ensure effective distribution. Innovative covers in the form of long term savings and protection solutions will find greater favour among the hinterlands. Implementation of new business models and risk mitigation solutions in hinterlands will enable insurance sector to gradually scale up.

Addressing the protection gap must involve actions that are planned and implemented based on a clear understanding of the challenges faced by the population in hinterlands. Insurers must encourage businesses to launch CSR projects in these areas to expedite development.

If hinterlands become attractive destinations for marketers of FMCG, insurers must view these markets with a similar level of commitment. Agents can use CDMA enabled machines that contain database considering customer details. Use of branded vans and interactive games can create awareness about insurance and generate long term brand visibility. It will be wise to recruit insurance sales force from local population. Stage plays and road shows can be used to increase awareness of insurance among the population in hinterlands. Insurers are now joining hands with rural institutions, rural co-operatives, financial institutions, NGOs and micro finance institutions to increase penetration.

Transparency in processes and improvement in access to affordable insurance and micro insurance products will drive the growth of insurance in hinterlands. Financial inclusion is the driver of economic growth and poverty alleviation. It can support stability, integrity and equitable growth.

Considering the fact that financial inclusion is an important component of United Nation's sustainable development goals, the time is ripe for insurers to provide low cost, high volume insurance services using agents and business correspondents to improve last mile delivery. Insurance literacy is a must and insurers must focus on this objective with single minded devotion.

Creating awareness about insurance and its value proposition to hinterlands is the most crucial step. This must be followed by buying procedures that are simple and

easy. Policies must be designed in a simple manner keeping in mind the needs of the population in hinterlands with easy payment options. Along with these steps, the penetration of insurance can only be strengthened through effective distribution mechanisms. All kinds of distribution channels must be deployed and their effectiveness must be evaluated at periodic intervals so that the most effective channels of distribution can be strengthened to increase the penetration of insurance in the hinterlands. For example, use of grass root representatives, co-operative milk federation groups, and dairy co-operatives can prove to be potent channels for distributing insurance covers. Joining hands with micro finance institutions and micro entrepreneurs to sell insurance will yield promising results. Leveraging the trust that rural population has in kirana stores can make such stores part of an effective distribution network.

Unless financial inclusion of rural hinterlands of India is accorded the priority that it deserves, the development agenda will remain incomplete. The insurance sector along with banking sector has a crucial role to play in fostering actions to achieve this goal. TJ

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Challenges of Reducing Protection Gap in Hinterland – Remote Sensing Solutions

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Abstract

Hinterland of India is suffering from gap in protection as required and as available. The reason for the gap is twofold - lack of distribution network and lack of after sales service. Technology can provide solution to both the problems. While for former problem human touch coupled with technology can provide effective solution. For the second problem use of remote sensing based technologies may prove to be effective.

Keywords

Hinterland Protection, Customer Servicing, Remote Sensing.

Introduction

The insurance penetration of India is very low. India is among the least insured countries and as of 2019, the density of non-life (which includes health) insurance in the country was a mere 19%[1]. Even most of this insurance coverage is in major cities and other urban areas. The hinterland of India housing roughly 70% of population is poorly serviced by insurance sector.
The inadequacy of the protection provided by the insurance in the hinterland was recently exposed by the COVID 19 pandemic. A large number of households were on their way to poverty due to expenses

[1] N *https://www.financialexpress.com/money/insurance/insurance-sector-rural-india-needs-insurance-in-sachet-form/2197374/*

associated with treatment of COVID 19 which was not covered by medical insurance and government / government aided hospitals providing free treatment were stretched to limit.

As per an estimate[2], the rural household holds 77% of the wealth in land and property, but the coverage of property insurance in the hinterland is very poor. Property insurance penetration stands at 1%. In terms of insurance density, India's overall density stood at US$ 78 in FY21[3].

Major reasons

The major reasons of the low penetration are

- low availability distribution network for insurance in the hinterland
- and poor aftersales service of the rural insurance products.

Distribution solution

The distribution network issues are sought to be solved by the use of information technology enabled solutions such as dedicated websites and apps. Mobile apps help the insurance industry in many ways, for instance, they help to increase efficiency, customer satisfaction, user engagement, loyalty, etc. Additionally, insurance companies can simplify complex processes and reduce paperwork to a greater extent[4]. The mobile app may be company owned or third party owned. Government of India itself has launched mobile apps to bring together people from hinterland and insurance companies to take benefit for various government schemes. For example, mobile App developed to implement flagship crop insurance scheme of PMFBY. Another technological solution for insurance sector, robo-advisor is being developed for investment management and is now being increasingly used for quotes with automated advice and offerings calculated through algorithms. Instead of or combined with face-to-face advisor, robo-advisor can provide automated guidance and execution on various financial decisions. Automated advice could assist pockets of population that do not have access to financial advice to gain input in a more cost-efficient way than a human advisor. However, depending on how the algorithm to provide advice is structured, it could also lead to inappropriate advice being made. The algorithm designing and AI innovation has still scope of improvement.

These solutions while solving problem of the accessibility to a large extent lacks human touch. The human touch brings with it certain trust and credibility. The insurance is a product sold on trust and the lack of human touch and subsequent trust is hampering spread of insurance in hinterland. Insurance Regulatory and Development Authority of India **(IRDAI)** has advised to tap various initiatives of the rural development ministry as well as network of Self Help Groups **(SHG)** members and bank correspondents for product distribution and servicing[5]. Insurance companies have been told to explore tie-ups with different farm input suppliers, financial institutions, rural services providers to target distribution of small ticket, short duration, or tailored products. This may solve distribution problem of rural insurance penetration.

Servicing Solution

Remote sensing is one of the solutions to property insurance service functions such as surveying and loss assessing. Remote sensing, which includes both space and earth observation (EO), is the science of collecting and

[2]https://www.deccanchronicle.com/opinion/op-ed/180520/can-indias-rural-property-card-be-capitalised-to-propel-post-covid.html

[3]https://www.ibef.org/industry/insurance-sector-india.aspx

[4]https://www.moflixgroup.com/blog/moflix-for-insurance

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interpreting visual intelligence about objects from afar using sensors mounted on satellites, aircraft and drones. Remote sensing may be used for crop damage and flood and fire risk assessment. Current satellites can map Earth's entire surface up to 12 times per year. Such frequency allows analysts to confirm information gathered from older, higher-resolution images and observe changes to properties over time. Insurers can see how weather, property damage, exterior renovations, or property additions have changed risk factors. To get the most benefit out of remote sensing technology, however, insurers can use these imagery-based solutions together across their entire organization, from point of sale to claims. Combining imagery from all platforms provides a virtual inspection that's reliable and as accurate as possible. The information is powerful throughout the policy's life cycle, and insurers can use it proactively to analyze portfolios, research potential customers, and prepare structural damage repair estimates. This can be accomplished without additional on-site inspections or potentially intrusive customer touch points, further reducing costs. Availability of satellite imagery before, during, or after an event allows the insurance company to assess the damage and shorten the timeline to assist the property owner during a time of need. This allows Hazard Insurance Claims Management to provide accurate and timely damage reports and weed out fraudulent claims, which might occur after such events[6].

Crop Insurance, Livestock insurance and plantation insurance covering major sectors of hinterland economy, can prove to be major users of remote sensing technologies. The development of technology such as high-resolution mapping via Geographical Information Systems (GIS) helps insurers better understand the geographical distribution of a portfolio of insured farmers, their locations, factors affecting risks and land use; it also strongly supports effective distribution and underwriting of index insurance[7]. Satellite monitoring is an effective tool capable of observing the state of crops. It can be used by the agricultural insurance companies to a great advantage. Soil moisture data helps to identify waterlogging, while the critical temperatures detection allows recognition of natural destructive events such as cold stress. Index insurances are well developed and important risk management tools for grassland-based farming systems in several developed countries, for example in the USA (Risk Management Agency, 2015) and Spain (Agroseguro, 2016). For instance, the launch of the first Sentinel-2 satellite in early 2015 has made the direct monitoring of grassland vegetation with open source data possible (Roumiguié et al., 2017). 2 In Europe and North America, recent examples of newly developed index insurances include the 'Assurance des Prairies' in France (Roumiguié et al., 2015b) and the 'Gras-Pauschalversicherung KLIMA' in Switzerland (Schweizer Hagel, 2018a). To improve risk management possibilities for farmers, a need for exchange about these diverse innovations emerges (e.g. Gobin, 2018; Iglesias et al., 2016; Kellner and Musshoff, 2011).[8]

Remote Sensing in Service of Indian Hinterland

Remote sensing has seen widespread use in servicing some of the social / rural insurance schemes being run for the benefit of Hinterland population of India. Pradhan Mantri Fasal Bima Yojna (PMFBY), the flagship crop

[6] *https://www.cloudeo.group/markets/insurance-finance*

[7] *https://www.ifad.org/documents/38714170/39144386/RemoteSensing_LongGuide_2017.pdf/f2d22adb-c3b0-4fe3-9cbb-c25054d756fe*

[8] *https://www.sciencedirect.com/science/article/pii/S0308521X18307200#bb0300*

insurance scheme being implemented by Government of India with the aid of various public sector and private sector insurance companies being one of them. Some of the activities,[9] that have been carried out under PMFBY using remote sensing may be enumerated as follows:

- Use of satellite remote sensing derived yield values for smart sampling and optimization of Crop Cutting Experiments (CCEs) being conducted under Pradhan Mantri Fasal Bima Yojana (PMFBY).
- Use of satellite remote sensing to assess the discrepancy between the actual sown area and the insurance area and compute the Areas Correction Factor (ACF).
- Use of satellite imagery for resolving disputes between the State Governments and Insurance Companies related to crop yield estimates.
- Yield data quality checking using remote sensing.
- Qualitative crop loss and health assessment using satellite remote sensing.
- Use of satellite remote sensing for assessing the areas of preventive sowing or failure of crop emergence.
- Use of long-term satellite remote data for risk assessment which have been used for clustering of districts.

The partners of the government in adoption of remote sensing technology are:

- ISRO Centres (SAC & NRSC)
- Mahalanobis National Crop Forecast Centre
- State Remote Sensing Centers
- India Meteorological Department

Apart from high spatial resolution satellite data, biophysical models, smart sampling, artificial intelligence among others, drone-based images are also being used in the large scale in implementation of this scheme.

Conclusion

It is projected that remote sensing will play increased role in covering the protection gap in the Indian hinterland. Indian insurers will have to adopt remote sensing technologies in the same scale as they have adopted information technology to stay competitive in the market. They must make use of judicious mix of satellite based remote sensing and Unmanned Aerial Vehicle (UAV / drone) based remote sensing. They must retrain their existing operational manpower in use of remote sensing technologies. The new recruitment should also lay emphasis on familiarity of remote sensing technology in the same way as the familiarity with information technology is done nowadays.

[9]https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1706067[4]https://www.moflixgroup.com/blog/moflix-for-insurance

Closing the Insurance Protection Gap – A Closer Look at the Challenges and Opportunities

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Abstract

The growing insurance protection gap is a significant worry for the worldwide insurance industry. Recent calamities have harmed many countries, revealing poor risk management techniques, acute underinsurance among populations, insufficient awareness, and insurers' reluctance to address climate and man-made dangers and perils that have caused this gap in developed and emerging markets. Several other micro and macro-economic factors influence the market penetration of insurance and society preparedness to handle natural disasters. The industry has been reactive in addressing these issues, resulting in an ever-widening gap in insurance protection that must be addressed immediately. This essay looks at the major concerns surrounding Insurance protection management and investigates the known vs unknown. The essay also discusses potential solutions to bridge this gap.

Keywords

Insurance Protection Gap, Risk Management, Reinsurance, Property and Casualty, Life Insurance.

Introduction

The insurance protection gap is widening worldwide, and it is one of the serious problems we face as a society today. The insurance protection gap is the difference between insured losses and overall economic losses. It shows the level of protection offered by

insurance coverages against natural catastrophes, which insurance companies pay out through claims to people who lost their properties or livelihoods to disasters.

The gap in insurance coverage affects both emerging and developed nations, owing to the ever-increasing number of global calamities that occur each year, the recent pandemic notwithstanding. There are several causes behind the gap: an increasing number of uninsured individuals, poor availability of insurance, weak insurance industries, poor governance structures, or an overreliance on micro-insurance, which leaves the society with insufficient insurance protection against both natural and artificial calamities. With increasing insurance rates and the growing risk of exposure, the problem has gained particular relevance in recent times. Moreover, the problem is not limited to emerging economies alone.

Even in countries with high insurance penetration and successful recovery rates, the gap is widening. The emergence of new and unknown risks is also a contributing factor. We now face a slew of fresh challenges, such as cyber-crimes, rapid climate changes, and hazards arising out of technology advancements. Even in well-established sectors like life and health, there is still a significant difference. The gap is virtually everywhere.

Although many participants operate in the insurance sector, its nature influences how it responds to insurance protection. As discussed earlier, one of the primary reasons for the insurance protection gap is that insurers are hesitant to offer insurance plans because they are uncertain about their risk exposure in developing regions, which causes them to be cautious about launching and marketing such products. There is also a misconception that certain losses or exposures do not qualify for insurance coverage, even if people have insurance. Studies have shown that the availability of insurance alone may not be enough to bridge the gap. The insured must have easy access to and affordability of insurance coverage, with transparent pricing indicators to help them make informed decisions about how much insurance cover is appropriate for them in terms of availability, affordability, and viability.

The insurance protection gap has significant ramifications, including reduced insurance availability causing higher premiums, lower returns on investment, and hence under-capitalised insurance sectors. The lack of insurance creates an artificial demand for government aid after catastrophes, resulting in unsustainable fiscal situations that exacerbate the damage to economies. Many insurers face difficulties in their lack of knowledge of local markets and rules, which leads to low representation and the inability to provide suitable products and solutions, especially in emerging economies, driving the gap.

Let us examine a few of these concerns in further depth and how insurers can address the gap.

Knowledge Gaps are a Significant Concern

Even today, customers are still hesitant to purchase insurance, particularly when compared to other retail services and solutions. Although consumers now have access to information and cutting-edge technology that assists them in purchasing insurance, the issue is not significantly better than it was years ago. Even in countries where products and solutions are available to safeguard against disasters and calamities, there is a lack of demand for them. As a result, most individuals still do not have insurance, believing that the government would provide relief during natural calamities.

Take the 2016 earthquake in Italy, where only about two per cent of the population was insured. The financial losses were put at more than $19 billion, but insured losses were a little over $241 million, implying that less than 1.3% of the overall economic damage was reimbursed. After years of economic struggle, the government's ability to fund post-disaster rebuilding

was significantly restricted. Another example is that despite being seismically active, 90 per cent of California's residents lack earthquake insurance, putting them at significant risk. Natural disasters are frequently seen as a justification for government assistance, but regardless of the total damage, even governments may be in financial difficulty if individual losses aren't compensated by insurance.

Insurance purchases often increase right after natural catastrophes in the year following the event, but this does little good. There is a significant problem of awareness and understanding surrounding natural catastrophes' dangers and vulnerabilities. Despite the fact that new kind of threats, such as cybersecurity, are recognised by businesses and organisations, individuals still largely remain ignorant or partial to the hazards posed by cyber-attacks. And even though individual insurance is accessible, such products and solutions have less market penetration.

Another issue is a lack of clarity surrounding these types of insurance products in terms of the coverages, benefits, and costs. Despite the rise in chatbots and virtual assistants and mobile apps that help customers purchase insurance, most consumers are still ignorant about what terms and coverage they need. There is a general lack of knowledge about insurance phrases and terminologies. Finally, these factor down to more detailed aspects of the contract, such as exclusions, coverage limitations, or any unique deductibles present. Two of the most significant factors contributing to underinsurance and an increase in the protection gap are a lack of clear understanding and affordability.

The Challenges in Risk Analysis and Modeling

Risk analysis and modelling are essential elements of insurance and reinsurance, as applied to natural catastrophes, threats, and other perils. Despite the progress in data and analytics, insurers continue to struggle to incorporate all variables into their risk ecosystem, leaving them unable to create robust risk models that would assist them in offering insurance products and solutions relating to natural disasters. Insurers and reinsurers spend hundreds of thousands of dollars on claims every year for calamities, but their risk modelling capabilities remain limited.

As a result, disaster risk financing has emerged as a major source of anxiety. This isn't a typical demand-supply equation; it necessitates a deeper understanding and the ability to foresee and anticipate risks. Indeed, the advent of big data and analytics has somewhat altered the picture. However, insurers' failure to use historical data and lack of risk models based on reliable data and information is largely to blame for why the industry is under-prepared to address the protection gap and minimise society's losses. This impacts financing, which is scarce when needed.

Besides, insurers have historically been plagued by poor data quality, which is split across many platforms available throughout their enterprise. Insurers are burdened with legacy issues, which makes it difficult for them to come up with a single and consistent version of the truth. Multi-layered architectures, combined with a lack of standard data models and structures exacerbate the issue. Developing effective risk models necessitates access to both internal and external data and information. Insurers find it difficult to keep a current and comprehensive database of information to feed their systems from a variety of external sources, including climate and government bodies, reinsurance firms, and others.

Insurers have heavily invested in data and analytics over the last few years in an attempt to develop cutting-edge risk models, but these provide little business value since outdated or unreliable and incomplete data eliminate their usefulness. The outcome of any prediction model is determined by what is fed into it as input. This

reflects the substantial difficulty insurers have in gathering accurate and thorough information to create effective risk modeling that can assist them in identifying appropriate economic opportunities when faced with financing catastrophes.

Role of Reinsurers, Governments, and Regulation

We have long discussed the insurance industry's income protection problem while simultaneously downplaying the significance of other elements in the chain, such as reinsurers. When it comes to sharing the burden of losses, historically, reinsurers have played an important role in the insurance ecosystem. While reinsurers may appear to be similar to insurance companies in many ways, their working methods are actually quite traditional. While large reinsurers play a significant role in closing the loss gap, their involvement largely remains to just share the losses. Aside from fulfilling their contractual obligation with insurance companies, reinsurers must play a greater role in solving the problems of closing the gap in income protection.

This has been acknowledged at the highest levels, and reinsurers and governments must collaborate to find creative solutions in order to reduce the risk exposure the society faces from natural catastrophes and man-made hazards. This necessitates considerably more extensive cooperation between insurers and their reinsurance partners, with many channels of interaction at various levels intended to share information and knowledge and provide applicable guidelines and governance that may help combat the problem of the growing income protection gap. Reinsurers, in particular, have a large amount of data that may be effectively utilised to produce insights that can assist insurance companies in better managing their risk portfolios. The issue here isn't just one of economic viability; it's about addressing a greater societal need for insurance coverage and awareness about the financial strain caused by natural catastrophes and man-made hazards—whether technological or otherwise.

Reinsurers must take a more creative approach in the insurance ecosystem. When it comes to filling gaps in insurance coverage faced by citizens living in both developed and emerging nations during natural disasters, it is time for reinsurers to think outside of the box. Not only the reinsurance sector, but governments are also essential for insurance protection gaps to be managed, especially in developing countries where insurance penetration rates are lower than those in developed nations. The insurance sector, like any other industry, requires the assistance of the government. In order to support both well-articulated insurance policies and insurance regulation, governments must step in.

There is a need to raise public awareness about the risk of exposure and, more importantly, the affordability of their current level of insurance protection against natural disasters. Insurance penetration will rise when more people are educated about insurance, which in turn requires greater insurance literacy. Through training programs, the insurance industry is already spearheading insurance literacy among citizens in both developed and developing nations. Governments have also taken action to raise public awareness regarding the risk people face when it comes to natural catastrophes.

The Untapped Hinterlands - Charting New Territories

The increasing insurance protection gap is caused by a variety of factors, as mentioned earlier. While many of these issues are frequently discussed and debated, there are still elements that remain unknown, both in terms of new and developing risks capable of widespread losses and measures that the sector as a whole must take to address them. While traditional strategies protect both short-term and long-term hazards for Life, Health and P/C insurers, there is always the danger

of some unforeseen or previously unaddressed risk that isn't considered.

Take the recent pandemic for example that has seen losses of millions of lives, something that was unpredictable as well as unforeseen. The advent of technology has resulted in information becoming more accessible, posing a danger of cyber assaults. When data is misused, there is a high risk of significant losses for both individuals and governments. However, the depth of understanding and appreciation for such devastation that goes well beyond typical natural catastrophe parameters remain largely unexplored with only a few insurers providing solutions, while the general public remains mostly ignorant of the potential repercussions.

In the business world, where individuals are still cautious about sharing information that might pique others' interests, proactive measures should be taken in response to such events. Even as new disruptive technologies have been shown to improve our lives, they may also displace us in milliseconds. If insurance were to be recommended for this sort of risk, the rate of insurance penetration would almost certainly rise. However, given the fact that insurance coverage is less in many developing nations, there is still a large gap in protection that needs us to step up and explore new potential areas where liability might exist.

The good news is that the insurance industry is gradually shifting to a more inclusive insurance value network, which will cover problems that are increasingly prevalent today such as cybercrimes, healthcare expenditures linked with an increasing number of lifestyle illnesses, and a growing elderly population leading to an increased probability of spending money on long-term healthcare expenses. There may be many distinct issues, for example, biodiversity loss, inflation of claims, or cryptocurrency fraud, which might become a problem in the future. These might lead to wide-scale economic losses.

The insurance business has just begun to scratch the surface. There are still a lot more problems ahead. When it comes to insurance protection, the insurance sector must come together and invent better solutions for closing the gap. This hour demands that we develop superior value propositions that will benefit both society and nations in dealing with risks.

Managing Insurance Protection Gap: The Road Ahead

There is a widespread misconception that insurance firms are to be blamed for gaps in coverage because they avoid or refuse to offer insurance protection based on their underwriting processes and premium criteria. As discussed above, the insurance sector has its own set of issues in working towards closing protection gaps. It isn't limited to coverages for catastrophes alone.

There are several other gaps in insurance coverage that insurers must be aware of, including insurance penetration difficulties owing to the cost and awareness, high price volatility, replacement insurance availability, and insurance frauds. Managing the protection gap is not the responsibility of insurers alone. They must be addressed by both the industry and customers. The insurance sector must consider these challenges while developing future insurance policies or insurance solutions for effective and efficient insurance protection.

Harnessing technology may be one of the most effective methods of overcoming protection gaps, as it can potentially address some concerns, if not all. Adopting approaches and methods that would increase awareness and ease in purchasing insurance products can help alleviate financial strain on economies by promoting a greater understanding and convenience in purchasing insurance products. There is a lot of potential for generating value by making insurance digital, which will help insurers save money while still

maintaining a high level of service and offer more customer-friendly solutions that are tailored to individual requirements.

The integration of technology and data with the power of artificial intelligence and blockchain can aid the insurance sector in dealing with the problem of increasing insurance protection gap. These new digital technologies have a significant influence on the insurance value chain, affecting almost all touchpoints. The solution lies in understanding the problem at the grassroots, which begins with the consumer and works its way up to the insurance industry and other players, culminating in government, economy and regulations.

Increased customer knowledge, customised solutions and goods, improved digital experiences, a stronger risk culture in which everyone is aware of the risks they face and how to manage or mitigate them would undoubtedly go a long way toward allowing societies and countries to deal with financial fallouts arising whenever catastrophe strikes, helping in closing the insurance protection gap in the overall scheme of things.

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Protection Gap: A Social Problem for the Country and an Opportunity for Insurers

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Scenario 1: Ramesh, a daily worker from a remote village of Bihar was working in Delhi city. Pandemic had turned his life upside down. He lost his job because of the lockdown but that was not just the end. Another big problem was waiting for him when he returned home, his only daughter got ill. He had to spend all his savings for her treatment. Now Ramesh is facing an acute financial crisis as he left with neither a job and nor savings.

