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EDITORIAL

The current issue of the journal deals with the prize winning articles of the various essay writing competitions held by the Institute, like S.K. Desai Memorial Essay Writing Competition, D. Subramaniam Award Essay Writing Competition and Technical Paper Essay Competition – Life, General, Health, Micro, Pension. An interesting observation may be made here about the contents of the articles. They broadly reflect three themes that are today among the central concern of the insurance industry.

Insurtech in its broader connotation is a catch phrase that may be used to reflect the application of various information and communication technologies, particularly by technology companies which are making headways in insurance space. A host by innovations like internet of things (e.g telematics), artificial intelligence, analytics and big data and distributed ledger systems exemplified by block chain are all instances of these applications.

Another theme which is engaging insurers and reinsurers is the phenomenon of natural catastrophes (popularly known as NATCAT). The continuing wave of floods and tsunamis, cyclonic storms, hurricanes and earthquakes, are all indicative of nature’s fury playing out, not in a random manner anymore, but more and more as a repetitive pattern with increasing intensity. It is an issue that might affect the very sustainability of the insurance industry.

Finally we have Ayushman Bharat, the celebrated comprehensive universal health insurance scheme, one of the largest in the world. It is an initiative still in its early stages, with a lot of challenges ahead, but which needs to be made into a success. The intentions of the Scheme are indeed praiseworthy.

The next issue of the journal would be on the subject of Insurance and Wellbeing. The theme is very broad, given that wellbeing extends to multiple areas of human life. We invite articles that would reflect innovative approaches to making insurance a powerful tool for the purpose.

Merit Winner

S.K. Desai Memorial Essay Writing Competition

A Roadmap for an Insuretech Revolution in India

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Abstract

The insurance industry in India is not known for a great customer experience. Lack of a consumer-focused mindset and slowness to adopt technology creates pain points for customers. For a young demographic that is used to ease and simplicity, this has made insurance a difficult concept to embrace. India has this huge underserved market, thus creating the perfect opportunity for the rise of insurtech start-ups. Fintech, the word, is a combination of "financial technology". When fintech emerged in the 21st Century, the term was initially applied to technology employed at the back-end systems of established financial institutions. Since then, there has been a shift to more consumer-oriented services and therefore a more consumer-oriented definition. After fintech, 'insurtech' is the next logical step in a series of technological disruptions in the economy, joining the ranks of cleantech, healthtech, agritech, smart mobility and edutech, among others. Insurtech start-ups also have the responsibility to deliver a powerful and pleasurable experience for first-time insurance buyers. They have to look at digitising, simplifying and automating the entire buying and claims processes for a seamless, end-to-end user experience so that insurance can be bought as easily as any product in the digital marketplace. These powerful

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innovations, topped off with improved customer service with trust instead of suspicion, have the potential to revolutionise the insurance industry.

Both InsurTech and FinTech are mentioned across the industry, online and in multiple articles & books. FinTech stands for Financial Technology and refers to the technology which has transformed the financial services sector over the past number of years.

Recently, InsurTech made its way into the industry. It is the application of technology to traditional insurance practices. One of the possible keys to the future of India's insurance market is technology. Developments in the digital world are refocusing all forms of commerce to become more customer-driven, which is altering business and sales models in industries from insurance and retail to telecom and banking. Infrastructure development in India has focused more on higher-speed, lower-cost mobile platforms than on broadband, and an approach fitting the rapid development of India's mobile market. Some insurers have mobile applications, with similar functionality, making it even easier to do this on your mobile device from anywhere. Best of all, these positive customer experiences improve the relationship between the consumer and these institutions. Technology improves the entire claims process and reduces the claim duration.

This Essay provides an insight into the application of InsureTech and its increasing use in the Insurance Industry. The case studies illustrated in the essay are real stories of Insurance companies which are equipped and extending the InsureTech benefits to the insuring public. The day is not far when entire insurance industry will have total dependency on this technology to provide speedier and "at your place" services. This roadmap for an InsureTech revolution is sure to transform the industry to compete with global counterparts. Facilitating policyholders with InsureTech will be the best marketing tool in the near future.