Scenario 2: In the faraway hinterlands of Vidharbha in Maharashtra, Hariprasad is mired in deep debt. He is hoping for a bumper crop this season so that he can pay off his debts. Unfortunately, the monsoon refused to visit his farm and his crops died a slow death, leaving Hariprasad and his family in unspeakable misery.

Instances from lives of Ramesh and Hariprasad give us an idea about the problems of rural areas.

Many current problems of rural areas can be solved through financial tools like insurance. The need for the hour is to address the challenge of the protection gap.

In 2018, Lloyd's second underinsurance report revealed that there is a global insurance gap of US$162.5 billion. Of the gap

identified, approximately US$160 billion comes from emerging nations, and the rest US$2.5 billion from developed countries. Even though the global economy has grown with more assets at risk over the years, there has been limited progress in closing the protection gap in emerging markets.

As Geneva Association insurance protection gap report, there are so many factors like lack of affordability and awareness, poor service quality, trust issues, cultural and social factors, behavioral biases, and weak legal environment which are responsible for this protection gap. The protection gap is a huge roadblock in the development of the risk transfer industry.

For addressing this issue, we have discussed three approaches described below as

Top-down Approach

- **Insurance Awareness through Social Media:** Social media is expanding its footprints very rapidly; it has grown up very much in Hinterland too. Now the population living in the hinterland is very much connected to current happening through social applications. This is the very right time to promote the benefits of insurance in the rural population through social media. Innovative insurance awareness campaigns can be launched on social media platforms.
- For example, well-known insurance firms like Coverfox, InsuranceDekho are continuously utilizing the power of social media through their inventive ideas. Every insurer needs to integrate social media into its main business strategy. And social media strategies need to be developed according to a target area. Insurers need to study the segment of the interior market very well through extensive surveys. Then they should find out which social media platform can help them in reaching the remote population in less time and resources. Thereafter, insurers need to continuously monitor the impact of the use of social media and continuously improve their strategy. More awareness will help to overcome the behavioral biases, cultural and social factors.
- **Active Engagement:** Bridging the protection gap in the interior area is not an easy task. It can't be achieved by the insurer alone. They need to come out and continuously increase their engagement with other influencing organizations. Many insurers are now redevising their engagement strategy and widening their horizon with other influencing bodies: non-government organizations, lawyers, regulators, aid agencies, and academia. Because only getting support at all levels, can make a real difference. NGOs are greatly helping in increasing the awareness of insurance in remote areas. In African countries, insurers are engaging with regional organizations and studying the area & thereafter building the insurance product which caters to the need of the regional population. The more the engagement with the influencing bodies more the knowledge of the region and helps in insurance penetration. Insurance is still a push product. Though some awareness has been gone up because of COVID 19 still wider interior population is unaware of insurance. To tackle this challenge engagement at multiple levels is of utmost required.
- **Process Automation:** There are multiple benefits automation can bring. Automation in the insurance process will help in the integration of various systems. The need for a hinterland population is different. Through automation improved and personalized customer experience can be brought. Automation will help in claims processing, policy management, regulatory compliance, and underwriting. The collection of data is very significant for designing the solution for the remote population. After collection improving analysis of collected

data to develop new solutions to bridge the gap. Insurance process automation will help in enhancing transparency and better customer experience. The story of GramCover can be well highlighted here.

GramCover is a broking firm focused on product design and tech-enabled distribution for India. They have adopted a unique technology-led distribution & servicing model which is well suited for rural setup to minimize the inefficiencies and transaction costs involved in the process.

- They design customized & affordable rural insurance products
- They leverage technology (Mobile + Jan Dhan + Aadhaar) for paperless onboarding.
- They follow a hybrid model to train & deploy village level entrepreneurs
- They partner with NGOs, MFIs, NBFCs, and others for maximum outreach & impact.

Bottom-up Approach

- **Developing platforms to Boost Micro-insurance:** Low-income communities live on the edge all the time of their life. Even a small misfortune from an economic shock can cause them to fall ever deeper into poverty. This we have just experienced because of COVID. The concept of insurance is not much known to these poor communities. However, the need for insurance is much higher for rural individuals as the financial losses that they face due to uncertainties can make their lives very difficult. Hence, a micro-insurance plan that can cover such financial losses will give them a big relief. The aim is to provide socially impactful, commercially viable insurance protection to the underserved. It is overcome the affordability challenge. Microinsurance is an utmost service to help low-income households secure their delicate lives and livelihoods against inevitable risks and unforeseen economic shocks. It will help in building the resilience of households against the adverse consequences of risks. Insurers are bringing tailored micro-insurance schemes for farmers' communities such as crop insurance, health insurance, rural, personal, accident, irrigation, animal cart, aqua-culture, agri-allied, and cattle insurance. Let's talk about Bima Mandi, an insuretech venture.

Bima Mandi is attempting to digitize and provide access to financial services for those living in rural areas. Bima Mandi targets to serve a cumulative set of more than 4 million rural customers across 125+ districts and 1000+ villages. Their goals will also include more than 50 million unique visits on its platform.

- **Strategic Partnership:** To achieve the above, we need to identify potential strategic partners having expertise in fields of distribution, technology, and social impact issues, along with donor organizations, and government and quasi-government entities. Good partnering with the government will help to address the loopholes of the legal environment.

Pune-based **DigiSafe**, a bootstrapped local digital insurance startup, which set to launch its service in India. This startup aims to fill the evident gap between the urban and rural areas for curated insurance products with an aggressive insurance penetration. Apart from simplifying products that span across Motor, Health, Livestock, Crop and Life Insurance for people living in the rural areas, DigiSafe is running a partnership program for channel partners that will identify, train and develop a team of certified point of sale persons for insurance distribution through a combination of physical and digital modes.

Third Approach

- **Filling the Talent Gap:** The insurance industry is at a critical juncture, with new risks fueled by rapidly evolving technology. Apart from this, Insurers are facing a growing war for talent. It is interesting to know that nearly four million baby boomers nationwide are retiring each year. As a result, the insurance industry is facing a looming talent crisis. With nearly 400,000 open positions projected by 2020 and less than five percent of millennials interested in working in insurance. The focus needs to shift towards employing and appealing to the next generation talent and bringing millennials into insurance. We need to attract the youngest minds with **the keenest understanding of** technology. For this, Insurers must join together and re-brand insurance as the industry for young professionals.

- **Reaching the Mobile-Friendly Young Generation:** explaining the benefits of insurance and also distributing insurance electronically. The young generation is very well connected through online mode. Most of the activities of young people are being done online only. Hence, insurance needs to become part of it. But the process of online buying insurance should be seamless they only it will attract young guys.

- Empowering youth by providing job opportunities in the insurance sector.

Conclusion

The protection gap is a global challenge and closing this is very critical for the industry as well as people. Our research work concludes that no one group can close the insurance gap on its own. A collaborative approach involving all the concerned organizations, experts, government entities, and NGOs can bridge the protection gap. Insurers need to come with innovation in product offerings and also work with policymakers to build functional products. Insurers need to come with innovation in product offerings and also work with policymakers to build functional products. The insurance industry aspires to make our world more resilient, however, underinsurance is the greatest barrier, which needs to be overcome as it does not help anyone. TJ

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Blood Stock Insurance - The Horse Power of Business

Horse racing is an equestrian performance sport, typically involving two or more horses ridden by jockeys (or sometimes driven without riders) over a set distance, for competition. It is one of the most ancient of all sports, as its basic premise – to identify which of two or more horses is the fastest over a set course or distance – has been unchanged since at least classical antiquity.

While horses are sometimes raced purely for sport, a major part of horse racing's interest and economic importance is in the gambling associated with it, an activity that in 2008 generated a worldwide market worth around US$115 billion.

Horse racing has a long and distinguished history and has been practiced in civilizations across the world since ancient times. Archaeological records indicate that horse racing occurred in Ancient Greece, Ancient Rome, Babylon, Syria, and Egypt. It also plays an important part of myth and legend, such as the contest between the steeds of the god Odin and the giant Hrungnir in Norse mythology.

In later times, Thoroughbred racing became, and remains, popular with aristocrats and royalty of British society, earning it the title "Sport of Kings".

Historically, equestrians honed their skills through games and races. Equestrian sports provided entertainment for crowds and displayed the excellent horsemanship needed in battle. Horse racing of all types evolved from impromptu competitions between riders or drivers. The

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various forms of competition, requiring demanding and specialized skills from both horse and rider, resulted in the systematic development of specialized breeds and equipment for each sport. The popularity of equestrian sports through the 0Centuries have resulted in the preservation of skills that would otherwise have vanished after horses stopped being used in combat.

There are 5 biggest horse racing regions in the world. These are Japan, USA, Hong Kong, Australia and France. But, still UK and Ireland catch maximum crowds in their race courses. The market size of the racing track industry in USA was valued at over 3 billon U.S dollars in 2020 and was forecast to reach at 3.52 billion dollars in 2021.

Horse racing is one of the few sports that has continued during the 2020 COVID-19 crisis, with Australian and Hong Kong the two main racing jurisdictions to carry on, albeit with no crowds.

Horse racing in India is over 200 years old. The first racecourse in the country was set up in Madras in 1777. Today, India has a very well established racing and breeding industry, and the sport is conducted on nine racetracks by six racing authorities.

Racing is restricted to Indian-bred racehorses and India has a well-established breeding industry with stallions imported from all over the world. The Indian Stud Book maintains records of all thoroughbred breeding activity in India.

India has a mixture of both pool betting and traditional bookmakers.

According to Indian Veterinary journal population of horses in India as per 2019 census is 0.34 million. Best quality horses are chosen for rearing and breeding and preparing for Races, Turfs and Derby and other Equestrian events. Etc.; In India there is National equine breeding and research Centre in Hissar and horse training center in Muktsar.

In the year 1996 The Supreme court of India has given verdict that horse racing is not a gamble alone or a merely luck, but a game of skill and expertise and gave it a status of regulated Industry to conduct horse racing betting.

Bloodstock Insurance: horses that are bred for racing are called bloodstock.

Considering the huge finance involved in race horses-there is a need to adopt insurance scheme for these costly horses. The price of the horses depends upon the breed and utility, pedigree and conformation. The average sales price of a racehorse is $76,612. The average price for a two-year-old thoroughbred in training is $94,247, and the average cost for a yearling is $84,722.In India it varies from a few lakhs to a few crore; since the cost of rearing a race horse is exorbitant.

The public sector general insurance companies have expertise in dealing with bloodstock insurance in India. This is transacted in miscellaneous line of business and not under Rural or Agriculture business.

It has been observed that the bloodstock insurance policy has four parts.

Part 1: This part has **general regulations** and says that

1) The policy is meant for horses used for racing and breeding purpose.

2) It is important that the proposer insures all the horses without any selection.

3) The underwriter shall not go on risk unless a duly completed proposal form and a satisfactory detailed veterinary health and equestrian management reports are submitted.

4) It is desirable to have an independent investigators report on the reputation of the horse breeder. This will help insurance company to pre judge frauds in future.

5) It is very important that the veterinary doctor of the company visit the equine farm along with a veterinary specialist on horses. The retired veterinary experts from remount veterinary corps have lot of experience on equestrian clubs and horse breeding. Their services can be availed for inspection of the farm.

6) Usually the age of the horse is taken as 1 year at the time of acceptance of the risk.

Part 2: Rating Schedule

Category:

1) **FLAT RACERS & GELDINGS**

(a) 2 Year old - 6% including Riot & Strike & Terrorism
(b) 3-5 Year old - 6.25% includingRiot & Strike & Terrorism
(c) 6-8 Year old - 6.50%
(d) 8-11 Year old - 0.5% loading for each year of age in excess of 8 YRS
(e) Over 11 Years old - Not insurable.

* A gelding is a male horse which has been castrated.

** A race (as for horses) on a level course without obstacles

2) **STALLIONS & BROODMARES**

(a) Up to 8 YRS - 5.50% including Riot & Strike & Terrorism
(b) 9-15 YRS - Load 0.5% for each year of age in excess of 8 YRS
(c) Over 15 YRS - Not insurable

* A stallion is an uncastrated male horse

**A Broodmare is a mare kept for breeding

3) **YEARLINGS**

As on first January - 7.5% for full year including Riot & Strike & Terrorism Following the date of birth

* A racehorse that is one year old, dating from January 1 of the year in which it was foaled in

4) **UNBORN FOALS**

From 180 days of certified - 15% for full year including Riot & Strike & Terrorism

Pregnancy to 1 year

* UNBORN FOALS: a foetus beginning on day 40

** A baby horse is called a foal (Colt -male, Filly-Female)

5) **FOALS**

(Only if foal in-utero is not Already covered)

(a) 24 HRS TO 3 MTHS - 12% for full year including Riot & Strike & Terrorism.
(b) 3 MTHS to 12 MTHS - 10% for full year including Riot & Strike & Terrorism.

6) **TRANSIT RISKS**

Rail &/or road within - 0.50% per transit.
India limited to arising
Out of accidents to on
Carrying vehicle/horse Box only.

7) **ADDITIONAL COVERAGE**

(a) Dry coated animal - Load 25% of applicable premium.
(b) Patchy sweaters - Load 25% of applicable Premium
(As advised by Veterinary Surgeon)

8) **OPERATIONAL COVERAGE**

All operations to be insured for 2/3rd of the value of horse, normal maximum age for Operational cover is 2 years. Cover is for the operation and 30 days thereafter.

a) Firing - 0.50%
b) Casting and Firing - 2%
c) Castration - 2%
d) Castrations of RIGS - 15%
(Subject to return of 10% for no claim)
e) Robday or roaring - 2.5%
f) Removal of ovaries - 15%
(Subject to return of 5% for no claim)
g) At and over 3 years - Load 0.50% per each year of age up to maximum 5 years.

* Firing in equine practice means that hot irons were put on the front tendons. It is a very old fashioned treatment when horses have injured their tendon. It is supposed to work by causing an inflammatory response to stimulate healing.

** Robday or roaring in a horse with severe paralysis, the laryngeal airway may collapse during strenuous exercise causing severe respiratory embarrassment.

*** Castration is a surgical procedure performed by a veterinarian that is defined as the removal of the testicles of a male horse

9) **DISCOUNTS**

1) Where cover is restricted - 25% discounts.
To accidents only For items 1, 2, 3.

2) Group Discounts:

Group of 10-29 horses - 5% discount
Group of 20-29 horses - 10% discount

Group of 30-39 horses - 15% discount
Group of 40-49 horses - 20% discount
Group of 50-59 horses - 25% discount
Group of 60 or more horses - 30% discount

10) **SHORT PERIOD RATES**

One month's cover - 25% of annual rate
1-3 months cover - 50% of annual rate
3-6 months cover - 75% annual rate
Over 6 months cover - full annual rate.

11) **EXCLUSIONS**

1) Osteoporosis and kumrie NOT to be insured under any circumstances.

2) No insurance shall be granted for operational risk covers like Castration, pin Firing etc. if an animal is not already insured.

12) **SPECIAL GUIDELINES**

1) Unborn Foals can be insured only if the mare is also insured with the same company.

2) For insurance of unborn foals the endorsement given below should be attached to the Policy.

"Notwithstanding anything herein stated to the contrary it is hereby declared and agreed that this policy is extended to cover the unborn foal of the following Mare/s, certified pregnant at 180 days to the stallion/s whose name/s is/ are mentioned alongside for a sum stated against each against being still-born or dying from the commencement of this endorsement to the expiry of the policy.

Name of the Mare	Name of the Stallion	Sum Insured on Mare	Sum insured on unborn foal

It is a condition precedent to Liability that visual evidence by a Veterinary Surgeon of the existence of the expelled foetus at 180 days or later be produced when claiming for the loss of or unborn foal.

It is further declared and aged that in case of twin foals no compensation shall be payable unless both are lost."

❖ Discounts: Where cover is restricted to accidents only for items 1, 2, 3 means: covering Flat racers and geldings, 2. Stallions and Broodmares, 3. Yearlings.

❖ Transit risks: Including air-travel: @ 1.00% including Riot & Strike and terrorism risk.

This should cover Road, including travel by Air. The cover is restricted within India. This will cover our usual risk namely accident illness, or disease during the period of transit.

❖ If Air travel has to be extended beyond Indian territories then the coverage will be from STABLE TO STABLE @ 2%. The coverage will be accident illness, or disease, including Riot & Strike, terrorism risk (Normal policy coverage).

Part-3. Proposal Form

The proposal form is always submitted with the veterinary health certificate.

The proposal form has details of Insurable horse. Its name and breed, Colour and other marks on the body, Pedigree certificate, Age in years, present market price and proposed Sum Insured.

Then there are Ownership questions, details of the trainer, Stable details, Stable management details, Details of other horses in the possession of the Insured, Vaccination and Deworming details and details of the pregnancies of the animal. Period of Insurance and a declaration from the proposer that his animals are sound and healthy.

The second part of the proposal form is Veterinary Health certificate. This is very important and is to be provided by a qualified Veterinary doctor; preferably an Equine specialist. This certificate certifies the health of the horse, market value, stable sanitation, identification of the horse nutritional aspects, castration and fitness.

Part-4

This is an actual policy with wordings, conditions, schedule, coverages and exceptions.

Coverage and Exceptions: The Company indemnifies the insured against

the loss sustained as the result of the death occurring during the period of insurance of the horse described in the schedule from accidental sickness or death during the specified period and the geographical area.

There is also Disability cover if specifically opted by the insured and additional premium has been paid for this peril.

The permanent disability of the horse arising out of accident provided the indemnity is limited to maximum of 80% of the market value or the sum insured, whichever is less.

The liability of the insurance company does not exceed the Sum Insured set against any horse in the schedule of the market value. Immediately prior to the accident, disease or illness.

Exceptions:

The company shall not be liable under this policy in respect of-

1. Loss resulting from or arising out of-

(a) Where the underwriters shall have expressly agreed to the destruction of the animal, or

(b) Where an insured animal suffers an injury or is afflicted with an excessively painful disease and a qualified veterinary surgeon appointed by the underwriters shall first have given a certificate that the suffering of that animal is incurable and so excessive that immediate destruction is imperative for human reasons.

Provided that in all such cases (a) and (b) the underwriters shall be given the opportunity of having a post-mortem and autopsy examination carried out by their veterinary surgeon should they so desire?

(2) This insurance does not cover death directly or indirectly caused by, happening through or in consequence of

(a) Any surgical operation unless conducted by a qualified veterinary surgeon and certified by him to have been necessitated solely by an accident, disease or illness and to have been carried out in an attempt to preserve the animal's life,

(b) the administration of any medication unless by a qualified veterinary surgeon(or experienced personnel directed by him)) and certified by the veterinary surgeon to have been of a prophylactic nature or necessitated by accident, disease or illness, as used herein, medication includes any drug, hormone, vitamin, protein or other substance other than unadulterated food or drink,

(c) Poison

(d) Malicious or wilful injury whether or not caused by any assured,

(E) (i) ionizing radiations or contamination by radio-activity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel,

(ii) The radioactive, toxic, explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof.

(3) Unfitness or incapacity to fulfil the functions or duties for which the animal is kept or employed or loss of use

(4) Accident, illness or disease sustained or contracted elsewhere than in INDIA.

(5) Overloading, unskillful treatment, wilful neglect, wilful poisoning, firing,'

(6) Transport except land transport for flat racers and gelding with proper care and supervision.

(7) Use of the animal for purpose other than those stated in the schedule here to without the consent of the company in writing'

(8) (a) loss due to death caused by Equine infections anemia (EIA). This disease is deemed to be covered by the policy from the time a negative certificate is produced in respect of the Horse to the company. Without any additional premium being charged.

(b) loss due to death caused by osteoporosis or kumarie, or depreciation in value due to contracting osteoporosis or kumarie prior due to any other cause.'

9(a) any accident or any loss or destruction of our damage to any property whatsoever or any loss or expenses whatsoever resulting or arising therefrom or any consequential loss.

(b) Any legal liability of whatsoever nature-

Directly or indirectly caused by or contributed to by or arising from ionizing radiations contamination by radio activity from any nuclear

waste from these combustion of nuclear fuel, solely for the purpose of this exclusion combustion shall include any self-sustaining process of nuclear fission.

10) any consequence of war invasion act of foreign enemy hostilities or wrinkle operations (whether war be declared or not) mutiny, strike, riot, civil commotion, insurrection ,rebellion, revolution, conspiracy, military or upsured power martial law or state of siege or any of the events or causes which determine the proclamation or maintenance of martial law or state of siege.

The Insurance by this policy expires at Midnight on the date of expiry specified in the Schedule of the contract.

Specific Exclusions:

1. Diseases contracted prior to and within 15 days of commencement of risk.

2. Diseases viz.Glanders, South African Horse Sickness, Rinderpest Anthrax, Black Quarter, Tetanus etc. Are covered by policy if the Horse is successfully inoculated and veterinary certificates are submitted to the insurance company.

Global perceptive: A deep study of bloodstock insurance in global market revels that the policy to cover bloodstock is similar in the placement of high value horses and large complex schedules. Whether these are racehorses, broodmares, stallions, young stock, show jumpers or dressage horses, which support their business needs and reflect their operational requirements. Some of the items, which are clubbed or tailor-made to present effective policies are:

- Riding schools
- Livery Yards Stud Farms
- Pony club centers
- Competition yards
- Race yards
- Private yards
- Riding/Dressage Instructors
- Horse owners

- Buildings, Contents & Stock cover on an All Risks basis.

- Liabilities including Public & Product, Employers' and Environmental

- Business Interruption to prevent a material loss affecting the day to day operation of your firm.

- Personal Accident to cover key groups or individuals amongst your staff, trustees or volunteers

- Goods in Transit & Livestock in Transit

- infertility cover and law of use

- Horse mortality and morbidity insurance covers

Optional coverages:

Air transit
Emergency colic surgery expense
Equine essentials enhancement
Horse equipment
Emergency evacuation
Necropsy and burial expense
Limited permanent disability
Medical/surgical and surgical only.

Claims Management

Dealing with the Bloodstock claims is the mast tedious in this business, due to high value claims and possibility of frauds.

The following are the required documents in the settlement of Claims:

1. Intimation letter within 24 hours of accident or death of the horse.
2. Copy of proposal form and policy form.
3. Veterinary Death Certificate.
4. Post Mortem Report from a Government registered Veterinary surgeon.
5. Pedigree certificate.
6. Purchase Bill
7. Valuation certificate.
8. Photographs.
9. Diet and Nutritional records.
10. Stable management inspection report.
11. Secret investigation and market reputation of the Insured.
12. Parentage tested report.
13. Annual valuation cord.
14. Veterinary Health Records.
15. Quarantine report in case of imports.
16. Vaccinations and Deworming Records.
17. Report of the Equine attendant.
18. Police report in case of suspicious death.

The indemnity is limited to 75% of the sum insured and no salvage is deducted from the Claim. TJ

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Wikipedia
Bloodstock - Clyde & Co
Bloodstock - Willis Towers Watson
PSU Horse Insurance Policy
Markel Horse mortality insurance
Indian Veterinary Journal
Insurance Regulatory and Development Authority of India

Metrics for Driving Performance of Life Insurance Sector

Ben Feldman – "Don't sell life insurance; Sell what life insurance can do".
Howard Wight – Life insurance is a combination of caring, commitment and common sense.

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Abstract

Metrics are important to achieve business objectives. Having a clear set of measurable and quantifiable performance metrics will allow a life insurer to adopt a course correction in case there are challenges in executing the strategic goals. The lower penetration of life insurance in a market like India, with a huge population needing protection cover, is a cause for concern. While this is an issue that has to be addressed on priority, life insurance organizations need to identify and evaluate a set of performance-based metrics that will enable them to achieve sustainable competitive advantage. There are a number of metrics available but insurers need to identify those that are important – metrics can also be classified as high priority, medium priority and low priority. Though there are a number of processes in the insurance value chain, the two basic processes – underwriting and claims - will need a greater level of scrutiny. Metrics will enable identifying the efficiency and effectiveness of business processes in insurance. Metrics can track operational performance of life insurance business over a period of time.