Introduction

Driven by the surfacing of InsureTech and FinTech start-ups, the insurance industry is amidst a systematic change in business operations, not unlike the transformation banking institutions are skilfully mastering now. Insurers should look to banking institutions that have entered the FinTech space as an inspiration for digitization. Banks are partnering with FinTech enterprises to operate at lower costs and alleviate the reliance on legacy systems. As a result, banking institutions are able to retain clients, while FinTech companions improve customer experience with user-centric, mobile solutions.

InsureTech refers to the use of technology innovations designed to squeeze out savings and efficiency from the current insurance industry model. InsureTech is a combination of the words "insurance" and "technology," inspired by the term fintech. The belief driving InsureTech companies and investments by venture capitalists in the space is that the insurance industry is ripe for innovation and disruption. InsureTech is exploring avenues that large insurance firms have less incentive to exploit, such as offering ultra-customized policies, social insurance, and using new streams of data from internet enabled devices to dynamically price premiums according to observed behaviour. InsureTech is a term, similar to fintech, for a company using technology to disrupt the insurance industry. Among other things, insurTech is looking to tackle this data and analysis issue head-on. Using inputs from all manners of devices, including GPS tracking of cars to the activity trackers on our wrists, these companies are building more finely delineated groupings of risk, allowing products to be priced more competitively.

The insurance industry is ready for transformation, to support new business operations, and to maximize efficiency. To make headway, insurance companies will have to look to InsurTechs for inspiration and partnerships. While InsurTech is rapidly transforming the industry, it does not aim to overtake traditional insurance, rather it is opening the doors for both counterparts to extend the value chain and increase mobility overall. In the very near future, enhanced data collection from cars, wearables, and smart phones will further enable claims automation. If accidents occur, diagnostics from these devices will automatically contact insurance providers, process claims immediately and even withdraw payment from designated bank accounts. Innovation through new technologies is steadily becoming a norm in human lives, simplifying their needs and wants and catering to their convenience.

What is Insureterch?

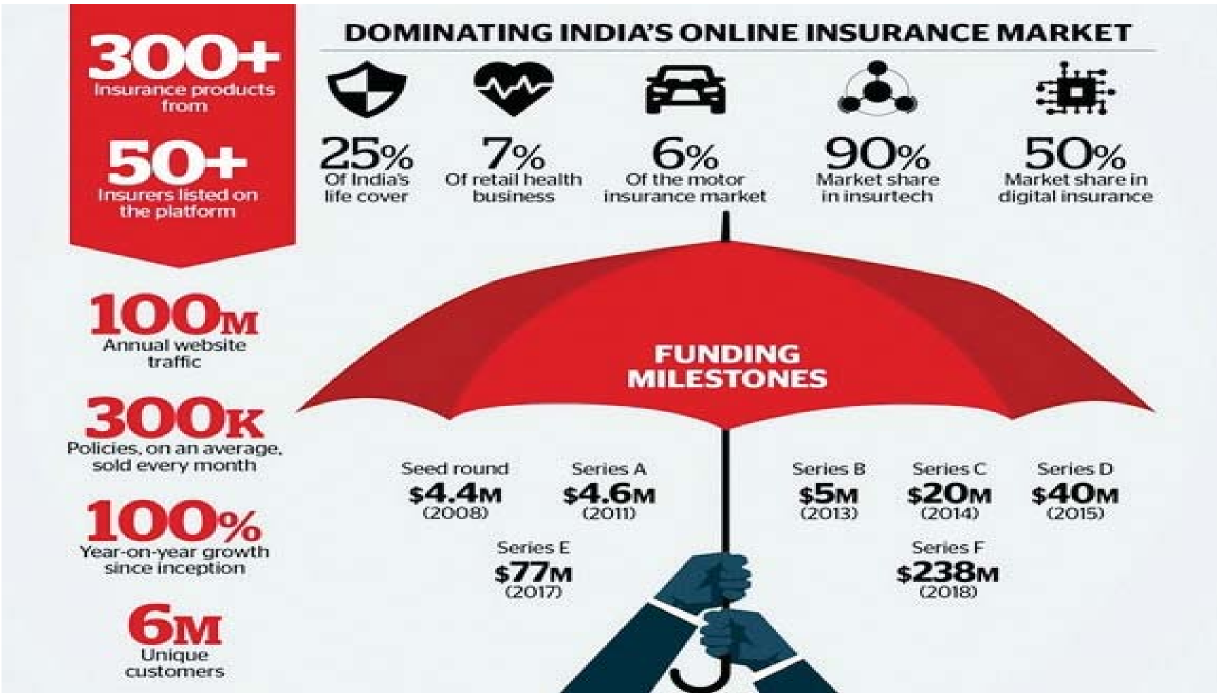
Insurance technology (InsureTech) is a solid endorsement of the value provided by solutions in this fintech subcategory. Insurtech has been slowly embraced by the insurance industry, a notoriously un-innovative industry. The strict regulations that govern the insurance industry have held back the development and implementation of insurance-specific applications. Now, however, insurance agencies have embraced the potential represented by insurance-specific solutions. The global insurance industry gross written premium (GWP), which is essentially the size of the industry, was $4.8 trillion in 2017. There is massive potential in the industry, and the influx of insurtech investment will continue as fintech companies look to capture some of that huge market.

Benefits of using InsurTech: Not only is Fintech challenging the traditional business models and disrupting them, but it is also inspiring new solutions and adding value to the customers. This can be explained as follows:

- **Innovative solutions:** FinTech combines your current business demands with IT to provide innovative solutions for maximizing the speed, cost efficiency, and flexibility of your services.
- **Superior customer engagement:** FinTech revolution has increased customer engagement as it has provided them with many convenient solutions in every step of their journey such as allowing access through mobiles. This makes the business of financial service companies much more effective.
- **Increased customer retention:** Fintech allows insurers to focus greatly on customer needs and target their pain points. This helps them provide effective solutions through different market segments and improve customer retention.
- **Value Maximization:** Like the finTechs, insurTechs target particular value pools in the sector, rather than seek to provide end-to-end solutions. Simpler IT and simpler operations translate into less investment and quicker returns and maximize values in a number of ways:
  - ➢ Targeted product concepts
  - ➢ Full automation
  - ➢ Data-driven decision making and insights
  - ➢ Social engagement
  - ➢ More frequent interactions
  - ➢ Digitizing “moments of truth”
  - ➢ Increased connectivity

Challenges faced by InsurTech: India has this huge underserved market, thus creating the perfect opportunity for the rise of InsurTech start-ups. For a young demographic that is used to ease and simplicity, this has made insurance a difficult concept to embrace. FinServes are facing many new challenges by entering the FinTech landscape. A few key challenges can be summed up as:

- **IT security concerns:** The security challenges of the IT industry make it a challenge for customers to enter the FinTech environment with complete reliability.
- **Frictions in customer journey:** With the introduction of FinTech, customer expectations have reached a whole new level. However, they still experience a lot of friction throughout their journey as their very high expectations are still not met.
- **New and different business models:** As the traditional insurance industry



remained unchanged for over a century, the change in business models is not easily acceptable. Failure to meet user's rapidly changing needs with time creates a challenge for FinTech adoption.

InsurTech is creating its own space within the FinTech segment. Insurance companies will either create their own InsurTech infrastructure or seek partners who can provide the needed technological support to make sure that the entire insurance cycle is revamped to suit the digital consumer.

How is Insure Tech changing the Insurance Industry?

In India, the insurance industry has undergone many structural changes, from being completely government-controlled, to being FDI-friendly to now welcoming new-age technologies in the form of artificial intelligence/machine learning (ML), bots, the Internet of Things and analytics. These latest developments are transforming the Indian insurance sector. While FinTech has had an impact on almost all the different financial services, insurance has lagged behind but is catching fast. Activity grows exponentially since 2012 but has since cooled off slightly due to tougher regulations.

InsurTech is changing the insurance industry in following areas:

Consumer Targeting – Machine Learning and Artificial Intelligence have allowed companies to target potential customers with more precision and better acquisition rates. InsurTech companies are utilizing this marketing technology to attract new customers that traditional insurance companies missed. For example, when you go to buy a car, you usually search for the car on the internet to find the best price. By targeting consumers who are searching for cars, InsurTech companies have a comparative advantage that smaller traditional insurance companies are not using. A small insurance firm would rather pay the InsurTech for leads rather than spend a hundred thousand dollars producing their own system.

Better Underwriting Decisions – Fintech Insurance companies are using Machine Learning and Artificial Intelligence to make better underwriting decisions. Artificial Intelligence can compile information based on past data to make more accurate risk assessment ratings. As a result, low-risk customers pay lower premiums and licensed insurance companies pay fewer claims.