This research effort tracks the important performance metrics for life insurance companies and their relevance in evaluating business performance of insurers - in terms of whether the right policies are sold, whether service quality delivers value to customers and whether the

claims are made to customers on time.

Keywords

Metrics, Performance Metrics, Life Insurance, Value Chain, Business Processes.

Introduction

Life insurance plays a key role in nation building where the long term funds of households are channelized and substantial contribution is made to the investments in the country's infrastructure. Life insurance plays a crucial role in managing societal risks. Individuals rely on life and health insurance products to protect themselves against future uncertainties.

The Human Development Index 1990 has three dimensions

- ✦ To lead a long and healthy life
- ✦ To acquire knowledge
- ✦ To have access to resources for a decent standard of living

The insurance sector has a crucial role to play in meeting these dimensions. However, considering India's population, penetration of insurance is woefully inadequate.

India's life and non-life insurance penetration at 2.82% and 0.94% in 2019 was lower than the global averages of 3.35% and 3.88% respectively as per the government's latest economic survey.

In FY 2020, the Indian life insurance sector was approx. $ 80 billion on a total premium basis. India is the 10th largest life insurance market in the world and 5th largest in Asia. A Goldman Sachs report in March 2019 indicated that only 1 out of 40 people (2.5%), among those who could afford to buy a policy, was buying a policy every year. The total premium in Indian life insurance sector grew at a CAGR of 15% between 2019 and 2020.

Based on Malhotra Committee recommendations, the Indian insurance sector was thrown open for foreign participation in 2000, leading to sweeping changes in the insurance business model in the next decade. In March 2016, FDI cap on insurance was raised from 26% to 49%. In the 2021 budget, FDI in insurance has been increased to 75% so that unlisted insurers can access capital for growth and use the money for expanding distribution reach, invest in new product creation and technology deployment.

Insurance is a long-gestation and capital intensive business and after the pandemic, many Indian partners are not in a position to invest further capital in their companies. With the changes proposed in the budget, mid-size and smaller players can recapitalize themselves and compete effectively with larger players due to increase in the FDI limits. Banks can have a maximum of 30% shareholding in insurance companies; so raising the FDI limit will work in their favor.

Understanding the performance of life insurance sector using a metrics based approach is important for all business stakeholders. This research effort attempts to explore the key metrics for performance in life insurance sector. Unless performance is measured using quantifiable metrics, the insurance industry cannot grow business in an intensely competitive environment. The metrics will open the road map for insurance sector so that there is greater clarity about areas that need massive improvement.

Challenges for Insurance Sector in India

There are 24 life insurance companies and 33 non-life insurance companies in India. Intense competition has characterized the market after the liberalization of the sector. There is limited scope of innovation in products and pricing. Post sales service needs improvement if penetration of insurance has to increase in India. Rampant mis-selling has dented the trust, image and prospects of insurers.

In insurance business, a balance between short term risks and long term rewards is an essential pre-requisite. Estimating the quantum of future insurance claims is difficult. Offering the right products that have the right people to sell the product is the main challenge.

In India, the regulations focus on policing of inputs while little attention is given to outcomes. Regulation is more about capital infusion than making insurance sector progressive and high performing. Poor market conduct of insurance players leads to more stringent regulations and this ends up in a vicious cycle. This is the reason performance measurement of a life insurance company becomes pertinent from a non-regulatory stand point.

Regulators caution insurance companies from undertaking projects that are too risky, without a sufficient amount of capital. Today, insurance companies have to hold higher amount of capital for the risk that they bear. Low interest rates have reduced returns from investment incomes. Life insurance companies with long term commitments are adversely affected. These companies (particularly in the West) are adjusting their business models to a fee-based operation.

Impact of Digitalization on Insurance Sector

Today, only 2% of the Indian population buys insurance online. Over 65% of India's population is under 35. Digitalization has improved agent productivity by 10-15%. Technology has made the customer an active participant in the buying process. Customers don't buy insurance products but buy solutions. Digital sales have reduced operational costs; so, the premium difference between offline and online is 35-40%. Conversion of a sale can take place within a day in the online channel whereas in traditional channels, the process may take 7 days. Insurers are using Facebook and Twitter for receiving customer complaints and promoting new products and features. In life insurance, self-service technologies are becoming popular. Digital media adoption has resulted in savings of 15-20% in life insurance sector.

Need for Performance Metrics for Life Insurance

Commissions for renewal premium have gone up sharply. Agents are being compensated by private insurers for ensuring that persistency ratios are high. Mis-selling and spurious calling has adversely affected the credibility of the insurance sector. This has led to the need for customer care camps where buyers can be sensitized against misleading offers and gains. Some insurers have begun using a pre-issuance video verification call system to help customers understand the terms and benefits of the insurance policy. There is a need to revisit insurance processes and tweak business models to maximize customer value.

The insurance value chain comprises

- Front Office
- Policy administration
- Claims processing and pay out

Besides these core elements, support functions are required to ensure smooth operations of insurance firms.

Metrics enable evaluation of fundamentals of a life insurance company.

Claims processing plays an important role in customer satisfaction. Inefficiencies in claims management results from manual processes, multiple systems and legacy systems that are inflexible and are poor in data consistency. Claims processes are adversely impacted by large amounts of unstructured data and metrics that are not quantifiable. So, insurers are unable to derive useful insights from the claims experience. Lack of metrics for measuring the performance of the claims process is a challenge. End-to-end claims management solutions are needed now along with focus on performance indicators that can improve the claims process. The implementation of advanced fraud detection technologies help in controlling fraud related expenses which reduces premium rates.

Using metrics, insurers can use tactical and strategic decisions to improve claims efficiency. Key performance indicators are used to measure the effectiveness of business processes. Insurance firms can use metrics to benchmark themselves against competitors and

also identify best-in-class practices. The key performance indicators can also highlight if the company is using technology to its advantage. Insurers can also use balanced score card elements like processes, finance, customer satisfaction and innovation.

What you cannot measure, you cannot control. Measuring performance will be useful for insurance businesses to reconfigure their operating model and sharpen their competitive edge.

Pre-Requisites for Developing Performance Metrics for Insurance

Key performance indicators must be quantifiable, well-defined and relevant to the line of business. They must be communicated throughout the organization. Metrics specific to insurance industry are important.

1. Goals those are clear and quantifiable
2. Analyse the importance of metric on the business
3. Integrate performance metric with existing business framework
4. Create an enabling work culture that can support measurement and control of the metrics
5. Based on data, insurers have to make informed decisions

Metrics in Life Insurance

Performance of insurance products is generally evaluated during a claim. The important metric in insurance is customer satisfaction measurement post claim. Swiss Re has highlighted the need for a standard framework for communicating the performance of life insurance companies. Profitability of life insurance sector is known only after meeting policy obligations. Boston Consulting Group has developed an insurance excellence tool. This can enable companies to evaluate performance based on their strategic priorities related to operational efficiency. The tool will enable an insurance firm to assess the gaps in performance.

Managerial practices and measures must be periodically reviewed. Insurers have formal and informal means of control. They include organisation structure, operating manuals, standard operating procedures, charters and budgets. Insurance companies operate organization divisions and sub divisions. The responsibility for profit must be delegated to units at lowest possible level along with expense budgets and well defined objectives Kasturi (2006).

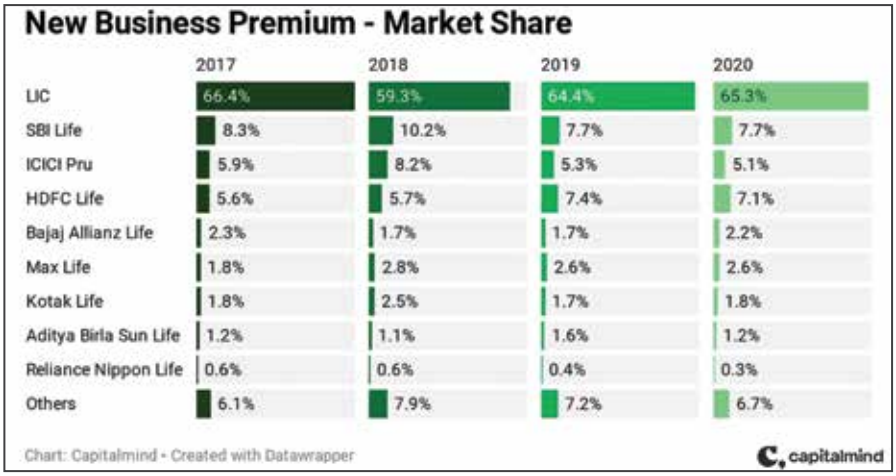
Metrics like profit from underwriting, ROI, ROE and annual turnover are gaining prominence now.

Sr No	Performance Metric	Explanation	Additional Remarks
1	Solvency Ratio	How much cushion an insurer has in the form of assets to meet future liabilities.	How much cushion an insurer has in the form of assets to meet future liabilities.
2	Market share	Size of premium income and investment will indicate financial strength of insurer.	Insurer's share in total premiums collected by the market
3	Persistency Ratio	Measures the proportion of customers who continue with insurance policies for a specific duration	This reflects an insurer's service standards and is a measure of trust customers have in the insurance company.
4	Claims settlement Ratio	Based on number of claims settled and value of those claims. For example, if there are 1000 death claims and the insurer has settled 970 claims, the claims settlement ratio is 97%.	We can use claims data submitted by insurers to IRDA. This metric indicates credibility of the life insurer, quality of underwriting and sales processes

5	Surrender Ratio	The proportion of surrendered policies in the average assets under management.	A lower ratio is better.
6	Expense ratio	It is the expense of management divided by the gross premium.	Expenses of management refer to commissions, and operational and administrative expenses.
7	Net promoter score	Measures degree of customer satisfaction by understanding if customers will advocate life insurance products to peers/ other customers.	Indicates level of customer centricity and reliability.
8	Incurred claims ratio	This indicates the ability of the insurer to pay claims. It is computed as a percentage of the value of claims paid against the total amount of premium collected in a given year.	Incurred claims indicate the value of claims paid against total premium collected by the insurer.

Growth in gross written premium (GWP) indicates growth of business. GWP consists of new business premium (NBP) and renewal premium (RP). Growth in NBP indicates that business momentum is on the higher side.

VNB (Value of New Business) margin is another important metric. It is calculated by dividing the value of new business by that year's annualized premium and it indicates the profit margins of the company. Example – if the VNB margin is 20%, then this means that if the insurer underwrote new business premium for a mix of products of Rs 100 in a year, the expected profit over the lifetime of that business is Rs 20. VNB margins indicate the product mix of a company.



Source: https://www.capitalmind.in/2020/12/icici-pru-life-insurance-demystifying-the-life-insurance-sector/

Other Metrics for Insurance

1. Commissions paid to agents

2. New policies sold per week, per month, per quarter, per year and per agent

3. Retention Rate= (CE – CN) x 100/ CS

CE = number of customers at end of period

CN = number of new customers acquired during period

CS = number of customers at start of period

4. Policy lapse ratio - This ratio indicates the number of policies that

get renewed compared to the ones that don't get renewed.

5. Average customer satisfaction – It can be measured as the number of clients who are satisfied with their experience compared to the total number of respondents surveyed.

6. Average policy size – Price of all policies sold during a certain time period divided by the number of life insurance policies sold.

7. Average cost per claim – measures how much insurance company pays out for each claim filed by customers. This metric helps assess the risk associated with each type of policy and adjusts the price of the policy accordingly.

8. Claims and Operating Expenses combined ratio as a percentage of premium income and commonly used by insurers. This is a measure of how well the company is performing in its day to day operations.

9. Investment income ratio (investment income divided by net premiums earned) takes investment income into account.

10. The Policy Sales Growth measures how many new policies are sold over a defined period of time and compares this to a target value. This helps to determine if sales targets are met. The metric can be defined based on the number of new clients, a measure of number of new policies sold or a combination of the two. Renewal policy growth can be measured separately. The policy sales growth can be used to encourage healthy competition among agents.

11. Underwriting speed refers to the number of business days within which the underwriting decision should be made as defined by the company. Speed of approval is important for customer satisfaction but also for agent and agency success. A faster approval time leads to more revenue generation.

Key metrics: Listed life-insurance companies

Companies	Gross written premium (₹ bn)	Net written premium (₹ bn)	APE (₹ bn)	VNB (₹ bn)	VNB margin (%)	Embedded value (₹ bn)	AUM (₹ bn)	Persistency ratio (61st month) (%)
SBI Life Insurance	207.3	204.4	39.8	7.5	18.8	298.6	1,864	60.8
ICICI Pru Life Insurance	144.8	141.2	33.7	7.1	26.3	226.8	1,655	57.5
HDFC Life Insurance	160.5	157.9	33.3	8.4	25.1	233.3	1,506	53

Data for six months ending September 30, 2020

Source: https://www.valueresearchonline.com/stories/48901/how-to-analyse-life-insurance-companies/

Insurance revenues are from total premiums (GWP – Gross written premiums) earned from policies issued. There are two categories: New business premiums and renewal premiums. A new business premium is premium that is due in the first year of the policy. Renewal premiums are those that are earned in subsequent years when the policy is in force.

Some amount of total premium is used by insurers to buy insurance from a re-insurer to diversify the risk of paying a large obligation due to large claim.

Annualised premium equivalent (APE): APE is that part of the premium that pertains to the current year. This metric is needed because a life-insurance company gets premiums from two types of policies - regular policies and one-time payment policies. One-time payment insurance policies involve a lump-sum payment for an insurance that may last many years. It is calculated by:

APE= Sum of regular annual payments + 10% of single-premium

Value of new business (VNB): How profitable are new policies? VNB is the present value of all future profits expected to flow to shareholders with respect to new policies written during the year. VNB margin is another metric used to examine the profitability ratio of a life-insurance company.

VNB margin = (VNB/ APE).

Assets under management: It is the carrying value of all the investments of a life-insurance company.

Persistency ratio: It is an indication of how long customers continue to keep policies active.

Claim-settlement ratio: This is the total number of claims paid out against the number of claims filed by policyholders of the insurance company.

Non-financial performance indicators

- Growth in number of policies
- Market share
- Customer satisfaction
- Growth in number of branches
- Average number of policies/ agent/ or channel
- Speed in policy processing and delivery; Growth in new products, speed in settlement of claims, Employee training; No of customer complaints, no of new policies (new business premium), retention of agents.
- Average time from submission to quote
- Average time to market for new product
- Average time to handle a claim
- Simplicity and meaningfulness of metrics
- No of customer grievances per 10000 new business policies (year on year); average claims settlement time.

Business profile can be measured using metrics like gross written premiums, operating expenses, sales channel mix. Performance of business support functions, core business functions and efficiency of outsourcing initiatives can also be considered. Efficiency of IT applications can be evaluated – for example - IT costs, IT applications used and IT service level agreements etc. To measure the degree of customer centricity, metrics like Net Promoter Score (NPS) can be deployed. Turnaround times for claims processing can also be a useful metric.

Premiums must be at a level that will cover claims as well as leave sufficient profit for shareholders. This is at the core of performance management system. Risk aspect is a part of PMS. Risk appetite is a foundation for allocating capital and measuring performance. Claims related ratios, solvency, general efficiency and sales performance are performance measures. Effect of digitalization can also be a key performance metric.

Embedded value is a framework that quantifies future cash flows of insurance products and the cost of capital for business lines with varying risk profiles. It is the value of a life-insurance company to its shareholders. Embedded value represents the value from the business sold by the insurance, if it were to stop writing any more business. The more business an insurance company generates, larger is the embedded value. Embedded value is sum of net worth and present value of all future profits to shareholders from existing book. Future profits are calculated based on persistency, mortality, interest rates and equity market performance. Embedded value is only calculated on policies already sold. Insurers can use the embedded value philosophy to increase the value of the company.

Key Recommendations

Every insurer needs to identify the right set of metrics that can enhance the effectiveness of business operations. A few recommendations have been given below so that life insurance companies can maximize customer value. Each of these initiatives will benefit if there is a metric to examine their ROI.

Description	Recommendations	Possible Implications
Underwriting-related	• Focus on underwriting profits (difference between premiums collected on insurance policies and business expenses plus claims paid out) is essential in life insurance sector.	Metrics pertaining to effectiveness of underwriting processes
Regulation-related	• There is a need for greater regulation for distributing insurance products online.	Regulatory compliance can be a low-priority metric.
Technology-related	• Protection gap in India is the highest in Asia. Hence, there is a need to create awareness about the need for protection and engage with customers through digital platforms. • Indian insurance market is ready for a data-driven online revolution. New business process can be automated by integrating online platform with artificial intelligence and machine learning based auto underwriting system. • Mobile apps can compare premiums of life insurance plans and pay premium online. The app can help agents store sales figures, maintain a premium calendar and customer directory and provide notifications for premium payment due dates and lapsed policies along with alerts for customer birthdays. • What insurance needs today is need-based selling through self-service technologies. • Insurance companies should look forward to acquiring/ partnering with insur-tech start-ups and connecting with customers at a personal level so as to enhance their insurance experience. • Product innovations have to match risk profile of policyholders and distribution channels need re-engineering. Digital tools are needed to reduce costs and improve services.	Metrics related to technology interventions and their impact on business has now become crucial. Value provided by innovations can be measured using suitable metrics.
Agent-related	• It is now the agent's responsibility to make the customer understand all the ifs and buts of the policy. • The agent has to guide the insured in selecting the proper policy and add-on covers as well as discounts. In case of claims, the client has to be guided about the dos and don'ts.	Agents' performance has a substantial impact on business performance of life insurer. Improving productivity of agents is an area that needs to be addressed using a suitable metric.

	• Tablet based sales processes are being used where agents fill in the key and relevant information in the tablet and the system recommends the suitable plans. • Going forward, interactions will be phygital – physical + digital. Insurers need to partner with multiple service providers to offer end to end services meeting customer needs and not just products.	
Payment-related	• Policies with a pre-authorized premium deduction method like direct debit/ECS/ standing instructions and deductions from salary – these have a higher chance of survival than the ones where the customer initiates the payment every time.	Flexible payment options can contribute to customer engagement.
Service-related	• Insurance companies need to create better service platforms and cater to customer needs in a seamless fashion. • Prioritization of customer journeys and identification of operational drivers for improvement are critical. • Insurance sector will need rebalancing of distribution mix, rapid expansion, transitions of product mix, digital transformation, capital inflows and a customer centric approach.	Service quality will continue to be a critical parameter in life insurance.
Miscellaneous	• Persistency has now become the catchword in life insurance. With lowering of margins, focus is now on profitability rather than just growth. Earlier, the private insurance players concentrated on new business premiums alone. • The insurance business model must include customer retention strategies, huge capital requirements and risk pricing. • This is the best opportunity to use the motto of Atmanirbhar Bharat to train rural youth to become insurance agents.	There is an awareness that profitable operations of an insurance business will lead to growth.

Conclusion

Life insurance is a long term industry. Insurance sector is facing stiffer competition, challenges in accessing capital, digital disruption and a complex regulatory environment. The protection gap in India is wide. Therefore, the need for insurance across mortality and morbidity and longevity coverage will remain high.

2/3rds of urban India own life insurance; only 1/5th of them own term insurance and close to 53% are unaware of term insurance. This was the data garnered by the India Protection Quotient Survey conducted by Max Life and Kantar IMRB. India provides greater scope for insurance penetration and increase in density of insured persons. In 2015, the Indian government introduced Pradhan Mantri Suraksha Bima Yojana

(PMSBY) and Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJBY) to bring more people under the insurance cover.

By 2026, the working population between age group 25-40 years will reach 795.5 million – this will add strength to the Indian economy. As customers demand better service, insurers have to maximize their operational efficiency to improve productivity, grow business and make profits. Long term commitment from life insurance companies can build long term loyalty from customers.

Changes in consumer behavior, regulatory pressure, emergence of niche channels and digitization has led to the need for life insurers to invest in customer acquisition, marketing and demand generation and multi-channel collaboration.

Customers are concerned with life; insurers are obsessed with insurance resulting in a gap in between. Indian population is moving towards a savings trend. More personal disposable incomes will result in higher household savings that can be channeled into different financial savings instruments like insurance and pension policies.

As customer service will be an important metric for life insurance business, new technologies must be used to enhance service offerings. Flexible payment options for customers and availability of multiple channels for making claims will add customer value. Policy information must be consistent across all service touch points. Tracking claim status online will increase satisfaction levels of customers. Investments in digital innovations can lead to wow experiences for customers.

Insurance firms are operating in a highly competitive environment driven by cost pressures, digitalization and consumer preferences. In a competitive market, an insurance organization's sustainability is determined by the ability to quickly make informed business decisions based on historic information and future trends. But the information is spread across a plethora of systems. Firms must have a clear idea about metrics required to support the business. Customer centricity aligns a company's products and services with present and future needs of customers to maximize their strategic value. Organizations can define the behaviors, actions and decisions that create value. They can decide on the right metrics for measurement. Monitoring claims related ratios is an important performance metric. Dashboards can be used to highlight metrics that must be improved to improve business performance.

Metrics are used by an organization so that they can achieve their strategic goals by measuring the performance of activities that are crucial to achieve this goal. Understanding drivers for business success forms the basis of formulating the right performance metrics. Real time interventions can be made if metrics indicate that the business is moving away from its goals. Metrics will enable informed decision making by insurance firms so that they can achieve competitive advantage.

Performance Management Systems have to be linked to strategy.

Insurance sector has to improve performance measurement systems to cope with the stricter regulations on capital adequacy requirements and risk calculations. Effect of digitalization on performance management is an area that is fecund for research.

Life insurance distribution is at an inflection point. Ability to measure, plan, manage and enhance performance through a metrics driven organization can determine long term survival of an organization. The speed, efficiency and effectiveness of key business processes will play a role in the transformation of insurance businesses as performance-oriented businesses. TJ

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How Rising Health Insurance Prices Impact Insurance Industry

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For the second most populous country in the world, the health expenditure in India is amongst the lowest at 3.54 percent of the Gross Domestic Product (GDP). Of this, the share of public expenditure is about 1.28 percent of the GDP, indicating that healthcare in India is largely privately owned. In such a market, health financing tools become an important social security measure. It not only enables access, but also generates demand for improved healthcare and ensures financial risk protection. An efficient health insurance market, therefore, reduces the 'out of pocket' healthcare expense burden on individuals, which can otherwise push households into poverty. But, in India, the 'out-of-pocket' expense on healthcare is a high 62 percent, which is indicative of the fact that health insurance in India is producing sub-optimal outcomes. Commercial health insurance is headlined not only by under-penetration-only 137 million lives were covered in FY20-but also market failure. The growing instances of market failure can be evidenced through health risk selection (cream skimming), shallow coverage, high administrative costs and low burning ratios. A huge part of the problem is the unmet need to

build and strengthen a regulatory structure in the healthcare sector, the lack of which is currently impeding the way the private insurance market is working in the country. This is one of the reasons why despite increasing medical costs, health insurance has seen fewer clients. This is also why health insurance cover continues to focus narrowly on hospitalization expenses (in-patient care) instead of the broader spectrum that includes preventive healthcare and out-patient costs which is essential for long-term sustainability of health financing.