Short-Term Insurance – The ride-sharing revolution has prompted the idea of short-term insurance wear customers can insure a vehicle, bike or other short-term use items for a short duration of time. For example, if you rent a boat for the afternoon, you can purchase a 24-hour insurance plan on your phone. The Internet of Things

(IoT) is also having a major impact on the insurance industry. Sensors in cars and smart phones make it easier for insurance companies to settle claims.

These are the trends in InsurTech technology:

Enabling: Improves efficiency or transparency of an insurance company. Enables cost saving in claims and customer acquisition. Efforts include Big Data and better analytics.

Transformative: Focuses more on the customer experience (digitization) and customer behaviour in order to increase revenue. It includes predictive models, artificial intelligence and engagement innovation.

Disruptive: Focus on the peer to peer market place, on demand models (including micro insurance to handle usage based needs), new product lines targeting segments and sub-segments of the population, new device channels like IOT sensors, and devices supporting insurance products.

Insuretech Start-Ups: Agents Of Change

The beginning of post liberalization era is a shift to digital insurance or InsurTech as it is called now. InsurTech has already arrived in India and is disrupting the traditional value chain of the insurance industry. The industry is fundamentally changing because of the impact of technology such as Artificial Intelligence, Internet of Things, block chain, big data, and Robotic Process Automation. The InsurTech universe can be segmented into four broad categories - Product & Distribution, Business Process Enhancement, Data & Analytics, and Claims Management. Some of the trends are as follow:

1. Globally, a strong shift from 'phygital' (physical+digital) to 'digital' is being seen. For e.g. InsurTech leveraging IOT to monitor health indicators, AI for medical insurance, home insurers collaborating with home automating companies to digitise prevention solutions. Globally, InsurTech companies are developing tools to harness data from wearable sensors in order to create insightful information that can be used to enhance life and health insurance products.
2. InsurTech initiatives in India have taken place mainly in the areas of Product & Distribution, and Claims Management i.e. the client facing processes. Further, the regulator's recent steps in forming working groups to explore InsurTech applications as well as adopting a sandbox approach are early steps in the right direction.

The insurance industry in India is not known for a great customer experience. Lack of a consumer-focused mindset and slowness to adopt technology creates pain points for customers. For a young demographic that is used to ease and simplicity, this has made insurance a difficult concept to embrace. India has this huge underserved market, thus creating the perfect opportunity for the rise of InsurTech start-ups. Indian InsurTech start-ups are yet to tackle some significant challenges as they try to break into the local market.

India Is Headed For Insuretech Revolution

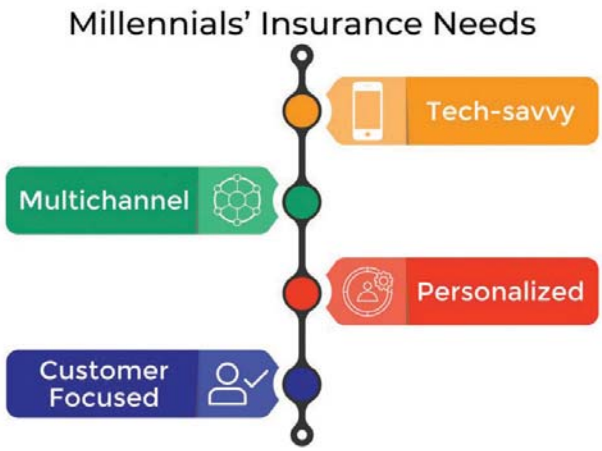
As India rapidly transforms into a major digital economy – courtesy the ever-increasing smart phone adoption and rapidly evolving innovation ecosystem fuelled by entrepreneurial take on real-world problems – now is the time to embrace and facilitate the digital revolution in the Indian healthcare industry. The mobile wallet market is forecast to reach $4.4 billion by 2022 with a compound annual growth rate of more than 148%. As India's migration to digital platforms gathers pace, cutting-edge solutions will enable consumers to do much beyond payments for daily-use items like groceries, milk, fuel and medical supplies, and access top-end services like loans, investments, savings and cross border remittances. Listed below are seven ways in which FinTech is impacting the insurance industry:

1. **Online Marketplace:** The Indian insurance sector had been a sleeping giant as far as technology was concerned. From purchasing a policy to raising a claim, the process was time consuming, resource driven, and paper intensive. Technology has addressed these concerns and awakens the giant. The online environment is no longer alien to consumers as well as brands. Insurance providers are meeting insurance seekers in the online marketplace.
2. **Exponential Growth:** FinTech has created an ecosystem which is conducive for exponential growth. Customers are used to purchasing

t-shirts online. FinTech has made it possible to replicate, if not better, this consumer experience in case of insurance. A few clicks and you can avail your car insurance instantly. FinTech has enabled productive user interface, glitch-free user journey, and streamlined back-end processes. This has changed the way insurance as a product, as a service, and as an industry is perceived by consumers.