An effective pricing of premiums requires a central repository of medical records of individuals, and the life insurance industry is looking for government support to build the database. This would be a game-changer as the insurers would be effectively able to underwrite risk based on more granular data and offer a better premium quote to individuals. Commercial health insurance is headlined not only by under-penetration-only 137 million lives were covered in FY20-but also market failure. The growing instances of market failure can be evidenced through health risk selection (cream skimming), shallow coverage, high administrative costs and low burning ratios. Even within this narrow scope of coverage, and despite important reforms to make health insurance more comprehensive, health insurance products come with complex constructs laced with waiting period exclusions, exclusions in terms of non-payable items, and other contractual disallowances compounding information asymmetry further leading to market failure. This is also why health insurance sees the highest bucket of complaints after life insurance policies. In fact, a huge number of the complaints in health insurance originate while making a claim, pointing to a lack of understanding on the part of the insured. Even within this narrow scope of coverage, and despite important reforms to make health insurance more comprehensive, health insurance products come with complex constructs laced with waiting period exclusions, exclusions in terms of non-payable items, and other contractual disallowances compounding information asymmetry further leading to market failure. This is also why health insurance sees the highest bucket of complaints after life insurance policies. In fact, a huge number of the complaints in health insurance originate while making a claim, pointing to a lack of understanding on the part of the insured.

In-Depth Health Data

In the absence of in-depth data, a healthy individual may end up paying the same premium as one not having made a full disclosure. However, insurers can offer better quotes if individuals share their medical records to a centralised repository that has proper data protection rules and can be accessed by the insurers. While banks and non-bank finance companies have access to centralised databases that can be used to understand the repayment capabilities of individuals, insurers to a large extent rely on the self-declaration of past medical records from prospective policy buyers before underwriting a policy. While financial data and its availability have seen a fair bit of evolution over the last 7-8 years, aggregation of health data is still at a nascent stage. There is a lot of ground to cover especially on health data. If an individual is willing to share his medical data and signs up for sharing data with some central repository, and supposing an insurer is able to tap into those repository, based on consent of the prospective customer, and if regulation permit a wider range of price nuanced quote, then policies can be better priced. This would encourage a pickup in life cover, particularly among the younger population as life insurance is a long term product and unlike other variants of insurance cannot be repriced easily. The pandemic-declared COVID-19 has resulted in a health crisis, destroying healthcare infrastructure and economies worldwide. It is the third recorded outbreak of a coronavirus, after

SARS in 2002 and MERS in 2012 which limited their havoc to specific regions. Till now, the virus has infected more than 147 million people and claimed more than 3 million lives.

Premium Hike in Health Insurers

India's corporate health insurance market has picked up steam and is expected to grow at a compound annual growth rate of 20% to Rs.65,000 crore by financial year 2024-25 (FY'25). The corporate health insurance market is pegged at Rs.31,000 crore. In March 2021, health insurance companies in the non-life insurance sector increased by 41%, driven by rising demand for health insurance products amid the Covid -19 surge. Today, India ranks among the top three countries which have been hit worst by coronavirus. This health crisis has resulted in high inflation, especially medical inflation, and unemployment in the country. One of the biggest challenges of Covid-19 is its huge treatment cost which can take a toll on the finances and mental well-being of different sections of society, especially the poor and the middle-class. The growth reflects that now more and more people are starting to consider a health insurance plan as essential as other necessities for survival, in a country where insurance penetration stood below 4% in the pre-covid times.

CRITICAL ILLNESS	DEATHS PER YEAR	ESTIMATED COST OF TREATMENT
Cardiovascular diseases	24 lakh	₹3.5 lakh
Lung diseases	11.8 lakh	₹20 lakh
Cancer	5.56 lakh	₹10 lakh
Liver diseases	2.17 lakh	₹18 lakh
Kidney diseases	2 lakh	₹4 lakh

How Much Does a Rs 15 Lakh Super Top-up Health Insurance Plan With Rs 5 Lakh Deductible Cost?

Policy name	Indicative annual premium
Liberty General - Health Connect Supra	Rs. 1,588
Future Generali - Advantage Top Up	Rs. 1,615
HDFC ERGO - My Health Medisure- Super Top Up	Rs. 1,650
Manipal Cigna - Super Top Up Plus	Rs. 1,758
Star Health - Super Surplus	Rs. 2,525
ICICI Lombard - Health Booster	Rs. 2,936
Tata-AIG - MediCare Plus	Rs. 2,983
Care Health Insurance- Enhance	Rs. 3,573
New India - Top Up	Rs. 3,717
Universal Sompo- Super Healthcare*	Rs. 4,770
IFFCO -Tokio - Health Protector Plus	Rs. 5,073
Cholamandalam MS - Super Top Up- Supreme	Rs. 5,660
United India Super Top Up Mediclaim	Rs. 6,136

A hike in health insurance premium may not be on the cards, at least for now, with the Insurance Regulator not in favour of such a move at present. With claims and losses mounting, some insurers were looking at the possibility of revising premium on health insurance this year. However, the IRDAI is not keen on a rate hike in the middle of a pandemic. The Regulator has been closely the monitoring the settlement of health insurance claims in the wake of the pandemic to ensure that it is done speedily by insurers. As of now, there has not been any increase in premium rates for health insurance this fiscal. A number of insurers had hiked rates last year and some were considering doing so this year. Getting adequate life and health insurance protection to safeguard financial interests during emergencies has been one of the most important lessons of the Covid-19 pandemic. And as far as health insurance protection is concerned, a policy with a sum insured of at least Rs 5 lakh-Rs 7 lakh is considered desirable, especially if you stay in an urban area.

Revision in Premium

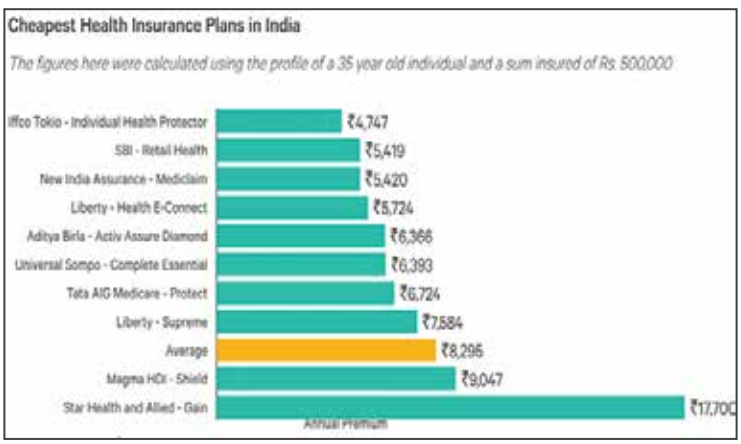
Many insurers had revised premium by about 10 per cent to 15 per cent last year after meeting IRDAI norms for standardisation of exclusions. However, with the rising Covid claims and faced with underwriting losses, some of them were looking at a fresh round of increase in

premium. Non-life insurers have been facing a surge in Covid-related health insurance claims since the last one year. While it had abated in between, claims rose to a much higher level during the second wave of the pandemic. Insurers have received over Rs. 23,000 crore of Covid-related claims till date. A recent report by ICRA also noted that underwriting losses for general insurers are set to rise. Despite underwriting losses, the sector is expected to report marginal return on equity (3 per cent to 4.5 per cent), largely supported by investment income. In the last two years, health insurance has successfully transformed from being a good-to-have product to a must-have commodity – all because of the rising Covid-19 cases across the country. People are in a state of panic and fear that the novel coronavirus can infect them anytime anywhere and have realized that the only way to stay financially protected against the pandemic is by investing in a comprehensive health insurance plan. Interestingly, even the number of people renewing their health insurance policies this year is much higher than ever before. As it turns out, this could not have happened at any better time! As per available data, of all the family-floater health insurance policies sold last year, over 85% of the policyholders renewed their policies before expiry. Similarly, approximately 80% of the customers with individual health insurance plans renewed their policies before the due date. For customers with health policies older than a year, the renewal rates were 94% for individuals and 97% for family floater plans. Copay & deductibles are two such situations that are overlooked while purchasing a policy. An informed decision is after all what saves you from paying the whopping amount and reap optimum policy benefits.

'Wellness Points' For Discount on Renewals

As medical costs increase every year, it is important to have a health insurance policy and to stay fit. According to a study over 20% of people who purchased health insurance plans during pandemic renewed their policies through wellness points this year. Policyholders are now using their 'wellness points' during health policy renewal to get insurance premium discounts. This tells us how policyholders are slowly and gradually shifting toward a preventive mindset that deviates from traditional health policy offerings. According to the International Data Corporation (IDC), the Indian wearables market has grown 144.3% year on year in 2020. The quarter from October to December 2020 was the most important in the country for the wearables category, with triple-digit growth. According to guidelines on preventive and wellness features, insurers are asked to incentivise the insured who is eligible for the reward points and meets the wellness criteria. Insurers are rewarding policyholders with a variety of services known as wellness benefits, which are simply a value-addition to the health insurance coverage provided at no additional cost.

Some notable plan names and features include Max Bupa Health Insurance ReAssure's - Live



Health Benefit, which provides a discount of up to 30% on renewal premiums. Similarly, Aditya Birla's Health Activ Assur Diamond and Activ Health Platinum plans offer renewal premium discounts of up to 100%. You can also purchase HDFC Ergo Health's Optima Restore and Manipal Cigna's ProHealth to save up to 8% and 20% on renewal premiums, respectively. Insurance companies are utilising wearables and health apps that provide benefits such as blood sugar monitoring, BMI, pedometer, behavioural counselling, and video/ teleconsultation with doctors, according to the study. Some insurers use external motivators such as rewards, monetary discounts, and digital badges to encourage customers to live healthier lifestyle. Insurers offer discounts on renewal premiums if the insured person exhibits healthy behaviours such as a number of steps per week, calorie count, and a healthy heart rate. Customers are also being enrolled in wellness programmes by insurance companies. These wellness reward programmes (WRP) are designed to encourage insured individuals to participate in certain activities to stay active and medically fit. Stress management, wellness points, preventive health check-ups, gym and yoga memberships and nutritional guidance are some of the elite features of new-age health insurance plans or wellness-oriented health covers.

Home Treatment Add-On Cover

According to IRDAI, non-life insurers can offer "homecare/ domiciliary treatment" or treatment at home as an add on cover afresh or to their existing policies. Homecare treatment is one taken at home for an ailment that normally needs hospitalisation provided that a medical practitioner advises the insured home treatment; there is a continuous active line of treatment with the health status of the insured monitored daily by a medical practitioner during the duration of home treatment; and that records of daily monitoring of the insured patient and the treatment given are recorded and signed by a medical practitioner. Norms for settlement of claims should be mentioned in the policy document and prospectus. We have seen how home hospitalization has been pivotal in handling the shortage of hospital beds and helping ease out the burden on the healthcare system and save lives. If people can add it in their health insurance policy, it will help more people to get the right treatment at home on time in case they are unable to get hospitalized. However, home health insurance policies already include home care treatment as an in-built feature of policy and helps make reimbursement accordingly. While this is not a mandatory feature, the coverage can vary from one policy to another.

Restoration Benefit in Health Insurance

There has been a constant rise in demand for high sum insured health insurance plans in India. More people started opting for health insurance plans of INR 1 CR, especially from people in the age bracket of 30-40 years. Along with a rise in demand for high sum insured, features that enhances coverage such as restoration benefit has also become quite popular. It is a common feature and is largely available with many health insurance plans in India. Also called the sum insured restoration, or recharge benefit, this benefit gives you additional coverage if you use up the sum insured. The restoration benefit is a coverage benefit wherein the sum insured gets restored or refilled after the original coverage is fully exhausted.

Let us see an example. If you have a health plan of INR 10 lakhs and you spend INR 11 lakhs in hospitalisation. Even then, the entire coverage of INR 10 lakhs would be available in the next policy year. However, if you need to claim again for say INR 4 lakhs in the same policy year, your health plan would not pay any further,

since you have exhausted the entire limit (of INR 10 lakhs) in that policy year. However, if you have Restoration Benefit after the entire sum insured of INR 10 lakhs is over, the insurer automatically refills the coverage for you to claim again in the same policy year. So, if you have Restoration Benefit, it works like a Stepney in your health insurance plan, i.e. a backup in case your primary coverage is exhausted. This would, therefore, reduce or eliminate your out-of-pocket expenses. Under most plans, the restoration feature is available if the sum insured is fully used up. If the sum insured is remaining, the restore feature would not apply on the second claim. For instance, say you have a sum insured of INR 10 lakhs and, on the first claim you use up INR 7 lakhs. Since INR 3 lakhs is remaining, the restore benefit would not apply on the second claim. If the second claim is INR 4 lakhs, INR 1 lakh would be your out-of-pocket expenses. Then, if you make a third claim, the restore benefit would be available. In fact, only in March 2021, there has been a phenomenal 41% rise in the health insurance industry and there has been a growing awareness and demand for health insurance plans in India.

Rs 1 Crore Sum Insured In Demand

Over the past year, we saw a steep upward trend in the sale of comprehensive health insurance plans. During the pre-covid times, the number of people who purchased comprehensive insurance plans was approximately 32%, while now after being hit by one of the biggest pandemics, this percentage has shot up to 55%. The data shows that Covid-19 has increased consciousness circling the importance of preventive health insurance in the country. Interestingly, in the last 12 months, Rs 1-crore health insurance plans have also successfully created a separate niche for themselves in the industry. Of all the health insurance renewals this year, 35% of customers enhanced the coverage and invested in Rs 1-crore sum insured health plans. Once a highly priced product, these plans are now easily available at affordable premiums – premiums as low as Rs 600 – Rs 800 per month for a 30-year old individual living in a metro city. The monoclonal antibody therapy and cocktail treatments, for instance, are not covered under the health policies.

This has also been possible with the introduction of the facility to pay premiums in easy monthly instalments. While earlier the customer had to pay the entire premium as a lump sum, the premiums can now be paid in monthly, quarterly, or half-yearly instalments as well apart from the choice of paying the premium yearly. The second option is not available to all. If you have a pre-existing disease like diabetes or hypertension, you'll not be eligible for top-up option of Rs 1 crore policy coverage. There are few other limitations as well. "First, it is meant only for fit people. Second, if you have an existing health policy, you cannot port it to Rs 1 crore cover policy. Third, in some policies there could be restriction of room to a single private A/C room. Cost of hospitalisation has been going up quite dramatically, especially in case of critical illnesses. So, higher

COMPREHENSIVE HEALTH INSURANCE PLANS
(For 60-plus individuals; Rs 5 lakh sum insured)

Company	Plan	Premium (Rs)	Exclusive features
Star Health Insurance	Arogya Sanjeevani	22,703	All day-care procedures covered; multiple sum insured options; ICU/ ICCU expenses up to 5% of sum insured (max. Rs 10,000 per day)
Aditya Birla Health Insurance	Activ Health Platinum-Enhanced	38,836	No co-payment; restoration feature; health coach; homoeopathy; tele-consultation; modern treatments like robotic surgeries, oral chemotherapy covered
HDFC Ergo Health Insurance	My:health Suraksha Silver Smart	37,116	Recovery benefit; sum insured rebound; preventive health check-up booster
Max Bupa Health Insurance	Health Companion	38,790	No cap on room rent; increase of base sum assured in case of no claim bonus; restoration of up to Rs 5 lakh

the policy coverage, the better. However, affordability is equally important. Although a health plan with a base cover of Rs 1 crore will be expensive, the combination of a small base cover along with a higher top-up plan is how insurance companies and insurance distributors have made the product affordable for customers.

Insurer/ Plan	₹1 crore health cover annual premium(₹) for a		
	30-year-old, non-smoker male living in Delhi	30-year-old male, wife	30-year-old male, wife and 1 child
Religare Health Insurance Care Advantage	13,590	22,895	29,899
Max Bupa 1 Cr. Super Saver	10,992	14,729	18,003
Aditya Birla Health Insurance 1Cr. Sum Insured	9,552	14,223	17,512

Premium Comparison of a 30-year-old Individual with Rs. 10 Lakh Sum Insured		
Insurer	**Plan Name**	**Premium**
Religare Health Insurance	NCB Super Premium	9,092
Max Bupa Health Insurance	Health Companion	10,379
Aditya Birla Capital	Active Assure - Diamond	7,938
Premium Comparison of a 30-year-old Individual with 1 Crore Sum Insured		
Insurer	**Plan Name**	**Premium**
Religare Health Insurance	Care Advantage	13,590
Max Bupa Health Insurance	1Cr. Super Saver	10,992
Aditya Birla Capital	1 Cr. Sum Insured**	9,552

Cost of Senior Citizen's Insurance Plans

Diabetes, blood pressure and cardiovascular diseases are common in the elderly and those in the lower socio-economic strata suffer more. Mobility issues, dependence on younger generation amid lockdown etc. affect their access to routine primary healthcare and essential care for other ailments. Senior citizens are considered to be more prone to getting infected with Covid-19 and the possibility of requiring hospitalization is high in them. Already, there is a low interest rate scenario in the country and on top of it, the rising medical expenses owing to Covid-19 has impacted the finances of most of the retired senior citizens. Only 18.9% of the elderly had health insurance and therefore may not be able to bear large expenditures on health. 27.5% of people aged 80 years or above are immobile and 70% of elders are partially or wholly financially dependent on others. But, at higher age, the premium is typically more than for those who buy medical cover at a younger age. Getting a high cover comes at a high price for the senior citizens and the health cover plans also come with a waiting period because of comorbidities in the seniors. There are exclusive senior citizens health insurance plans that may be explored by them. The exclusive senior citizens health insurance plans generally come with a co-payment feature which requires one to pay a portion of the hospital bill before the insurer pays the rest. They may also have several sub-limits in them or longer waiting periods. And, if such plans don't have such restrictions, then the premium could be on the higher side. Given the higher premium rates, it is crucial to keep in mind that health insurance should provide auto restoration of the sum insured once exhausted during the pandemic or demand lower premiums to contribute. The super top-up plan is highly recommended for senior citizens since, in their case, the risk of getting hospitalised is higher. The super top-up plan can reduce the higher premium rates that come due to increased age. Moreover, you can also use super top-up plans to upgrade your group health insurance plan, as in many cases, the sum insured offered by group health plans is comparatively lower and insufficient due to the increased medical treatment expenses.

PLANS FOR SENIOR CITIZENS
(For up to 65 years of age; Rs 5 lakh sum insured)

Company	Plan	Premium (Rs)	Exclusive features
Star Health Insurance	Star Health Senior Citizens Red Carpet Plan	21,240	No pre-medical check-up required; coverage for modern treatments such as uterine artery embolisation, HIFU, robotic surgeries, etc.
Care Health Insurance	Care Senior Health Insurance Plan	27,689	Automatic recharge of sum insured; lifelong renewability; only 30 days waiting for any illness except injury
Bajaj Allianz Health Insurance	Bajaj Allianz Silver Health Plan	27,886	Cumulative bonus of 10% of sum insured for every claim-free year (up to 50% of sum insured); 5% family discount
TATA AIG Health Insurance	TATA AIG MediSenior	29,170	Covers critical illnesses; offers free-look period with portability facility
Aditya Birla Health Insurance	Aditya Birla Activ Care	36,476	Health care check-up; personal health coach; healthy returns programme, where one can earn up to 21% of the premium

Group Health Covers' Cost Up

India's overall workforce includes 477 million individuals, 85% of which are unorganised blue collared employees.. A mere 15% of the total workforce is covered under such programs. 405 million employees across sectors are still not part of such corporate programs. This shows there is a long way ahead of such programs. As there is a direct correlation between health and performance, organizations must look into ways to increase the reach of such programs and how to move the needle on employee well-being. Corporate health programs include health insurance, telemedicine, pharmacy access, gym access and health check-ups, and includes various sectors like manufacturing, BFSI, logistics, agriculture, trading among other industries. At present, the corporate health and wellness market in India is worth Rs.55,000 crore. However, with the pandemic forcing employers to ramp up health covers for their employees.

Rising Covid claims are pushing up the cost of group health insurance for employers by 25%-40% in the wake of the second wave of the pandemic. This, even as new demand for employee health cover is coming from smaller employers like small and medium-sized enterprises (SMEs) and MNCs with less than 50 employees. Small business owners are realising that the Employees' State Insurance Corporation (ESIC) programme under which they are covered is inadequate and are opting for commercial group cover. Companies that have adopted the full work-from-home model get a relatively lower hike on premium as risk exposure is lower as well as the claims raised. The rise in premium is because the second wave has made health insurance less profitable. On an average, Insurance industry has recorded a 30% rise in the premium price of group health policies as compared to the previous year. On requests, they provide add-on covers where tele-medical consultations and elderly care are covered, against an additional premium. This also includes consultations for mental illnesses. The loss claim ratio for group health business stands above 100%, that is, 104-110% in June 2021, as against 90%-95% in June 2020. The fresh demand is cushioning the price rise. A high demand could lead to a minimum price revision of 12%-17%, where it could go up to 30%-40% if there is not much pickup in demand. There is an added pressure on employers to provide inclusive wellness care for employees who work from home. The cost of treatment is higher in metro cities than non-metros.

In July 2020, the IRDAI also made it mandatory for insurance companies to offer COVID-19 specific short-term health insurance plans namely Corona Kavach Plan and Corona Rakshak Plan. These two plans were specially designed to help policyholders meet the healthcare cost incurred due to the corona virus . The pandemic has changed a lot of assumptions we have about our health. What we are seeing now is a definite increase by millennials who are adopting good health cover early. Health insurance is a living benefit product and provides people with a much-needed financial backup at times of medical emergencies. So, you don't need to empty your bank account, or borrow money from your relatives

or think of taking up a loan. A health insurance policy will cover you at all times and will ensure that quality healthcare remains accessible and affordable in the long term. When buying a health insurance plan, it is imperative to assess the size of the cover. It is best to go with a broad spectrum critical illness cover rather than choose one aimed at a particular disease. The cancer protection plans from some health and life insurance companies are priced lower than a critical illness plan, but will only cover one disease. Cancer is not the only ailment that threatens you. Lifestyle-related risks include heart ailments, diabetes, kidney and liverrelated illnesses. Hence, a wider coverage would be a wiser pick.In the recent past, we have witnessed a huge requirement for home care treatment due to shortage of medical facilities where people had gone under home quarantine or even had made an ICU facility at home. One of the most important money lessons that the ongoing pandemic has taught us is the need for having the right type of health insurance policy and having an adequate amount of it. In a significant development, automation of faster claims processing, adoption of artificial intelligence, internet of things, cloud computing, blockchain and digital platform solutions, including DigiLocker has helped India's health insurance sector to grow faster, reshaping the future of insurance. It is not possible for insurers to pay inflated prices as the insurer will honour a claim up to a 'reasonable cost'. Though policyholders may get reimbursed for a good part of their expenses, the burden of the difference between the normal price and current inflated price will fall on them. TJ

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Microinsurance - Life and Non-Life Insurance: Challenges and Opportunities With Reference to Kanchipuram District[1]

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Introduction

"Microinsurance - Protection from specific risks, paid for by regular premiums, specifically designed for low-income individuals", Churchill (2006). Today microinsurance offering various insurance products for rural population and socially weaker section of the society. It is very simple insurance cover with low premium and low cap.

The concept of micro insurance has shown a stable growth in many countries in the past decade. In India, the concept has gained popularity in the recent years. Many insurance companies are launching micro insurance products as per the directions of IRDA to concentrate 20 per cent of their insurance business in rural areas thereby fulfilling their social and rural obligations. A number of market research studies had been conducted which reveals that India has an untapped insurance market owing to low penetration of health insurance products. A

[1] Synopsis of Ph. D. Thesis 'Micro Insurance: Life and Non-Life Insurance - Opportunities and Challenges with respect to Kanchipuram District', submitted by Dr. K. Arivalagan to the Alagappa University, Karaikudi, Tamil Nadu.

study by UNDP, GTZ and Allianz AG (2006) concluded that India has the most dynamic micro insurance sector in the world. The UNDP study on "Potential and prospects for Micro insurance in India" stated that up to 90 per cent of the Indian populations are still excluded from the insurance market in India.

Micro Insurance Scenario at Global Level

The origin of micro insurance is similar to that of micro-credit. According to Churchill (2007), micro insurance has existed since at least the 1800s, when mutual protection schemes co-insured by the poor workers. In several countries microinsurance schemes were already a part of the process of designing and implementing increasingly more consistent and incorporated social protection systems. For example, in Rwanda and Ghana, the state implemented nation-wide social protection schemes and in Bangladesh, Grameen bank had established a separate wing called Grameen Kalyan (village welfare) which implemented micro insurance schemes through women groups in the villages. Micro insurance Centre (2007) had estimated that around 135 million of the low-income people in developing countries have used micro insurance products.

Microinsurance Scenario in India

In India, a few micro-insurance schemes were initiated, either by non-governmental organizations (NGO) due to the need in the communities in which these organizations were involved. These schemes have now gathered momentum partly due to the development of micro-finance activity and partly due to the regulation that makes it mandatory for all formal insurance companies to extend their activities to rural and well-identified social sector in the country (IRDA 2002). As a result, Micro-finance institutions (MFIs) and NGOs are negotiating with the for-profit insurers for the purchase of customized group or standardized individual insurance schemes for the low-income people. Although the reach of such schemes is still very limited, their potential is viewed to be considerable. The micro insurance regulations of 2005 & 2015 was a pioneering approach by the Insurance Regulatory Development Authority (IRDA). In 2002, IRDA issued a regulation on rural and social sector obligation norms that mandated every insurance company and it was further streamlined in 2015.

Microinsurance Scenario at Tamil Nadu

An UNDP press release, based on field investigations and public consultations in rural areas in the states of Orissa, Rajasthan and Tamil Nadu concludes that Tamil Nadu was found to be relatively developed in microinsurance compared to Rajasthan and Orissa, where coverage is less than one percent. Government of Tamil Nadu and Government of India have joined hands to provide health insurance cover to 2.5 million families below poverty line in the state under the "Kudumbasree Poverty Eradication Mission (Roth. J, 2005). All the insurance companies in Tamil Nadu which are actively engaged in micro insurance. All the insurance companies except LIC have stopped working on life micro insurance not because people are not interested in taking life micro insurance but because they cannot meet the expenses or they have attained the target set by IRDA in rural areas or because not many people came forward to act as agents or intermediaries for providing life micro insurance.

Statement of Problem

What happens when a poor family's breadwinner dies, when a child in a disadvantaged household is hospitalized, or the home of a vulnerable family is destroyed by fire or natural disaster? Every serious illness, every accident and every natural disaster threatens the very existence of poor people and usually

leads to deeper poverty. That's where "microinsurance" comes in.

Globally, the bottom of the pyramid represents nearly 2.7 billion people who live on 2.5 USD or less per day. C K Prahalad, the noted management guru, highlighted the need for businesses, governments and donor agencies to stop thinking of the poor as victims and instead perceive them as resilient and creative entrepreneurs as well as value demanding consumers. Across the world, amongst the various financial products targeted at the bottom of the pyramid, credit seems to be the most popular and in demand. The growth of microcredit and microinsurance investment thus marks only the beginning of a significant trend and presents a unique opportunity to diversify risk while achieving strong returns. Around that 90% of the Indian population constituting of 950 million people are not covered by insurance and 88% of Indian labour force are still left out from any kind of insurance (UNDP, 2007). But so far almost 90 percent of the Indian population is uninsured.

It was found that the average insurance literacy was only (36.75 %). Insurance coverage in low and middle income countries is only around 1-2% which is quite low and the poor rely on their savings, mortgaging their assets or arrange emergency loans from informal sources (Munich Re, 2005).

Potential global market size of microinsurance market is estimated to be around $40bn. For India the annual potential market size of microinsurance is around USD 1 billion. The breakup is as follows: Life Insurance - USD 0.24 to 0.32 bn per year; Health - 0.20 to 0.28 bn per year; Crop - 0.20 bn per year; and Livestock - 0.1 to 0 .12 bn per year. Insurance markets in India are showing clear signs of expansion, requiring insurers to be innovative in their approach towards achievement of sustainable growth.

The NCAER (2008) survey showed that even though Indian households are good savers but unfortunately they are financially at risk due to lack of planning and financial education. Insurance literacy being a part of the overall financial literacy can help individuals take better decisions to secure themselves and their families thereby increasing their monetary security. Secured families pay more attention to the schooling of their wards which in turn improves the social and demand future for their children. Secured families are also more active in their communities and promote economic development of their community (Hogarth, 2006).

Reliance on government and other aid agencies is also detrimental as post-disaster the relief is both delayed and inadequate. Past experiences such as the 2004 tsunami and 2001 earthquake in Gujarat, India show that in spite of massive relief efforts, just 60% of families received timely and adequate aid (World Bank, 2003; Fritz Institute, 2005). Insurance stands out as a more honorable option of managing unforeseen problems as compared to depending and waiting for assistance. Also apart from corruption another fillip side due to reliance on government and other aid agencies is that it discourages individuals from taking preventive actions to avoid risk (Mechler.R, 2005).

Even after so many disasters witnessed in India during the last 5 years, there is no improvement in insurance penetration in India. Strong regulations on microinsurnace, obligations of insurers towards rural and social sectors and various initiative of government, the Indian microinsurance market is still not reached the level as expected. How to address this problem and to expend the reachability of microinsurance is the statement of problem of this study.

Need and Significance of the Study

Present world is full of risks either financial risk or physical risk. Physical risk can be prevented

and managed if the person in sound financial conditions. But the financial risks cannot be managed if the person not in sound financial conditions. Financial difficulty, illiteracy and lack of awareness on insurance preventing them to buy any types of insurance unless forced by someone like NGO or SHG to buy insurance that to their loan amount, if the borrower dies during the course of loan period and to recover the same from the insurance companies. This type of study will help the insurance companies and government agencies as well as the general public to understand factors to influence the growth of microinsurnace market and also extend the insurance coverage / benefits at least at basic level those who never covered under any type of insurance.

Scope of the Study

In 2012, the Indian government stated 22% of its population is below its official poverty limit. The World Bank, in 2011 based on 2005, PPPs International Comparison Program, estimated 23.6% of Indian population or about 276 million people and lived below $1.25 per day on purchasing power parity. In our country, 70% of the populations are residing in the villages / rural areas. Even some of the villages do not have power supply even after 72 years of Independence.

Literacy in India is a key for socio-economic progress and the Indian literacy rate has grown to 74% (2011 Census figure) with recent reports of 80% literacy approaching the world average rate of 84%. Even the literacy rate is increased to 80% but the insurance literacy has not reached among our population especially village population. Insurance literacy enhances the protection of life and property from various risks by proper insurance arrangements. This study will focus on to understand the level of awareness on microinsurance among general public, insurers and insurance agents / NGOs, to analyse the reasons for non-performance of microinsurance as expected and seek suggestions and scope to improve the performance of microinsurance.

Review of Literature

P. Venkat Rao, Research Student (10/1983), one of the major tasks confronting the third world countries is the problems of bringing about improvement in the lives of weaker section of the society and to identify the situation of disadvantaged groups, their awareness, their deprivation of the welfare schemes of the government and the predominant attitudes of these groups to much welfare schemes. **Brown W & Churchill C (2000a),** the study says that, in the drive of sustainability and profitability of micro insurance, the MFIs are diversifying their lines of financial products and insurance has the potential to improve profitability by reducing loan losses and replacing clients need to draw down savings for emergencies. **Brown W. (2001),** poor are highly vulnerable and their vulnerability does not translate directly into demand for microinsurance and MFIs lack the skills and resources to develop or manage all but the most basic products of microinsurance. **Alexia Latortue (12/2003),** over two billion poor people worldwide lack any type of formal social security protection. **ILO (2004a),** out of 80 listed insurance micro products, 45 covers only single risk whereas the package of risk covers only 2%; **ILO (2004b),** study focused on the microinsurance schemes operational in India. The study highlighted that 512 schemes are operational in India. **Rajeev Ahuja & Basudeb Guha Khasnobis (6/2005),** penetration of most of the microinsurance schemes are concentrated in the southern region then rest of India. **Craig Churchill, Edited (2006),** this compendium on microinsurance housing various factors influencing the microinsurance presented by various authors.

Objectives of the Study

- To analyze the Performance of Insurance Companies in India

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- To find the association between the Demography Variables and Buy microinsurance
- To evaluate various microinsurance schemes of Governments and suggest improvements.
- To appraise the compliance of microinsurance regulations and social / rural sector regulations
- To find the level of awareness of microinsurance among the Public/ Agents/ NGOs & Insurers
- To identify and analyse the reasons for unreached of microinsurance
- To identify and analyse supply side constraints, Challenges and Opportunities to improve the Performance of microinsurance
- To develop a SEM model to find the inter relationship among Lack of Social Security, Insurance Protection and Growth of microinsurance
- To design and develop new products under microinsurance
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- To design and develop new products under microinsurance

Methodology

This study is primarily based on the primary data from the stakeholders of microinsurance viz Insurer – Insured – Insurance Agents / NGOs. Since the Kanchipuram District has uncontrolled samples, the researcher obtained samples on random basis for primary data collection and secondary was obtained from various resources.

Primary Data Collection

There are several methods of collecting primary data, particularly in surveys and descriptive researches. Some of the methods are observation method, interview method, questionnaire method, scheduling method and so on. For the descriptive type of research, the best and suited method of collection of primary data is predesigned questionnaire method. Under this method, samples are collected and the different magnitude is measured with respect to the whole population. Questionnaire method of data collection is quite popular and adopted variedly by research workers, industry and even government. For this research work, the primary data was collected from three stakeholders of microinsurance (1) General Public (2) Insurance Agents / NGO who is selling microinsurnace and (3) Insurance Officers.

Primary data collection from Public

The research area divided into 13 taluks. Each taluk is divided by villages, panchayat sand municipalities. Total villages in the research area are 1187 villages. The researcher randomly has chosen 2 to 4 villages in each taluk. 560 samples, randomly samples are collected and 500 are valid samples used in the study.

Details of Taluk wise data collected from the public

Taluk wise quantity of data collected from the public			
Name of Taluk	**Nos.**	**Name of Taluk**	**Nos.**
Chitamur	47	Kanchipuram	27
Lathur	48	St. Thomas Mount	26
Thirukazhikundram	35	Kattankolathur	35
Thiruporur	46	Walajabad	45
Madhuranthangam	40	Sriperumbudur	29
Achirapakkam	45	Kundrathur	28
Uthiramerur	49	**Total**	500

Primary Data collection from Insurance Agents / NGOs

To understand the problems or issues to market the microinsurance products, the researcher designed a questionnaire specific to agents and NGOs representative / agents who are actively working as carrier of insurance products among the general public in the research area. The questionnaire contains basically demographic details of the village but specifically on three aspects to evaluate themselves and suggestions viz (1) Awareness on microinsurance (2) Reasons for microinsurance has not reached and (3) How to improve the performance of microinsurance

Details of data collected from Insurance Agents / NGO Agents

Taluk wise no. of data collected from the NGO Agents			
Name of Taluk	**Nos.**	**Name of Taluk**	Nos.
Chitamur	30	St. Thomas Mount	15
Lathur	15	Kattankolathur	8
Thirukazhikundram	24	Walajabad	9
Thiruporur	10	Sriperumbudur	10
Madhuranthangam	11	Kundrathur	16
Achirapakkam	22	**Total NGO Agents**	208
Uthiramerur	28	**Insurance Agents Total**	192
Kanchipuram	10	**Grand Total**	400

Primary Data collection from Insurance officials

There are more than 100 offices in the research area consisting of Life Insurance Offices, Non-Life Insurance Offices and Standalone Health Insurance Offices. 95% of offices are government owned insurance company offices and rest private insurance companies. 3 types of insurance offices in the research area viz (1) Micro offices / one man Offices / Satellite Offices, (2) Branch Offices and (3) Divisional Offices. The Micro offices / one man offices / satellite offices are situated in rural areas to cater the need of rural public. All these types of offices are owned and operated by government insurance companies and no such types of offices are operated by private companies. Branch office and Divisional office are controlling offices of micro office / satellite offices / one man offices apart from doing their own

business. The microinsurance policies are sold on higher level at micro offices because they are very close to the rural population. The researcher designed the data collection based on the above narratives from the insurance officers working in the research area. Details of data collection are listed below.

Details of data collected from Insurance Officers

Designation	MO in charge	BM/ Divisional Manager	Officers	Total
No. of Data	28	55	217	300

Collection of Secondary Data

The researcher interested to analyse the microinsurance performance on life, non-life and standalone health insurance sector. But the secondary data for microinsurance was available only for life insurance and not available for non-life insurance either in IRDA annual reports or insurance companies annual reports. Hence a simple descriptive analysis limited to life microinsurance considered.

As per IRDAI (microinsurance) Regulations 2005 and 2015, the microinsurance products sold under this regulation will be considered to complying insurer's obligations towards rural and social sector under IRDAI (Insurers obligations to Rural and Social Sectors) Regulations, 2002 and 2015. Hence the researcher has carried out the descriptive analyse of insurers compliance on obligations towards rural and social sectors. All the secondary data collected from insurance companies' Annual reports, Public disclosures, General and Life insurers Council reports & IRDAI Annual reports.

Limitation of the Study

This study is limited to microinsurance which itself major limitation of this research project. Majority of public data collected from the villages in rural area. The rural people are quite apprehensive about answering to queries such as their level of income, savings as part of monthly income, and their employment details and so on, it took more than the optimal time for the researcher to convince them and elicit required answers from them. Another set of data collected from the Insurance Agents / NGOs agents, it has become big task for the researcher to make them to understand the purpose of the study and the requirement of their feedback and suggestions on the study. The answers were obtained after several visits to their places and this process was also taken a lead time of the researcher. The third set of data collected from various insurance officers working in private and public sector, nonlife and life insurance, standalone health insurance.

The secondary data for microinsurance has been collected from IRDAI website and its Annual reports, Regulations, Insurance companies websites, Insurance Information Bureau, General Insurance Council and Life Insurance Council, Microinsurance Academy, National Insurance Academy etc.

This research is limited to microinsurance and confined to Kanchipuram District only, which may question the chosen sample size representing the whole population. Moreover, the rural India is characterized by its heterogeneity spreading across the states.

Primary data collected from the three different segments connected with microinsurance, viz (1) Public, (2) Agents/ NGOs, and (3) Insurers were analysed by using various tools and the results are discussed in here. Major findings are highlighted in this report with appropriate suggestions to improve the awareness, unreached and to improve performance of microinsurance. Also suggested, new microinsurance models based on the current needs.

Findings of the Study

Findings on Public data

➢ In the research area, 64.8% are in the age group of up to 40 years which is ideal group of marketing microinsurance products; 59.5% are females and 40.5% are males; 88.2% are married and rest unmarried; on types of families, 43% are joint families and 57% are nuclear families; on size of the family, 33.4% families are having 4 members and 23.2% families are having 3 members. On education level, 73.4% studied up to HSC level and on employment, 38% are self-employed and 26.4% private employees.

➢ On earning, 47.6% are earning up to Rs.5000/- per month ; on savings per month, 97.8% are savings some amount from their monthly income; 73.6% are interested to invest their savings in some form of investments; 43.4% are interested to purchase insurance cover from their savings; 50.4% are interested in personal accident insurance.

➢ 83.6% are interested to buy insurance from government owned non-life insurance companies and 77.6% on government owned Life Corporation of India. In particular, 50% are interested in procuring non-life insurance from United India Insurance Company and 77.6% from Life Insurance Corporation of India.

➢ 58.2% are already having microinsurance cover. 37.2% are having life insurance cover and 34.6% are having personal accident cover.

➢ People purchased microinsurance cover at the advices of NGO represents 19.4% and SHG 36%. The motives behind the purchase of microinsurance, the Rational Motive, which motivated more people to buy microinsurance.

➢ Reasons for purchase of microinsurance, Security placed at 42.5% followed by Savings 41.2%. On claims made, just 2% only made claim in their policy / schemes. Among the population, 77.4% are members of SHGs and 51.4% are NGOs.

➢ 51.8% are covered under Chief Minister health insurance schemes and 23.5% are covered under Pradhan Mantri Jeevan Jothi Beema Scheme and claim made just 10.2% in the schemes.

Findings on Agents/ NGO data

➢ 52% samples represent NGO members working as Insurance Agents and 48% represents Insurance companies Agents. 74% of NGOs group size is below 50 members.

➢ In the blocks, villages having population less than 5000 are 52.9%; BPL families below 300 families are 31.3%. Families covered under Chief Minister Health Insurance Scheme, 71.6% families are covered in the villages having less than 500. The total families covered under Pradhan Mantri Jeeva Bhima Insurance Scheme in the blocks represents 20.7% of below 500 families and 79.3% represents above 500 families. Total families covered under Pradhan Mantri Suraksha Yojana in the blocks represents 68.3%, 20.7% and 11.1% of below 500 families, 501 to 1000 families and above 1000 families respectively.

➢ 74.5% NGO members involved in micro finance activities. 73.0% Agents / NGO members interested in marketing microinsurance products. Out of 73.0%, majority of agents are NGOs and not insurer direct agents. The reasons for that NGO actively involved with the general public on day to day basis through their members for various activities including advising insurance because of microfinance.

➢ 41.8% of NGO/agents interested in marketing Health insurance products followed by Personal Accident Insurance at 30.3% and the least interest shown to property insurance at 8.1%. 39.3% demand for Health and 26.7% and 28% for Personal Accident Insurance and

Life Insurance respectively. Less demand for crop insurance @ 33% followed by 25% for pension.

➢ 79.5% demand for micro insurance products of government. 43.2% demands the premium be adjusted in the loan amount offered by the microfinance companies. 75.3% required training to market the micro insurance

➢ Based on mean ranks, 1. Factors of Awareness on microinsurance, Role of microfinance institution in marketing microinsurance are the most important variable and the least variable is Regulations on obligation of insurers on Social and Rural. 2. Factors of Reasons for microinsurance has not reached, People think, insurance is not beneficial like savings is the most important variable and the least variable is Insurance premium on higher side, 3. Factors of to improve the microinsurance, more publicity / create awareness about microinsurance the most important variable and the least variable, if premium paid directly, commission to be adjusted, and 4. Between Factors of Awareness of microinsurance, Unreached and To improve the Performance of microinsurance, To improve Performance of microinsurance is the most important factor and the least factor is Awareness on microinsurance.

Findings on Insurer Data

➢ 9.3% of officers are working as Micro Office in charges, 18.3% of officers are working as Divisional / Branch Managers who are controlling the Micro In-charges and 72.3% of officers are working in Branch Offices and Divisional Offices located in the research area. 14% of officials are working in life insurance companies and 86% of officials are working in non-life insurance companies. 93.3% are Government companies and 6.67% are Private companies carrying out insurance business viz Life, Non-life and Standalone Health Insurance in the research area.

➢ Based on mean score, Various Products under Microinsurance the most important variable in factor of Awareness on various aspects of microinsurance, and the least variable is Role of microfinance institution in marketing microinsurance; Huge premium is still untapped under microinsurance is the most important variable in factor of Strength of the microinsurance and the least variable is Microinsurance market is presently seller market; Rural / Social sector population are lacks in insurance knowledge is the most important variable in factor of Weakness of the microinsurance and the least factor is Most of insurance schemes offered by Government are not viable; 70% of population still in rural India and uninsured is the most important variable in factor of Opportunities of microinsurance and the least variable is SHG/NGO located in every village to promote microinsurance; High claims ratio on government schemes is the most important variable in factor of Threats on microinsurance and the least variable is Excessive costs towards managing microinsurance portfolio; No enough knowledge about insurance among general public is the most important variable in factor of the Reasons for microinsurance has not reached the target and the least variable is Insurance premium is on higher side; more publicity / Create awareness about microinsurance the most important variable in factor of, To improve the performance of microinsurance and the least variable is Removal of excess, exclusions and excluded diseases.

Findings on Secondary Data

K. Nagaraja Rao, 5/2010, "Challenges in Designing Need Based Products in Life Insurance for inclusive growth in India", Southern Economist highlights that, huge untapped rural potential in the life insurance market. This is yet to be discovered and explored.

Though most of the life insurance companies surpassed the rural target; the insurance penetration is till ranging around 25% of the insurable population. The policies of life insurance companies are still not rural centric catering to the specific needs of the people. With a view to popularize life insurance, the companies need to study the rural market, analyze the specific needs of each segment and design innovative products suiting to the requirements of the people with objective of inclusive growth . Even after 8 years of publishing this paper, still the insurance companies are not centric to rural public as demonstrated and proved in the present primary data analysis.

The Insurance Regulatory and Development Authority of India (IRDAI) has issued two specific regulations viz (1) IRDA (Insurers Obligations on Rural and Social Sector) Regulations amended in several times and new regulations was issued in 2015 (2) IRDAI (Microinsurance) regulations originally issued in 2005 and new regulations was issued in 2015. Both the regulations stipulate certain norms / regulations towards rural and social sector insurance. Important provisions of these regulations, its compliances and shortfalls are given:

Analysis of compliance of IRDAI
(Insurers obligations on Rural and Social Sector) Regulations, 2015

Regulations on Rural and Social Sector Obligations on Insurers	
Provisions	All the insurance companies should comply the norms stipulated in the IRDAI (Insurers Obligations on Rural and Social Sector) Regulations 2015 from the inception of the insurance company. This is applicable to all life, non-life and standalone health insurance companies.
Compliance	As per IRDAI Annual Reports, all the insurance complied the norms of IRDAI except one or two. The same was reflected in the public disclosure statements of all insurance companies.
Shortfalls	1. All the compliances of most of the insurance companies are just mere statue and statistical compliance of the statutory requirement without real facts of compliance. 2. There is no check by the IRDAI on the compliances of statistics submitted by the insurance companies either through investigations or verification. 3. The data which are not qualify under the Social and rural norms such as motor third party insurance, workmen compensation etc. are taken as compliance on rural and social obligations of insurers. 4. In most of the public disclosures of non-life insurers including IRDAIs Annual Reports does not contain the details of lives covered under social sector compliances but IRDAI approves that these companies are complied the social sector norms and reports the same in their Annual Reports. 5. Even the IRDAI Annual Reports has just started in the year 2015-16 publishing the details of compliance of social and rural sector with minimum details. 6. In life sector, social lives covered are given as (1) Rural Sector (2) Urban sector. But in the regulations, as per definition clause, it has been clearly defined which one is the rural sector to comply the norms. Whereas while providing the statistics, the life sector has not divided the rural population less 5000 and above 5000 as per regulations tier V & VI cities, just clubbed the entire sector in rural as single unit and claimed compliance. 7. Even the IRDAI has not having the statistics on compliance of its own regulations from the data of regulations came into effect.

From the above analysis, we conclude that the regulations are just as compliance without any real objective and result oriented. IRDAI has to investigate the compliance of regulations with real objective for which the regulations has been issued instead of just like window shopping.

Analysis of compliance of IRDAI (Microinsurance) Regulations, 2015

Regulations on Microinsurance	
Provisions	All the microinsurance products will be eligible to qualify compliance of Social and Rural Sector Obligations.
Compliance	There are no details either in the IRDAI Annual Reports, Annual Reports of Insurance Companies and Public Disclosures statements of Insurance Companies about which all are the products of microinsurance has taken by the insurance companies to comply the norms of Rural and Social Sector obligations.
Shortfalls	1. There is no firm commitment by IRDAI through their microinsurance regulations on insurers to comply minimum requirement of selling microinsurance products. 2. No details of premium booked under microinsurance and claims paid by the insurance companies. 3. No details about the policies approved by the authority since its inception except yearly addition. 4. No details about the policies withdrawn by the IRDAI for various reasons.