3. **Convenience Matters:** Constant innovation propels brands ahead in the competition. When it comes to online business, e-commerce sites are redefining themselves to meet customers' demand for a simple yet engaging interface. FinTech helps insurance companies to create state-of-the-art websites and mobile apps to keep pace with leading e-commerce sites. Convenience is a top priority for e-commerce brands and FinTech will assist insurance providers to reduce barriers faced by customers during their online purchase journey.

4. **Customized Pricing:** Insurance premiums are traditionally priced based on certain generic factors. For example, car insurance premium depends upon car's make, model, age, location, etc. With technology, insurance companies can access data that will shift the premium pricing model from generic to specific. Thus, a driver who is cautious doesn't speed much, and travels a route which is not prone to accidents, will pay less premium compared to a rash driver who often takes his car on long trips. Overall, FinTech will help in risk assessment and customized policy pricing.



5. **Integrating Technology:** Technology integration must be holistic, not individualistic. Customers interact with online insurance providers via their website or mobile app, however, the back-end processes related to them also need to be injected with advanced technology. From customer acquisition to customer servicing, technology can increase efficiency and lower costs.

6. **In Trend:** Internet of Things (IoT), Big Data & Analytics, and Blockchain technology are buzzwords associated with insurance. IoT enables physical objects to share data. Just as telematic devices provide data pertaining to a driver's profile, fitness trackers will give insights into a person's health profile which can be analyzed to arrive at tailored health insurance quotes. Big Data & Analytics aid precise customer profiling which facilitates customized marketing and cross selling.

7. **Breaking Barriers:** By going completely digital, insurance companies are no longer confined by geographical barriers. This reduces operational costs and the cost advantage can be transferred to the customers. Insurance companies can explore untapped markets by using technology as a vehicle which will be fuelled by data and innovation.

Insurers Pressing Hard on Adoption of Technology

New technologies are rapidly changing the world of business. Financial technology has grown explosively, and fintech, which originally referred to computer technology applied to the back office of banks or trading firms, now describes a broad variety of technological interventions into personal and commercial finance. Forward-looking players in the insurance industry are taking note and working towards making InsurTech more mainstream so that they are able to cater to customers better and are also able to create operational efficiencies within their organizations. Insurtech in India for sure has been making steady strides in both innovation and premium growth.

The total market size for India's insurance sector is expected to touch USD 350-400 billion by 2020. However, India's insurable population is anticipated to touch 750 million in 2020. India's life insurance sector is the biggest in the world with about 360 million policies and expected to increase at a Compound Annual Growth Rate (CAGR) of 12-15 percent over the next five years.

The Top Five Trends In India's Digital Payment Landscape

Consumers are rapidly switching to non-cash payment methods that provide simple and convenient ways to transfer money across bank accounts. E-commerce companies like Flipkart also offer payments solutions through PhonePe. We expect digital payments to evolve rapidly over the next few years, and non-cash spend to overtake cash spend by 2020.

The top five trends that we expect to play out in the country are:

1. **UPI:** While the technology underlying UPI, which enables instant payments from one bank account to another, is path-breaking, there is friction in creation of the virtual payment address (VPA)—the alias which is used to transfer money on UPI. Consumers find it cumbersome to log on their internet or mobile banking app to create the VPA.

2. **QR code:** Deployment of QR code technology for digital payments at merchant outlets eliminates the use of expensive EDC (electronic data capture) machines or (near field communication) NFC (near-field communication) devices, and improves the economics of merchant acquiring. We believe that riding on this, more than 10 million merchants will accept non-cash payments in the next couple of years. Mobile phones will be the payments instrument of choice.

3. **Zero transaction fees:** Driven by both government incentives as well as competitive pressures, the economics of payments transactions have been continuously declining. The Reserve bank of India has capped the merchant discount rate for debit card transactions at 0.4% (for small merchants). Most fintech firms are offering payments services for free.