Findings based on primary data of Insurer on Major Challenges and Opportunities

Opportunities	Challenges
• 70% of rural population still uninsured • Huge Premium is still untapped • NGO/ SHGs represent every part in the rural/ social sector	• People think, insurance is not beneficial like savings • No knowledge much about insurance among rural and social sector • Most of them illiterate or studied up to primary • Excessive management cost • Distribution channels are not trained

The basic challenges are creating awareness and redefining the distribution channel to suit the need of rural / social sector. Excessive management cost can be overcome by insuring more people may result in more premiums. Considering the huge potential of premium is still untapped insurance companies should evolve various methods to create the awareness on insurance.

The results of primary data of NGOs / Agents and the few studies analysed in this thesis, highlights that, NGOs / SHG groups are penetrated nook and corner of every village to popularize microfinance. At present, Microinsurance has taken some place in the rural and social sector means, the credit has to go to NGOs / SHG groups only, not to any other agencies including direct agents. The insurance companies has to take NGOs / SHGs into confidence by way of increasing their commission rate on microinsurance policies and quick settlement of the claims, then they can easily reach the rural mass.

Further the agency data results demonstrated that the agents / NGOs are lacking in marketing microinsurnace products due to no special and specific training was given to them to market this specific product to specified groups. Proper and timely training to NGO members

will improve the performance of microinsurance.

Bridging the Research Gap

This study identified the research gap as to test the awareness on various aspects of microinsurance, to find the reasons why the microinsurance has not reached as expected and suggestions to improve the performance of microinsurance among Insurance Officers and Insurance Agents/ NGOs. Apart from this, a SWOT Analysis by way of questionnaire method was conducted exclusively on Insurance officers' to understand their views and issues.

Factors	Agent	Insurer
Various aspects of microinsurance	Very much aware	Very much aware
Unreached of microinsurance	No enough knowledge about insurance among general public	No enough knowledge about insurance among general public
To improve the performance	More publicity / create awareness about micro insurance	More publicity / create awareness about micro insurance
RESULTS OF SWOT ANALYSIS ON INSURERS ON MICROINSURANCE		
Strengths	Huge premium still untapped under microinsurance	
Weaknesses	Rural / social sector population lack in insurance knowledge	
Opportunities	70% Population still in rural India and uninsured	
Threats	High Claims ratio on Government Schemes	

From the above, we can understand that, both the insurer and the agents are aware on various aspects of microinsurance and stand on together in single point without any differences (1) No knowledge about insurance among general public (2) More Publicity / create awareness about the microinsurance is required at present to enhance the microinsurance reach and improve the performance. The study further proved that, there are 70% people are still uninsured and huge premium is untapped till now which is the opportunity for the insurers and the rural population think insurance is not like savings and government schemes are high claim prone which are weakness of insurers on microinsurance.

Strategies to Improve the Performance of Microinsurance

STRATEGY – I: Increase the Agency force on microinsurance and increase the Offices in rural sector

Primary Data collected for this study from the Insurer and Agents and correlated among the factors viz (1) Awareness (2) unreached and (3) Improve the performance of microinsurance, the t value on higher side on Awareness followed by Improve the Performance. This results show that both the agents and insurers are much aware on microinsurance, however the microinsurance concept has not reached the buyer as expected.

More than 20 lakhs agents employed by Life Insurance and Non-life Insurance Companies. The total agents account for microinsurance – special agents – both for life and non-life are just 75,265 as on 31.3.2017.

No. of microinsurance Agents

Types	Private Insurer	Public Insurer	Total
Life	19301	15899	35200
Non-life	2771	32294	35065

Out of 20 lakhs agents in total only 1.75% represents as microinsurance agents. This 1.75% has to work for rural population accounting for 70% on total population and socially weaker section of the society.

No. of Insurance Company Offices in India

Types	Private Insurer	Public Insurer	Total
Life	6057	4897	10954
Non-life	1946	8518	10597
Specialised	0	83	83
Standalone Health	594	0	594
Total			**22228**

Out of 22,228 insurance offices (excluding specialized insurance offices) all over the country, only 374 offices (Life sector – 223 and non-life sector – 151) are in the rural sector i.e. tier V & VI cities. This also one of the main reasons for unreached and non-performance of microinsurance. The Government / Regulator should take concrete measures to reach the unreached by taking corrective steps including advising all the private and public sector insurance companies to open their offices and creature the avenues to reach the insurance to the rural by involving NGO members in insurance activities and educate the unemployed rural youths about the carrier in insurance sector as insurance agency.

STRATEGY – II: Increase the awareness among the microinsurance buyers

Case Study: 1

The "Demand for Disaster Microinsurance for Small Businesses in Urban Slums: The Results of Surveys in Three Indian Cities" [2] conducted in partnership between the All India Disaster Mitigation Institute (AIDMI), an NGO based in Gujarat, India and Stanford University California, USA supported by the Humanitarian Innovation Fund at the urban slums in three disaster-prone cities of India – Puri in Odessa, Guwahati in Assam and Cuddalure in Tamil Nadu in 2016. These cities were selected because they met two important criteria: each lies in a high-risk zone for cyclones or flooding, and each had a community based organization with the capacity and motivation to participate in this programmer. The outcome of the study highlights that:-

1. Every one interviewed in Cuddalure wanted disaster management microinsurance whereas in Guwahati and Puri – 44% and 71% respectively simply said they would not be able to afford the price. The reasons for Cuddalure people acceptance, the awareness creation on insurance is better than other two selected places which were proved in the study conducted by IFMR Research, top 30 districts all over India by MFI Penetration, 14 districts were from Tamil Nadu and Cuddalore one among them. The MFI are focused on microinsurance cover the loan losses due to sudden death of borrower.

2. Most of them not aware of microinsurance and microinsurance for business purpose.

3. There is a need to create awareness for demand.

4. Beyond, creating demand, insurers should design suitable products and delivery methods.

5. It revealed that in the study, small informal business owners have suffered extreme loss in recent disasters.

When we compare the above study with current study, most of the points highlighted in the previous study till not achieved even at a reasonable level. The results of primary data collected among the public in the research area about the education level shows more than 50% are up to primary level.

Understanding the concept of insurance among this group is very difficult. Instead of making public announcement in the radio and newspapers and advertisement in TV Channels, the insurers along with the government agency has to organise street plays at the village level to communicate the benefits and advantages of microinsurance to reach the concept easily into their mind. Street play is time consuming and expensive little but the result will be long lasting.

STRATEGY – III: Monitoring the Regulations on microinsurance

The IRDAI – Insurance Regulatory and Development Authority of India – has issued two regulations on Microinsurance in 2005 and 2015. These regulations are just regulations but not having any cascading effects on insurers, if they fail to comply the regulations. There is no fine or penalty for non-compliance of the regulations. There is no special check by the IRDAI team to inspect the compliance. Mere reporting from the insurance companies is sufficient for IRDAI. IRDAI does not have data about the various microinsurance products sold by the insurance companies, premium and claims details, policy details like other portfolios of insurance from the inception. From 2017 only IRDAI started publishing just no. of policies / lives covered under microinsurance etc. IRDAIs active involvement is required to improve the performance of microinsurance.

STRATEGY – IV: Insurers attitude towards microinsurance needs to be changed

The preference of customers is changing towards investment policies in India. Customers also prefer annuities and family policies if the benefits are properly explained to them. In tune with the changing preferences, the distribution strategies also undergoing to accept the required changes. Bancassurance and alternate channels are on the ascendency and have great growth potential. Unlike in mature markets, the internet business is yet to catch up in India.

Most of the insurers particularly the private players eye on big premium with less work. The microinsurance products are very small, premium is very low but volume of work on higher side. Due to this reasons, most of the private players avoid microinsurance. Even the government has not taken much interest to involve the private insurance companies in selling microinsurance products. For example the PMSBY scheme was offered only by government insurance companies, since the premium is very meagre and involved high volume of work. The insurers' attitude particularly private companies' should change towards this small microinsurance. To popularize the microinsurance, the insurance companies need to study the insurance market, analyse the specific needs of each segment and design innovative products suiting to the requirement of people with an objective to inclusive growth.

STRATEGY – V: Agents/ NGOs/ Financial Institutions - should be concerned on Microinsurance

Regular agents are allowed by insurers to market microinsurance business apart from the exclusive microinsurance agents appointed to sell microinsurance. The regular agents never concentrate on microinsurance, since there is no pressure from the insurance company one side and another side low premium and high volume of work involved which preventing the agents to involve in microinsurance selling.

The NGOs/SHGs are involved in microfinance activities. Those who have availed microfinance, they are covered under Personal Accident insurance / Life insurance cover to secure the loan amount, in case of the borrowers sudden death. At present NGOs/SHGs are concentrating on this aspect only and not on insurance security in general for common man when he faces the unforeseen losses. NGO/ SHGs activities on insurance are restricted up to the loan amount alone but NGOs should broaden the scope for on insurance.

Case Study – II

IFMR Research – Centre for microfinance in collaboration with BIRD – Bankers Institute of Rural Development of NABARD has collected MFI and SHG data to analyze penetration over time by region and state, drilling down the district level. The data collected by Map of Microfinance Distribution in India has taken a detailed stock of operation and outreach of MFIs collected from 103 organizations between 2008 - 2010. The programme titled as "Map of Microfinance Distribution in India". The findings are very interesting and useful to improve the penetration level of microinsurance.[3]

1. The majority of microfinance services are in the Southern region, which accounts for 52% of all microfinance clients and 54% of all microfinance loan portfolios. The Northeastern, Northern, and Central regions have very underdeveloped microfinance sectors, accounting for 2%, 6%, and 6% of client outreach respectively.

2. SHGs, Southern region accounting for 52% of client outreach and 68% of loan portfolios, while the Northeastern, Northern, and Central regions account for 3%, 9%, and 3% of client outreach and 2%, 8%, and 2% of loan portfolio respectively.

3. The result highlights that The SHG-Bank Linkage programme serves a large number of poor clients in India and has also witnessed extensive growth over the last few years.

4. MFI Outreach and Portfolio, Andhra Pradesh stood first followed by West Bengal and Tamil Nadu.

5. Among top 5 states by MFI penetration SHG credit linked penetration, Tamil Nadu stood at 3rd position.

6. Among the top 30 districts all over India by MFI Penetration, 14 districts were from Tamil Nadu.

7. The study highlights that Microfinance penetration is more on Southern states with the active support of SHGs. In most of the rural and villages of India, the SHG is active in selling microinsurance as an allied activity along with microfinance.

The above case study again proved in the present study - the primary data analysis - that the NGOs are actively involved in microinsurance marketing. Their active involvement in microinsurance will enhance the performance of microinsurance. Government / insurance companies should repose their confidence on microinsurance and support to enhance the reach of microinsurance in to every corner of the country.

STRATEGY – VI: Government should concern on microinsurance

The State / Central Governments are concerned on very popular products of microinsurance example crop insurance, personal accident insurance, health insurance, pension and not much on assets insurance etc. Moreover, all these insurance covers are benefit covers but it has not reached except health insurance covers due to lack of awareness among the public. Government should make awareness among the general public on all types of microinsurance products except on popular products. To reach the maximum awareness on microinsurance, the government should find out the present level of awareness on microinsurance and use of microinsurance products among the rural and socially weaker sections of the society and evolve a suitable method to reach the unreached.

STRATEGY – VII: As an Individual, concern on microinsurance

As an Individual, each and every member of the society should concern about the safety and security for himself and his family. He cannot just depend on each and every thing from the government. He should not think government should take initiative for his safety. There is no doubt Government will concern about their citizen, at the same time the individuals also concern about himself and his dependents.

Individuals should not take the insurance just offered by the government or any agency in force or compulsion / complimentary, it should be voluntarily and personal requirement to safe guard his life and assets.

Suggestions of New Products under Microinsurance

Even though there are various reasons for unreached of microinsurance, we can consider two major reasons

(1) Lack of knowledge in insurance

(2) Financial Constraints.

Both these issues can be easily addressed by the insurer with little and concrete efforts with the Business correspondent of Banks and NGOs/SHG in the area.

NGO members / SHG members and Business correspondence of Banks are meeting the rural and social weaker section of the society for the microfinance activities every day or frequently. If the insurance companies engage these sources properly, they can easily reach the rural mass and create the awareness on insurance ; understand their financial constraints to pay the premium in full ; to consider the payment of premium on daily collection basis etc. The following policies are designed in keeping mind the requirements and the premium paying capacity of rural folk.

Table – Non-Life Insurance - New Products suggested in Microinsurance

Name of Product	Property	Perils covered	Sum Insured	Premium
Fire Insurance	Building and contents	Accident Fire, short circuit, Flood, Earthquake, lightning, RSMD	Rs. 25,000 Rs. 50,000 Rs. 75,000 Rs.1,00,000	Rs.15.00 Rs.20.00 Rs.25.00 Rs.30.00
	Shop Building and contents	Accident Fire, short circuit, Flood, Earthquake, lightning, RSMD	Rs. 25,000 Rs. 50,000 Rs. 75,000 Rs.1,00,000	Rs.20.00 Rs.25.00 Rs.30.00 Rs.35.00
Add on	Additional perils under Fire policy	Landslide/ rock slide/ impact damage/ like other perils	Rs. 25,000 Rs. 50,000 Rs. 75,000 Rs.1,00,000	Rs.0.25 Rs.0.50 Rs.0.75 Rs.1.00
	Agriculture implements	Fire and MBD	Rs. 25,000 Rs. 50,000 Rs. 75,000 Rs.1,00,000	Rs. 75.00 Rs.100.00 Rs.125.00 Rs.150.00
	Personal Accident	Death and loss of both limbs	Rs. 25,000 Rs. 50,000 Rs. 75,000 Rs.1,00,000	Rs.10.00 Rs.15.00 Rs.20.00 Rs.25.00
covers or separate cover	Health Insurance: Only hospitalization	Family floater (up to 5 members)	Rs. 25,000 Rs. 50,000 Rs. 75,000 Rs.1,00,000	Rs.200.00 Rs.250.00 Rs.275.00 Rs.300.00

	Health Premium can be collected by installment. If the claim occurs during the policy, claim can be settled upto sum insured for which the premium was paid.			
Specialized covers	Building and Contents – Shops and houses	Catastrophic losses such as Earthquake, Tsunami, Hurricane, entire village submerged due to flood, entire village burnt due to fire	Rs.1,00,000/- per family	Rs.10/- per house/ shop
	This type of policy can be issued with minimum no. of houses / shops for example 100 nos. in a single locality on group basis to NGO, Government agencies, banks and welfare associations etc.			
	Business Interruption- shops	Loss due to fire/ injury of owner/ cat. losses	Rs.50,000 Rs.1,00,000	Rs. 75.00 Rs.100.00

Table – Life insurance - New Products suggested in Microinsurance

Name of Product	Risk covered	Lock in period	Sum Insured	Single premium/ 12 equal installments	Benefits payable = Savings + benefits	
					Accidental death Rs.	Natural Death Rs.
Term insurance	Death due to natural & accidental causes	5 years	50,000	Rs.500	50,000	25,000
		10 years	1,00,000	Rs.1000	1,00,000	50,000
		15 years	3,00,000	Rs.2000	3,00,000	150,000
		20 years	5,00,000	Rs.3000	5,00,000	250,000
	Note: 1. Sum insured should be higher for young people and lower for senior people 2. Premium should be lower for young people and higher for senior people 3. Premium can be paid in 12 equal instalments 4. Any claim occurred before payment of full premium, the claim amount can be reduced proportionately to sum insured and premium received in case of death claims 5. Discount can be allowed if the premium paid in full 6. Age should be 25 to 50 years with a coverage limit according to age					
Add on covers	Covers mentioned in non-life sector can be given as add on covers except Personal accident under Life Insurance.					

Scope for further Research

Considering the enormity of the rural market in India in terms of geographical spread, cultural variations, socio economic class differences, number of local dialects being in use, media habits, differences in cultural values and beliefs, this market throws abundant opportunities for the researchers to widen the scope further and further. The industry, which has more than 52 players at present, is really looking forward to tap the untapped potential in rural market by sponsoring scientific research projects. All these, will provide ample scope to pursue research in rural India. The present study concluded that (1) the reasons

for lacking in improvement of microinsurance are lack of insurance awareness among general public and unreached by the insurers and (2) this can be attained more than as expected, if the insurance companies properly trained the NGO / SHG group members and Banking Correspondent on microinsurance who are meeting the rural population and socially weaker section of the society for microfinance activities on daily basis. So, the future study can be focused on how the NGOs / SHGs members can be trained on marketing microinsurance and also suggest the best publicity methods to reach the unreached.

Conclusion

As Prof C.K. Prahalad pointed out in his latest book *'Fortune at the bottom of the pyramid', 'To Become Rich, Sell to the Poor'* should be the mantra for success to all the organizations in India.

Poor awareness level about the insurance products, fluctuation in agricultural income, apprehensions about the investments made in insurance products along with superstitious beliefs are making the life of the insurance marketers miserable in rural India. With an integrated marketing approach taking into account the product design and apt communication strategies, the marketers of insurance products could tap this untapped market to the fullest potential. The study brought out the hidden potential available in the rural market, which in turn throws lot of opportunities to the insurance companies in India.

Based on the research findings this research study conclude that to improve the performance of microinsurance, the rural population and socially weaker section of the society should be properly educated on insurance through various means and methods but the current suitable methods is to use the NGOs / SHG group members and Banking Correspondent who are in touch with this group every day to enhance the insurance penetration and tape the huge premium potential in the rural market. TJ

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Weather Index Based Crop Insurance for Risk Management in Indian Agriculture: The Case of Karnataka[1]

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1. Introduction

horticultural crops and productivity are increasing, making India to take second position in the global production of fruits and vegetables, next only to China. India ranks first with 179.8 million hectares (9.6 percent of the global net crop land area) of net cropland area (Government of India, 2018).

The real growth rates of agriculture and allied sectors have been fluctuating at 1.5 per cent in 2012-13 to minus 0.2 per cent in 2014-15, 6.8 per cent in 2016-17 and 3.6 per cent in 2020-21 (NSO 2021).

The uncertainties in growth in agriculture are mainly attributed to climatic risk explained by the fact that more than 50 percent of agriculture in India is rainfall dependent which aggravate the production risks.

Agriculture in India is subject to variety of risks arising from rainfall aberrations, temperature fluctuations, hailstorms, cyclones, floods, and climate change. Besides natural risk, policy related risks include input and output price fluctuation, weak rural infrastructure, poor marketing

[1] Synopsis of Ph. D. Thesis 'Weather Index Based Crop Insurance for Risk Management in Indian Agriculture: The Case of Karnataka', submitted by H. Jeyanthi, Agricultural Development and Rural Transformation Centre (ADRTC), Institute for Social and Economic Change, Bangalore, 560072; to the Department of Economics, University of Mysore, for the Degree of Doctor of Philosophy in Economics.

facilities and lack of financial services such as credit and insurance (Acharya 2006). Extreme temperature shocks reduce farmer incomes by 4.3 per cent and 4.1 per cent during kharif and rabi respectively, whereas extreme rainfall shocks reduce incomes by 13.7 per cent and 5.5 per cent (Government of India, 2018). Once again, these average effects are felt more in unirrigated areas. These factors not only endanger the farmer's livelihood and incomes but also undermine the viability of the agriculture sector and its contribution to nation building. Management of risk in agriculture is one of the major concerns of the decision makers and policy planners, as risk in farm output is considered as the primary cause for low level of farm level investments and agrarian distress (Chavan and Ramakumar, 2007).

The major risks to which crops are exposed are adverse climatic occurrences like drought, dry-spell, wet-spell, flood, untimely/ inadequate/excess rainfall, thunderstorm, hailstorm, cyclone, cold wave, frost, pests, diseases, weeds and wild animals. Currently India incurs losses of about $ 9-10 billion annually due to extreme weather events. Of these, nearly 80 per cent losses remain uninsured (Government of India, 2018). It has been estimated that, on an average, 20 per cent of the annual crop production is lost due to pests, plant diseases and weeds. Crops on nearly 11.6 million hectares are damaged every year by natural calamities and adverse seasonal conditions. About 33.46 million hectares of the area is prone to flood damage as per Indian Meteorological Department report 2010. Extreme temperature shocks results in a 4 per cent decline in agricultural yields during the kharif season and a 4.7 per cent decline in rabi yields. Similarly, extreme rainfall shocks result is a 12.8 per cent decline in kharif yields, and a smaller, but not insignificant decline of 6.7 per cent in rabi yields. The net irrigated area to total cropped area was 34.5 per cent and the rest is dependent on rainfall (Government of India, 2018). Barely 28 per cent of the rainfall is utilized in the country because of the short duration in which the monsoons are active. The rest of the rain goes away as run-off.

Given the exposure of crop yields to a multitude of perils, it becomes imperative to have risk management strategies to stabilize the farm income by offsetting the adverse effects of seasonal and inter-annual variability.

1.1 Risk Management Strategies

Various risk management strategies are available to farmers to cope with risks. Crop insurance is one of the important risk management interventions available to them. Risk management strategies can be classified as ex-ante (prior to the occurrence of the risk) and ex-post (after the risk has occurred). Another way of classifying the approach is informal and formal risk management strategy. Informal strategies can be interpreted as arrangements that involve support from individuals or households or communities in villages, while formal arrangements are market-based activities and government support activities (Government of India 2006).

Indian farmers are known to deploy many ex-ante informal strategies, ranging from 'avoiding the risk' to 'adoption of risk tolerant crops and resistant seed varieties. Various other informal strategies include crop diversification, inter / mixed-cropping and staggered planting. Ex-post informal income-smoothing strategies are typically the reduced consumption patterns, mutual help among family and friends, sale of assets, such as land or livestock, or reallocation of labor resources to off-farm labor activities and migration to urban areas (World Bank 2005).

Formal risk management strategies can be classified as the government supported or market based strategies. Ex-ante government supported strategies are agricultural extension services, supply of quality agricultural inputs, subsidies on sprinkler/drip irrigation equipment, pest management systems, infrastructures such as

roads, dams, irrigation systems and weather forecast and weather advisories. Agriculture insurance, cash transfer, calamity relief, crop loan waiver / rescheduling and consumption credit are the other government initiatives aimed at helping the farmer to cope with the risk after it occurred. The price support operations are one of the most prominent and significant government interventions. Contract farming and futures trading are some of the market based ex ante strategies (Raju and Chand 2009; Ray 1981).

1.2 Crop Insurance as a Risk Management Strategy

The principal characteristic, which distinguishes crop production from any other activity, is its dependence on nature. Uncertainty of crop yield, arising from extreme variations in weather parameters, is thus one of the basic risks that most farmers face in different agricultural production systems in the world. However, these risks are particularly high in India where the overwhelming majority of farmers are poor and are, therefore, unable to bear the risks of crop failure, especially when they are of a disastrous nature (James 2009). Crop insurance is a method by which farmers can stabilize income from agriculture and investment and thus improve their risk bearing capacity (Raju and Chand 2009). It is a financial mechanism through which the uncertainty of loss in crop yields is minimized by pooling large number of uncertainties that impact on crop yields so that the burden of loss can be distributed.

Crop insurance has many potential advantages in mitigating agricultural risks: it cushions the shock of disastrous crop loss by assuring farmers a minimum protection; helps the farmers to initiate production activities after a bad agricultural year; spreads the crop losses over time and space; gives farmers greater confidence to make more investments in agriculture; improves the position of farmers in relation to agricultural credit; helps to normalize the availability of supplies and stabilize prices; relieves the government from the irregular financial burden of providing calamity relief; helps to maintain dignity of farmers and facilitates adoption of improved technologies.

At the same time, crop insurance is not a panacea, particularly in the Indian context where a large number of small land holdings with a little output per unit of land are prevalent making it difficult to provide insurance cover on the basis of individual approach (Hazell 1992; Raju and Chand, 2009; Gurdev 2010). Hence, in India, crop insurance programs are implemented on the principle of area approach (all the farmers in a specified area will form a risk group).

1.3 Crop Insurance in India

There are two types of crop insurance programs available in India. One is yield index based crop insurance and another one is weather index based index insurance. Yield index insurance is a common form of crop insurance. Farmers purchasing yield index insurance receive a claim payment when average yield of insured crop fall below a predetermined threshold level. For example, farmers in a hobli (sub-district in Karnataka state) are compensated based on hobli level average yield. In weather index insurance, the underlying index is based upon measurable weather parameters such as rainfall and temperature that exhibits a strong correlation with the crop yield. Claim payouts are estimated by interpreting adverse deviations in weather conditions in terms of loss or shortfall in crop output. The crop modelling and statistical techniques are used to work out the relationships between crop yield and weather parameters and, then establish the linkage between the financial losses suffered by the farmers with weather variations (GOI Crop Insurance operational guidelines; World Bank 2011).

The first ever crop insurance program was started in India during 1972 which was based on individual approach and lasted up to 1978. Later Pilot Crop Insurance Scheme (PCIS) and

Comprehensive Crop Insurance Scheme (CCIS) were operational in the country from 1979 to 1984 and 1985 to 1999 respectively. From 1999 Rabi season, the CCIS was discontinued and replaced by the National Agriculture Insurance Scheme (NAIS), which was being implemented as the flagship yield based crop insurance program by the Government of India for about 17 years till 2015. It was the largest crop insurance program in the world in terms of number of farmers covered. The government announced a pilot scheme on the improved version of NAIS, called Modified National Agricultural Insurance Scheme (MNAIS) from Rabi 2010-11 season for experimentation in 50 districts and during 2014, it was implemented all over the country replacing NAIS. Again during 2015, NAIS was brought back due to administrative reasons and during 2016 it was replaced with Prime Minister Fasal Bima Yojana (PMFBY).

Despite high claim ratio and low premium rates in NAIS, farmers were not coming forward to avail crop insurance in a big way (Mahul et al. 2012; Government of India, 2014). The combination of high vulnerability of farmer households and low penetration of NAIS has provided a fertile ground for innovations in the provision of agricultural insurance. Weather index based insurance sparked interest among policymakers and the government had introduced Weather Based Crop Insurance Scheme (WBCIS) during 2007 and in 2016, it was improved with additional features and implemented as Restructured WBCIS (RWCIS).

1.4 Weather Based Crop Insurance (WBCIS) in India – Advantages and Challenges

Weather based crop insurance is implemented from 2007 to provide an alternative form of insurance to farmers to address weather risk specifically. The key advantages of the weather index insurance are that the payouts can be made faster; the insurance contract is more transparent, and the transaction costs are lower (Rao, 2011). Because weather index insurance uses objective, uses publicly available data and it is less susceptible to moral hazard[2] (Hellmuth et al, 2009). Most importantly, where there is no sufficient historical yield data available, except the weather data, weather index based crop insurance is the next best opportunity to protect the farmers from crop loss. In yield based insurance, high cost and huge man power are involved to conduct crop cutting experiments and again yield data are not of high quality due to human error in the estimation of yield. In weather index insurance, pool proof weather data can be ensured and less human intervention required.

Despite some key and distinct advantages with weather based crop insurance mentioned above, it still suffers from few challenges (Woodard and Garcia 2007; Smith and Watts 2009; Norton et al 2010; Rao 2011 Rao 2011; World Bank 2011; Kapphan 2011; Clarke 2011, 2012; Mahul et al 2012; Government of India 2014).

The present network of weather stations from where the historical weather data collected are too sparse for a weather index insurance to serve as a meaningful risk mitigation tool. Delay of about 30 to 45 days in receiving the weather data is not helping the insurance scheme in giving expeditious payouts as proposed. The cost of weather data from private data providers is quite expensive which seems to be a constraint for scaling up of weather index insurance. Insurers have to find a way to offer a technically sound product while keeping it simple and easily accessible to the farmers. Technically sound products may have better predictive capacity to capture risk, but may not be easy to understand (Clarke 2011; Mahul et al 2012). It's important to make sure that weather insurance should present the right balance between technology and simplicity.

[2]Moral hazard is dishonest, careless or indifferent behavior by an insured person that increases the chances of loss (e.g. negligent maintenance of a farm because it is insured).

The multitude of weather insurance products offered by various weather insurance providers necessitates the need for benchmarking the various products to enable the farmer to make an informed choice. Through benchmarking, it may be ascertained whether the products offered by the different insurance companies carry at least comparable benefits. There are still many weather events such as hailstorm, thunderstorm, and floods that are difficult to cover under weather insurance. Moreover, pests and diseases which are largely due to the inter-play of weather parameters are also highly challenging to cover them under weather based insurance. The two biggest weaknesses and challenges of the present weather based crop insurance program are: (i) designing a proxy weather index with predictive capability to realistically measure crop losses (thus, it is closer to the indemnity principle); and (ii) the basis risk due to poor density of weather stations. Both may lead to a similar problem of no claim payout despite the occurrence of crop loss at the individual farm, or a claim payout when loss did not occur (Clarke 2011; Mahul et al 2012).

From the above discussion, it can be said that the success of weather insurance program in India is dependent on proper weather insurance product design; minimizing the basis risk; creating realistic knowledge of weather insurance through awareness programmes for farmers; adopting reliable and sustainable pricing, and product servicing and timely claim settlement. The present study will analyse in detail the issues and challenges confronting weather index insurance product and will attempt to design an optimal product that works well for both parties to the insurance contract, i.e., farmers and insurance provider.

1.5 Statement of Problem

The farming community in India consist of about 12 crore farmers of which only about 20 per cent avail crop loans from banks and financial institutions and only about 75 per cent of them are insured. The remaining 80 per cent are either self-financing or depend upon informal sources for their financial needs (Raju and Chand, 2009). Hence the probability of voluntary participation in crop insurance is very low in India. Though Indian crop insurance program has been considered as the world's largest insurance program (Rao 2011), about 9.5 crore farmers still not being covered, despite significant government subsidy and substantial welfare benefits that could arise from improved agricultural risk management. Among different states, Karnataka is pioneer in experimenting all new technologies in crop insurance to provide better risk management solution to the farmers and piloting new crop insurance schemes.

The reason for low demand for crop insurance from farmers without compulsion is still a 'puzzle', which needs to be empirically analyzed. Hence, it is important to find out the farmers' demands/views with respect to the key weather perils as perceived by them; perceived need for crop insurance; awareness and experience of crop insurance; barriers to purchase crop insurance; satisfaction with the existing crop insurance policy; farmer's view on basis risk, their willingness and ability to pay premium and farmer's management of weather risk. Further, to what extent the inputs from farmers can be used in the weather index product design need to be verified.

Despite efforts made by the government to provide crop insurance to protect farmers against agricultural risks, a significant proportion of farmers have remained uninsured. Perhaps low insurance coverage could be due to issues in insurance product design, particularly long delays in claims settlement and basis risk. The most significant challenge with the weather index product is basis risk, the risk that an insured farmer might not receive a claim payment even when they incurred loss due to an imperfect correlation of actual loss with index. An index that

captures the vast majority of bad years is likely to be more attractive to farmers, but an index that does not trigger claim payments in very bad years will be unattractive to farmers. Basis risk is not a major issue in yield index insurance, when the size of the insurance unit is small and nearly reflecting individual farm loss. But basis risk in weather index insurance is a big problem in India and so it is needed to examine different dimensions of the basis risk in weather index insurance.

Existence of complex relationship between weather and crop yield poses a challenge to design a proper weather index for effective risk management. The crop weather relationship is not always as straightforward since differences in crop varieties, crop growth phases and soil textures have different responses to the same weather factor. A clear and satisfying relationship between the weather and crop yield is first needed. This relationship then needed to be properly converted into an index which must be able to explain a very high portion of the variability in yield, and effective in providing payouts when losses are experienced, eliminating basis risk as far as possible. Otherwise it will lose its attractiveness as a hedging device. Hence, appropriate identification of the relationship between yield and the weather variable is highly important. Product should also be designed in such a way that the products can be adjusted to meet price, payout, and coverage constraints through optimizing the parameters for collection of risks as the index insurance works on area approach principle. Simply the insurance contract should be optimal for both insurance purchaser and insurance provider. Insured should be benefited and insurer also benefits by offering insurance service. So, designing a proper weather index is important to address the major concerns in the operation of the weather index insurance program.

2. Review of Literature

Detailed background about the WBCIS insurance product is explained in World Bank (2011) discussion paper, Skees et al (2009) and working papers of Gine, Townsend and Vickery (2007). Gine, Townsend and Vickery (2007) also studied the determinants of household insurance purchase decisions based on a 2004 household survey in Andra Pradesh and in another paper they analyzed the payouts from WBCIS product sold by ICICI Lombard during Kharif 2006 season in Andra Pradesh. The insurance's risk reduction potential was evaluated by Heimfarth and Musshoff (2011) by measuring changes in the SD and the VaR of revenues with and without insurance.

Leblois et al (2011) considered different indices that could be used in weather index insurance from the simplest to more complex ones. Kapphan et al (2012) analyzed the potential for weather insurance in light of climate change. They considered different weather indices - single as well as multi-peril indices that offer risk protection against various weather phenomena and found that potential for hedging yield risk with weather-based insurance products improves.

Deng et al (2006) evaluated the efficiency of various index insurance products to reduce farm yield loss. They tested the effectiveness of sophisticated index insurance product from crop production model and simple products based on area yields or weather variables. Fuchs and Wolff (2011) found that not only the minimum amount of cumulative rain in each period but also its variance within that period is important and suggested additional index which takes care of this. Filler et al. (2009) modelled and estimated the losses of a weather related insurance and concentrated on the tail behaviour of the joint loss distribution as the probability of large losses is crucial for insurer and decides the premium.

Berg et al (2009) insisted that index insurance benefit to the farmers should account the loss in input costs due to yield loss otherwise it will be an underestimate. Similar works on weather index evaluation were done by Bokusheva and

Breustedt (2008), Odening et al (2007), Chung (2011), Miranda et al (2010), Rao, K.N (2011) and Xu et al (2010).

Cole et al (2012) studied the demand for rainfall index insurance in India and estimated that insurance demand is significantly price sensitive, with an elasticity of around unity. Their result suggested that price reductions generated through greater efficiency or competition, or subsidies, would significantly increase take-up, but would not be sufficient to generate widespread diffusion of the risk management product, at least in the short run. Their field experiments suggested that several non-price frictions that further limit demand: limited trust and understanding of the product, product salience and liquidity constraints.

Clarke (2011) attempted to present a model of rational demand for indexed products. The presence of basis risk is shown to alter or reverse many of the key results arising from the theory of rational demand for indemnity insurance. He concluded that combination of deadweight costs and basis risk can render weather derivative products unattractive to poor farmers particularly to the most risk averse, even if they offer a hedge against economically important risks. He said that indices are not a silver bullet; designing a good agricultural insurance product for poor farmers will require more than just choosing the best functional form for a weather index, and implementing products with low basis risk will require more institutional capacity building than the installation of tamper-proof weather stations.

Kumar et al (2011) conducted a farmer survey to assess the perception of farmers about various facets of crop insurance schemes. Crop diversification index has been used to examine the farmers' adjustment mechanism against risks. Factors such as gross cropped area, income from other than agricultural sources, presence of risk in farming, number of workers in the farm family, satisfaction with the premium rate and affordability of the insurance premium amount significantly and positively influence the adoption of insurance and premium paid by the farmers.

During an evaluation study on WBCIS conducted by Government of India during 2011, the respondents were queried on 16 different dimensions of weather index insurance. The aspects of weather index insurance with the maximum 'not satisfied' respondents include basis risk/location of weather station, grievance redressal mechanism & convenience in enrolment, quantum of sum insured and period of risk coverage and about 25 percent were not satisfied with weather index as a substitute for yield index insurance.

Raju and Chand (2008) as part of their intensive study on problems and prospects of agriculture insurance in India analyzed the secondary data on crop insurance and conducted a field survey in Andra Pradesh to assess the perception of farmers about agriculture insurance. They collected the views of farmers on various dimensions of insurance including motivation and experience with agricultural insurance, opinion on premium rate, risk bearing ability and suggestions for improving the crop insurance scheme etc. they also collected the response of non-borrowers and not insured farmers on reasons behind the same.

Mobarak and Rosenzweig (2012), conducted a combination of non-experimental and experiment-based survey in rural India and found that basis risk, as measured by the perceived distance of the respondent to the nearest rainfall station, is a significant impediment to the take-up of the index insurance product. Their findings indicate that informal insurance is both a complement to formal index insurance and a substitute, depending on basis risk and the nature of the informal insurance arrangement.

Woodard and Garcia (2007) categorize basis risk into three types: local, geographic, and product. They suggested that while the degree of geographic basis risk may be significant, it should

not preclude the use of geographic cross-hedging. They also find that the degree to which geographic basis risk impedes effective hedging diminishes as the level of spatial aggregation increases.

Odening, et al (2007) quantified the geographic basis risk by estimating the popular de-correlation function which represents the relationship between the correlation coefficient between the precipitation at different places and the distance between the places. Similar works on Geographical basis risk is done by Filler et al. (2009) and Woodard and Garcia 2008.

A study on weather index drought insurance by Berg et al (2009) shows a negative correlation relation between rainfall and index/yield, albeit with a certain dispersion, even for low cumulative rainfall. While analyzing product basis risk, Woodard and Garcia (2007) observed that temperature measurements are more representative of the surrounding region than precipitation measurements. Basis risk may be reduced through the selection of appropriate weather observations to construct the index, but in reality the prevailing weather conditions are only one variable in crop production and are often considered exogenous to the production function (Turvey and Norton 2008).

Norton et al (2010), investigated basis risk using a novel approach to space measurement. They have developed a program that is linked to all of the weather stations in a given region (i.e. includes data on all weather stations in the United States). From a randomly selected point, they selected all weather stations within a proscribed radius and calculate the particular weather risk at each station to calculate the burn rate insurance premium.

The subject of crop-weather relations has attracted attention of Indian Scientists for several decades. Most of the studies postulated the linear relationship between the two variables wherein the meteorological factors are directly included in a linear fashion (Rao, 1964; Shaha and Banerjee, 1975; Kumar et al., 2011, Sivapragasam and Prabakaran, 2014). Crop weather relation was studied using multiple regression approach for rice crop in Tamilnadu state of India by Sivaprakasam and Prabakaran (2014). They analysed the crop yield and weather relationship in different combinations. They found different weather parameter influenced the yields of rice crop in different seasons. Kharif season sowing, transplanting and vegetative stage temperature and rainfall plays important role for rice crop, but during harvesting stage rainfall plays negative correlation with rice crop yield.

Kirtti et al (2012) measured the weather impact on crop yield using aridity index in Odisha state. They used multiple regression analysis to measure the same and incorporated aridity index variable in the model.

In the insurance perspective, the relation between crop and weather were analyzed using nonlinear approach since the insurance losses are nonlinear and loss distribution is skewed. Schlenker and Roberts (2006) found a robust and significant nonlinear relationship between temperature and yields and concluded that this sharp nonlinearity gave implication for biased estimates of the average impact of temperatures in studies using average temperatures. Doll (1967) developed a model to estimate crop yield response to weather and time trend. The weather response function was used to determine an index which indicated the effects of weather on crop yields in each year. The index did not depend directly upon the method of trend estimation and the estimates were obtained through use of a nonlinear regression routine.

Leblois et al (2011) found that it was difficult to identify the actual sowing date to determine the beginning of the crop growth period in an insurance contract because it was costly exercise for the insurer. Thus they compared two growth phase schedules simulated following the methodology of Sivakumar, 1988

and defined the beginning and the end of the growing season. They used a weighted average of millet critical growth phases cumulative rainfall and a crop model (SARRA-H) defining the growing cycle schedule, harvest dates and weighting factors.

To reduce farmers' exposure to weather-related shocks, pay-offs from the weather insurance contract have to closely match incurred losses. In this context, Goodwin and Mahul (2004) point out that the design of an efficient insurance contract depends on the relationship between the individual yield and the underlying weather index, and Vedenov and Barnett (2004) specifically emphasize the importance of the weather insurance parameters (tick size, strike, and limit) with respect to achieving hedging effectiveness, i.e. the degree to which weather risk is being reduced by an insurance product. Since then, formal models to determine the buyer's optimal choice of the insurance parameters with respect to risk reduction have been developed (quoted in Ines Kapphan, 2011). Osgood et al. (2007, 2009) designed index-based weather insurance contracts for several African countries (Malawi, Tanzania, Kenya, and Ethiopia) that are implemented by the World Bank and Oxfam America under pilot projects.

RESEARCH GAP

- Field level issues and farmer concerns on crop insurance work were done by various researchers and the government stakeholders themselves in India. But most of the research studies concentrated on the issues of yield index insurance programs. A comprehensive study on the field issues of weather index insurance and the farmer needs/expectations from weather index insurance and actual comparison with field realizations is still lacking and this study made an attempt to fill this gap.
- Basis risk in weather index insurance was realized as a major hurdle for the growth of the insurance program and to meet farmer needs and different dimensions of basis risk were addressed in various literatures. Level of risk varies crop wise and region wise. In India very few studies were available on overall basis risk issue for few regions and not in-depth analysis as required. So, an in depth study of basis risk by crop wise and location wise over the years was made in this research.
- Available literature has shown that the studies of crop weather relationship are mainly using crop growth simulation models. Econometric models using parametric and non-parametric approach were also tried in weather index insurance and these studies were mainly done outside India. In India crop weather relationship are mainly studied in linear perspective. An effort was also made to study the crop weather relation in a nonlinear framework in the Indian context.
- Better weather index product is one which has less basis risk. Available research studies lack the integration of basis risk problem with good designs. Present study will fill the gap of integration of basis risk problem with good weather index designs.

By this way this study will become a complete study on weather index insurance by addressing all issues together with possible solutions and contribute to the literature of weather index insurance.

3. Objectives of the study

The study addresses the above key research questions with the following specific objectives:

to evaluate the weather index insurance program in meeting the farmers' needs; to analyse the efficiency of weather index insurance products in terms of addressing basis risk problem; to examine the effect of weather variables on crop yield through crop weather modelling approach and to suggest weather index insurance design with optimal hedging effectiveness.

4. Data and Methodology

The study presents the performance of crop insurance schemes in the state of Karnataka to have overall idea about crop insurance programs implemented in the state. All the analyses with respect to the specific objectives were done at disaggregate level.

In order to understand ground level working of weather index insurance products, a survey was conducted with farmers in major two districts (Dharwad and Gadag) of Karnataka in terms of coverage under weather index insurance program. The sample comprised of 160 farmers, 80 in each district. Secondary data on crop insurance was analyzed using the standard insurance tools such as claim ratio, claim cost, average premium rate, pricing multiple, frequency and severity of claims and other statistical techniques such as simple statistical tools (average and percentages), percentiles and probabilities.

Basis risk in WBCIS products was studied for a period of three years from 2012 to 2014 for kharif season. This study covered nine food and oil seed crops and three commercial and horticultural crops grown in irrigated and rainfed environment. To conduct basis risk analysis for collection of WBCIS products, adjusted yield and weather data sets were used. Basis risk was analyzed using scatter plots, correlation coefficient and by calculating Probable Maximum Loss, claim cost, probability of claim payouts and compared with yield based insurance product which were constructed for this purpose for the crops.

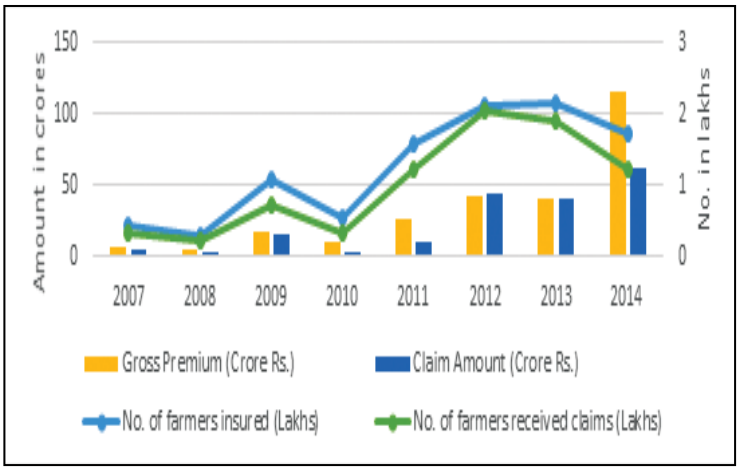
Crop weather relationship was studied for maize rainfed crop for which yield data and weather data are available for reasonable number of years. Firstly, weather parameters and critical crop growth period were identified. After identifying the weather parameters, it has to be fit into a model to predict yield data. The direct use of meteorological variables such as rainfall and temperature as independent variables in the crop weather models was not accepted by many researchers like Stallings (1961), Shaw (1964) and Oury (1965) because of no clear functional relationship between these variables and yield. So the concept of Aridity Index (Quan et al., 2013; Beran and Rodier, 1985; Kirtti et al., 2012) was used which combines the major weather parameters viz. rainfall and temperature. An econometric model was used where crop yield is considered as a function of aridity index as a measure of weather and a trend to represent technological change. Various forms of aridity indices were tried to better predict the crop weather relation. The model was checked by fitting linear model of yield and weather. Later the models were evaluated through Percent Prediction Error (PPE), Mean Absolute Error (MAE), Root Mean Squared Error (RMSE) and coefficient of determination (R2) techniques.

To design a revised/improved/new weather index insurance contract, one major commercial crop (cotton) and one major field crop (maize) insured under WBCIS scheme were selected for the locations covering Dharwad and Davangere districts. Some assumptions were made to develop a new insurance contract. Structure of the contract and new indemnity functions were defined. The newly developed termsheet/contract was compared with previous five years' (2010 to 2014) termsheets and evaluated by calculating historical payouts, payout frequencies, payout cycle, Probable Maximum Loss (PML), pricing indicators, scatter plots and correlation with yield and yield shortfall using Pearson's Product moment correlation coefficient and Spearman's Rank correlation coefficient.

5. Summary of Major Findings

5.1 Evaluation of Weather Index Insurance

In Karnataka, u number of farmers insured recorded Compound Annual Growth Rate (CAGR) of 2.52 per cent while gross premium collected recorded CAGR of 16.39 per cent during the period 2000 to 2015.



Source: Crop Insurance Cell, Department of Agriculture, Government of Karnataka.

On an average 42 per cent of the insured farmers received claims through various crop insurance schemes in Karnataka. Under WBCIS, on an average nearly 77 per cent (claim frequency) of the insured farmers received claims. Weather based crop insurance, though have more advantages over yield based crop insurance, it has not shown consistent performance over the years (Figure 1).

For food and oil seed crops, premium rate was high in WBCIS compared to NAIS and for commercial and horticultural crops, premium rate was higher in NAIS than WBCIS. Analysis has revealed that because of high premium charged for pulse crops under commercial schemes, area insured reduced over the years for these crops. However, insurance coverage increased under commercial and horticultural crops because of the same commercial schemes in which less premium is charged for these crops. It is premium charged under different insurance schemes that is driving the demand for crop insurance.

Most of the years from 2000 to 2015, claim ratio (claim to premium ratio) was more than 100 per cent under NAIS scheme and reverse in case of WBCIS and MNAIS which were commercial schemes and mostly implemented with the participation of private insurance companies. Average premium rate of NAIS was the lowest in all the years followed by WBCIS and MNAIS. But the average claim rate over which loadings were done to arrive at commercial premium was less than the premium rate in all the years under MNAIS and WBCIS and reverse in case of NAIS. High premium loading was done in MNAIS (247 per cent) and WBCIS (171 per cent) leading to heavy premium burden on farmers and government under these schemes.

From the analysis, it was found that over the years, major cereals, pulses and oilseed crop were mostly insured and minor crops were less insured. There is a need for action from government to increase the insurance penetration under the minor crops so that farmers can grow confidently these crops and area under these crops can be increased. District wise analysis of insurance coverage under WBCIS reveals that Dharwad, Gadag and Haveri were the major districts contributing to premium and claim share.

Crop wise analysis for cotton, onion and chillies reveals that only WBCIS have paid for losses more than yield based insurance schemes in the state and WBCIS is suited better than any yield based crop insurance scheme for these crops. Though WBCIS performed better than yield based insurance schemes in terms of high claim payout, there were frequent claim payments under WBCIS than other two schemes, which can be interpreted that under WBCIS small risks were compensated regularly instead of compensating adequately when there was a huge loss also leading to high premium rates.

Specific analysis of WBCIS for cotton, onion and chillies during good and bad agricultural years

shows that there was high frequency of claims during bad years than good agricultural years but claim ratio and severity of claims (claim paid per hectare) was less during bad years than good years which indicates poor design of WBCIS product which was unable to capture the actual field loss. WBCIS claims distribution analysis using percentile ranking technique also proved the same results.

Highest Probable Maximum Loss (PML) was 37 per cent in WBCIS for cotton, onion and chillies which means in WBCIS so far, no farmer received 100 per cent claims even in bad years. In WBCIS, termsheets were designed highly complicated in such a way that possibility of paying 100 per cent claims up to full sum insured was never made possible in Karnataka. Insurance company wise analysis of performance using claim ratio indicates that Cholamandalam General Insurance Company (89 per cent) and Agriculture Insurance Company (72 per cent) performed better than other companies.

From the farmers household survey, it was found that many farmers were aware of insurance schemes but not interested and not having sufficient funds to purchase insurance. None of the sample farmers were satisfied with present crop insurance scheme because of no/ inadequate compensation compared to the actual loss incurred and delay in claim settlement. Farmers expressed that premium paid under WBCIS was very high compared to NAIS and they expressed need for insurance cover both large as well as small losses since they need finance for next season.

The analysis of insurance data and the farmers' opinion reinstates that there were issues in claim settlement and field losses were not adequately captured and the settled claims were inadequate though there were regular claims every year. This is called basis risk problem, which need to be understood properly for effective risk management under WBCIS.

5.2 Analysis of Basis Risk

Considering the significance of basis risk issue in weather based crop insurance, it was analyzed for all crops notified under WBCIS for three years from 2012 to 2014. Among different types of basis risk, product basis risk was analyzed in this study. Product basis risk indicates, how far weather based crop insurance performs in terms of claim settlement if in its place another crop insurance scheme was made available. Here, NAIS, MNAIS and PMFBY crop insurance programs were considered as alternative products and compared with WBCIS to analyze the magnitude of basis risk problem in the scheme.

The scatter plot analysis reveals that when there was a claim as per yield based insurance, there was also a claim in WBCIS but not exactly matching claims (Figure 2). When there was no claim as per yield insurance, there was most claims in WBCIS leading to huge basis risk. Premium collected is unnecessarily utilized to pay farmers who have not incurred any loss or more than adequately compensated which can be better utilized by keeping reserves to compensate the farmers sufficiently when there is catastrophic risk. Comparison of WBCIS claims with NAIS and MNAIS/PMFBY claims reveals that as per yield based insurance when more claim payments were made, there was no claim payment or very less claim payment under WBCIS. Scatter plots shows that problem of basis risk is more in commercial and horticultural crops than field crops (Figure 3).

Figure 2: WBCIS vs NAIS at 80% IL for Kharif 2012

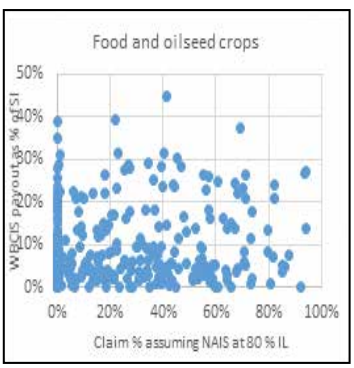
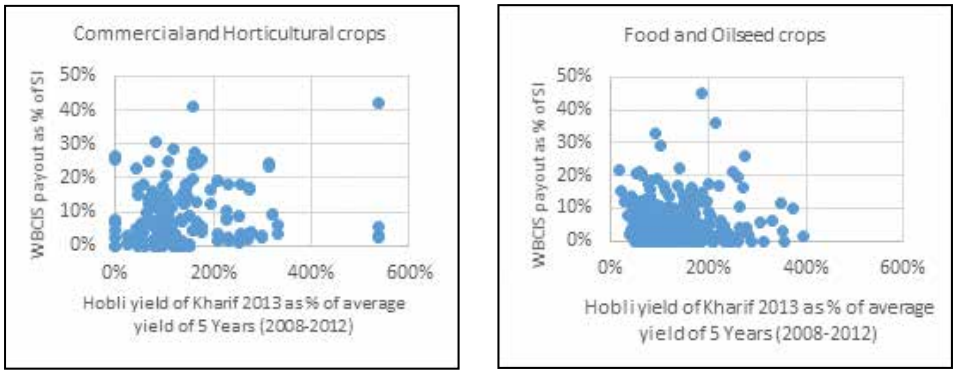


Figure 3: WBCS vs Average field condition for Kharif 2013



Correlation analysis using Pearson correlation coefficient between WBCIS claims and actual yield and also WBCIS claims and yield based insurance products indicates the same result as that of scatter plot. Food and oil seed crops have more and significant correlation with yield than commercial and horticultural crops. For food and oil seed crops, there is significant positive correlation between WBCIS claims and yield based claims at all indemnity levels. The correlation coefficient is almost same for kharif 2012 and 2013 for NAIS and MNAIS/PMFBY at all indemnity levels. Though it is significant and positive correlation as expected, there is low correlation (correlation coefficient of about 20 per cent in 2012 and 2013) between WBCIS and yield based claims. Soybean rainfed crop is showing high correlation between WBCIS claims and yield based claims in all indemnity levels (correlation coefficient of 0.9). All the food and oil seed crops have comparatively better correlation between WBCIS claims and MNAIS/PMFBY claims at 90 per cent IL than MNAIS/PMFBY at 70 per cent IL and NAIS claims at 80 and 60 per cent IL both in 2012 and 2013. Among the commercial and horticultural crops, chilli rainfed crop alone have significant correlation between yield based and weather based claims and other crops are not even having positive correlation. Among the three years under study, the crops insured in 2012 have better correlation between WBCIS claims and yield based insurance claims compared to the crops insured in 2013. Also, the crops insured in 2013 have better correlation between WBCIS claims and yield based claims over crops insured in 2014.

The Probable Maximum Loss (PML) analysis shows that among all the crop insurance schemes PML was low in WBCIS in all the years and crops under study than yield based insurance schemes. It is the problem with WBCIS that PML was low even when there is 100 per cent of loss of crop because of inherent problems in the WBCIS product design.

Like PML, average claim cost was low in WBCIS than yield based insurance indicating inadequate claim payment made under WBCIS i.e., problem of basis risk in WBCIS. This shows that average claim need to be pushed upwards in WBCIS to compensate the farmers adequately and reduce the problem of basis risk and thereby to ensure better risk management in WBCIS. The probability of claim analysis reveals mainly how the premium collected in WBCIS was unnecessarily wasted by paying huge claims in areas where yield was high and no possibility of shortfall in yield.

From the analysis of basis risk, it was found that there was high basis risk in WBCIS insurance products. That is, farmers did not receive claims when there was actually loss of crop and also there was a claim as per yield based index. Those farmers compensated are not adequately compensated compared to benchmark product and average field condition. Compensation was also received by farmers who had a good yield compared to historical

yield and when no loss as per yield index. Overall the WBCIS scheme has benefitted all insured farmers who incurred crop loss and those who had no loss or harvested good crop.

Hence the reason for WBCIS not being able to reflect actual field loss adequately need to be seriously taken care and so an analysis of crop weather relationship by rigorous modelling is needed. If crop weather relationship is predicted properly, then weather index can be developed to accurately capture the field loss.

5.3 Crop weather relationship

The purpose of the study of crop weather relationship is to understand the linkage between area average yield and various weather factors which will be helpful while designing weather index for weather index based crop insurance scheme (WBCIS). For this purpose, a major crop covered under WBCIS for which weather and yield data are available for reasonable period was considered. Accordingly maize rainfed crop in Davangere district was chosen. When weather parameters were linearly added in the model to predict yield, the results are not significant and useful. Hence the concept of aridity index which combines weather variables was tried. Four important aridity indices widely used globally viz., Lang index, De Martonne index, Angstrom index and Selyaninov Hydrothermal Coefficient are considered in this study and they are incorporated into the econometric model to quantify the effect of weather variables on crop yield. To analyze the relationship between crop yield and weather, the important weather parameters and the duration or crop growth period (critical crop growth stages) which have more impact on crop yield are identified by regressing yield data separately with rainfall and temperature of each month and also with average rainfall and temperature of specific months.

When weather parameters such as rainfall and temperature are added linearly into the linear model to predict yield, temperature is not significantly influencing the yield. But in all the aridity index models, the coefficient of aridity index is highly significant. Among the Aridity index models, De Martonne Index model performs better than other aridity index models with a marginal difference over other models in terms of Root Mean Square Error (RMSE), Mean Absolute error (MAE) and Percent Prediction Error. While Angstrom Index Model performs better than all other aridity index models and even over simple linear model when growing period is considered as June to August. It means that when temperature is combined with rainfall, it has significant effect on yield. From this analysis, it can be understood that wherever rainfall and temperature have more effect on crop yield, these variables can be combined into one variable and an index can be constructed to proxy the yield loss.

5.4 Weather Index Insurance Design

Analysis has clearly shown that WBCIS product need to be redesigned to target the real losses and make the compensation (payout) adequate to meet the loss. Before designing the product, from the analysis of past year products it was found that none of the term sheet was paying claim up to full sum insured even during the bad years and average claim percentage which is called as burning cost in insurance was very less making the product highly beneficial for insurance companies. All the previous year cotton rainfed term sheets in Dharwad district from 2010 to 2014 and maize rainfed termsheets in Davangere district from 2010 to 2013 were studied for its claim paying capacity. Historical claim payouts were calculated for past 25 years based on these termsheets and none of the term sheet was paying claim up to full sum insured in any of the past years even in bad years. Average claim percentage which is called as burning cost in insurance was very less, making the product highly beneficial for insurance companies. But there was always some payout in the past years ensuring that

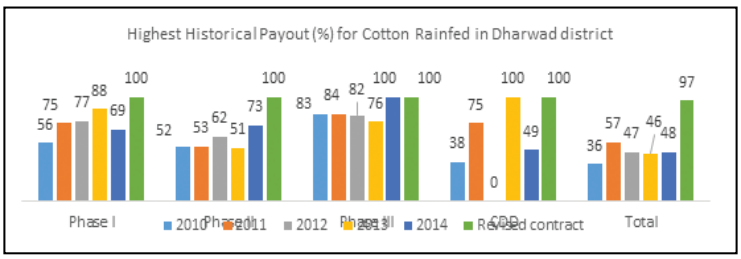
every year there was some claim from the product. Rainfall being the major risk in farming, simple index capturing rainfall risk was developed with normal burning cost benefitting farmer and insurer for cotton rainfed crop in Dharwad district and maize rainfed crop in Davangere district. The performance of the new contract/product was evaluated by comparing it with products sold in the years 2010 to 2014 using various performance indicators such as payout frequency, Probable Maximum Loss (PML), payout cycle and by comparison of historical payouts and correlation with yield shortfall.

New contract was designed very simple and understandable to farmers and various stakeholders with features similar to yield based insurance scheme. Payout frequency was reduced to 68 per cent in new contract which was very high in products sold in the previous years (Figure 4). By reducing payout frequency, it can be ensured that small losses are avoided and large losses are adequately captured.

Payout cycle for the revised contract is 1.5 years which cannot be further reduced since the weather events falls below the triggering weather in many years in the 25 years duration. The objective of designing the new contract is to predict and estimate accurately and compensate properly the field losses rather than trying to reduce the frequency and payouts of claims to match with other forms of insurance.

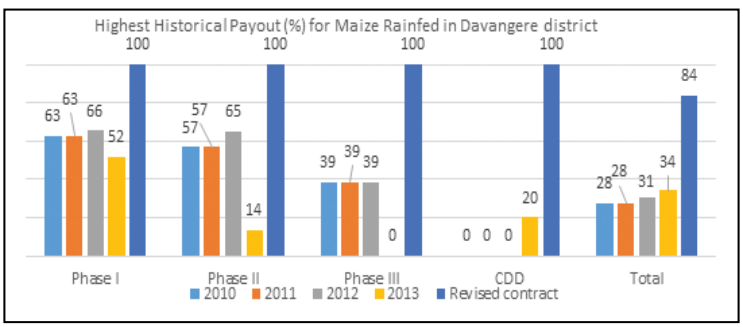
The new contract outperformed all previous year products in terms of highest historical payout parameter and even after adjusting the pure premium of previous year products matching with new contract (Figure 5 & 6).

Figure 5. Highest Historical Payout for Cotton rainfed in Dharwad district



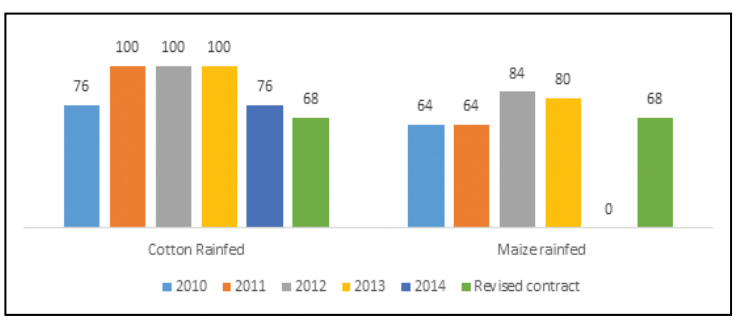
Source: Author's Calculation

Figure 6 Highest Historical Payout for Maize rainfed in Davangere district



Source: Author's Calculation

Figure 4. Payout frequency (%) for Deficit Rainfall Index



The expected loss cost/burning costs/pure premium for revised contract is about 20 per cent. This means that revised contract is expected to payout 20 per cent of the sum insured on an average. For the previous year products, it ranged from 7.6 per cent to 25.3 per cent for cotton and 3.8 to 6.6 per cent for maize which were too low to pay losses adequately.

The results proved that the revised contract performed better in all aspects than the past year products. Still there is scope for improvement. Notwithstanding, the present study has shown that small improvements in the design are making big difference in claim paying capacity of the product and targeting the correct risk.

6. Conclusion and Policy implications

6.1 Conclusion

The present study evaluated the weather index insurance program in meeting the farmers' needs in Karnataka through insurance data and farmer household survey. Basis risk problem in Weather Based Crop Insurance Scheme which affects its performance and scaling up of the insurance scheme at large scale was analyzed in detail. Crop weather relationship was examined by combining the rainfall and temperature variable into a single variable and modelled to predict the crop yield. A revised (new) contract was designed with less basis risk which can compensate risk of crop loss in a better way than existing ones. Based on the summary of findings presented in the above section, the following general conclusions have been drawn:

- When premium rate was less for a crop in an insurance scheme, coverage under the scheme has increased and vice versa. It is not possible to run insurance scheme like NAIS as it will not be viable for government and insurance companies but premium cannot be too high as in case of MNAIS and WBCIS so that it will adversely affects the penetration of crop insurance.
- None of the sample farmers were satisfied with existing crop insurance schemes because of no/inadequate compensation compared to the actual loss incurred. Delay in claim settlement was another major reason for dissatisfaction of farmers. Many of the farmers expressed premium paid under WBCIS was very high. Farmers expressed need for insurance cover for large as well as small losses too since they need finance for next crop season.
- In WBCIS, small risks were compensated regularly instead of compensating adequately during heavy loss which also lead to increase in premium rates. To compensate the risk of commercial and horticultural crops, WBCIS can be a best option for farmers compared to any yield based schemes.
- In the state, major cereals, pulses and oilseed crop were insured mainly and minor crops were less insured.
- There is a high basis risk in WBCIS i.e., farmers did not receive compensation when there was actually loss of crop and those farmers compensated are not adequately compensated. The WBCIS scheme has benefitted all insured farmers who incurred crop loss and who incurred no loss or harvested good crop.
- Crop weather relationship study shows two growing periods (June to September month and June to August month) average monthly rainfall and average daily maximum temperature have significant effect on yield. Weather parameters such as rainfall and temperature when added linearly into the model to predict yield, temperature is not significantly influencing the yield. But when rainfall and temperature were combined, it has significant effect on crop yield. So combined indices have better prediction capacity than individual weather parameters.
- Simple rainfall index developed in the lines of yield index has performed better than weather insurance products sold so far in terms of high historical payouts, good payout frequency, adequate claim cost and improved probable maximum loss. The new contract is offering optimal benefits to both parties of insurance.

While designing the new contract, it was understood that paying 100 per cent of sum insured is not possible under WBCIS with the

existing method of adding of sum insured in all indices and phases to arrive at full sum insured. The sum insured of a weather index product is a misnomer since it is perceived as the maximum payout that can be expected for that product in the worst case scenario. However, in actual practice, the highest historical payout denotes the maximum cumulative payout (sum of payouts of all phases and indices). The quantitative difference between sum insured and the highest historical payout for a weather index product represents the financial gap between the maximum payout committed by the product and the actual payout that could be expected from that product even in adverse years. When payout of the total sum insured is a never possible event in weather index, it will have effect on premium rates while expressing premium as a percentage of big number.

6.2 Policy Implications

The main policy implications emerging from the study are

- By reducing the premium rates in WBCIS and making the scheme pay for large losses so that farmers themselves manage small and moderate risks can help in revival of the scheme for which it was originally proposed in the country. Also premium rates can be reduced by avoiding frequent and small claim payments for low risk events thereby saving the subsidy premium share of the government which can be better utilized for other areas of development in agriculture sector such as creating irrigation facilities, infrastructure.
- Different farmers have different requirement and a single cover may not meet the need of all the farmers. It necessitates that farmers should be given option to choose the amount of sum assured they want and different risk covers to choose based on their risk bearing capacity.
- Redesigning WBCIS in such a way that it is beneficial during bad years and maximum claim possibility during bad years can help to improve the performance of the scheme in future.
- There is a need for action from government to increase the insurance penetration under the minor crops so that farmers can grow confidently these crops and area under these crops can be increased.
- Weather Based Crop Insurance Scheme can be made effective by removing unintended beneficiaries by targeting high risk only and by avoiding low risks which farmers can manage from their own sources. Redistribution of benefit from unintended to intended beneficiaries is the main task to the make the scheme as successful risk management tool.
- Combined indices of rainfall and temperature can be attempted in weather index design since it has more prediction capacity of yield than individual weather parameters which needs rigorous research before piloting.
- Rainfall is the major risk for rainfed agriculture. Existing WBCIS product is highly complex and difficult to evaluate and benefit farmers. So there is need to develop simple rainfall insurance cover which remains same for fixed number of years and provide catastrophic cover for farmers and benefits both the parties to the insurance contract. Small improvements in the index design are making big difference in claim paying capacity of the product and targeting the correct risk which can be attempted in the similar lines proposed in this study.
- As in weather based crop insurance, it is not possible to pay claim up to full sum insured, in order to improve the economic value imparted to farmers, it should be ensured that the farmers' premium rate is kept low (which is fixed as a percentage of sum insured) or total sum insured is kept at low level by matching the maximum payout possibility. TJ

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1	Bankers Indemnity Policy with Focus on Cyber Security and Computer Crime	22nd February, 2022	10.00 am to 1.00 pm	Rs. 1500/- + 18% GST
2	Reinsurance Treaty and Facultative Underwriting, Designing and Placements	23rd to 24th February, 2022	10.00 am to 1.00 pm	Rs. 3000/- + 18% GST

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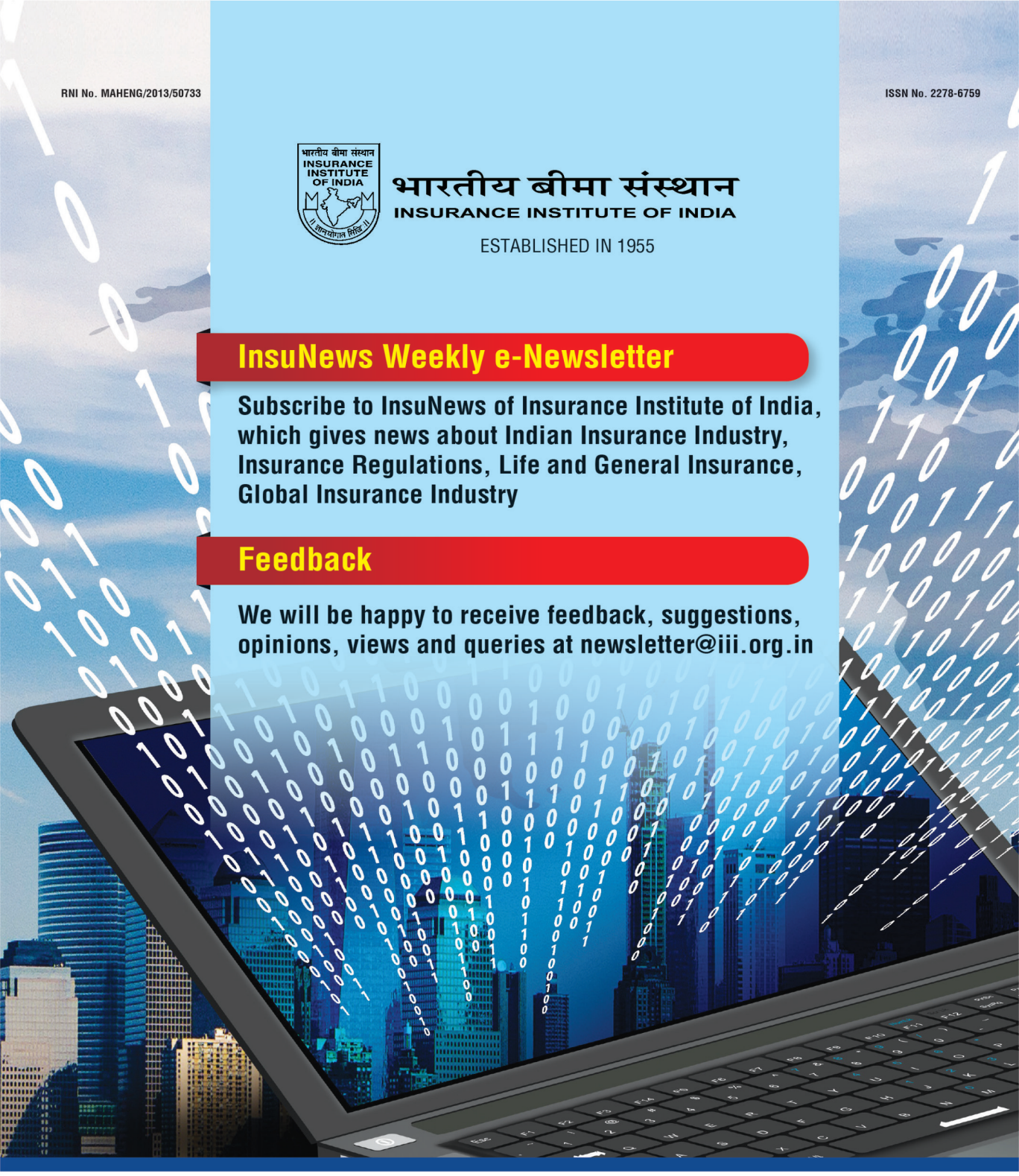

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