4. **Cyber security:** It is reported that cyber-attacks caused financial damages of more than $500,000 to Indian companies in the last 12 months (Source: CISCO). It is imperative for digital payments players to embrace new technologies like biometric authentication, AI, ML and pattern matching for real-time fraud prevention for digital payment transactions.

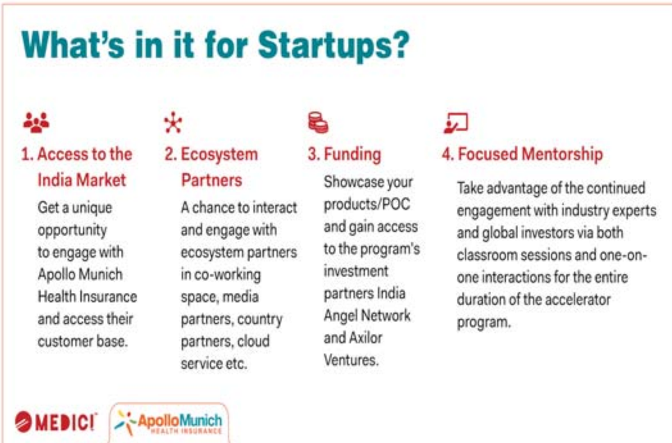
5. **Payments space:** The last few years have seen entry of hundreds of new players in the payments space. A lot of these provide niche solutions. However, consumers demand ubiquity, and look for instruments that work across use cases, both online and offline. Hence, we expect that the space would see consolidation, and few large players would dominate.

Insuretech Ecosystem by Appollo Munich

Apollo Munich Health Insurance takes on the unique challenge and opportunity to provide superior customer service to the large Indian population by continuously improving its operational efficiency. As the next step towards their mission of Making India Health Confident, Apollo Munich Health Insurance is pleased to announce the launch of their first-ever accelerator program, InspireNext, to embark on a journey of sourcing and adopting innovations by partnering with early-stage disruptive "healthcare meets FinTech" startups. With this step, Apollo Munich Health Insurance is aiming to address areas of opportunities within their key business units (BU) by developing innovative products.

About InspireNext

The Apollo Munich Health Insurance team worked with all group BUs and internal technology teams to identify their most pressing pain points in order to develop a baseline view of which FinTech spaces would be best able to work with each BU and arrive at mutually beneficial solutions. The idea was to provide a platform for the incoming cohort to integrate their 'tech' and solve 'fin' problems holistically. With this, start-ups stand a chance to scale their business by increasing speed-to-market by offering their solutions to the large and diverse customer pool of Apollo Munich Health Insurance. With its InspireNext program run in partnership with MEDICI, Apollo Munich Health Insurance is looking to



identify FinTech/InsurTech start-ups with products and solutions.

What's in it for start-ups?

Among the main benefits for start-ups are:

Insurtech Startups In India:

A recent survey conducted among CEO's of insurance companies across the world revealed that almost 90% of them fear that will be losing out on a large segment of their business to InsurTech start-ups who are more nimble and tech savvy. The giants of Insurance still rely on paperwork and work using legacy software which is focused on employees rather than on the needs of the customers. All this is set to change as new start-ups aggressively ramp up their product portfolio with tie-ups and strategic product launches. InsurTech companies are generally more responsive to customer needs than state behemoths who do not have to worry about being profitable. These new breed of companies are more willing to take risk and innovate compared to the established insurance companies like Oriental, New India Assurance, LIC Of India, IFFCO TOKIO and ICICI Prudential.

Changing Buying Habits

Customer no longer visits government offices inquiring about new policy plans for health, vehicle or life insurance. They seek this information on the Internet. They have become accustomed to purchasing goods on e-commerce websites and expect a similar experience for buying insurance policies. Many of the established players in this sector have now begun investing money in technology and some are even incubating start-ups in house in anticipation of the disruption. There are 142 Insurance Tech start-ups in India. Here is a list of the most exciting ones:

1. Coverfox – www.coverfox.com

The website offers bike, car, travel, health and life insurance. Coverfox was started with the goal to prevent insurance policies being sold through fraudulent promises by phone agents. It is a platform where it is easy to compare, manage and buy new policies from multiple vendors. Coverfox is a simple and quick way to buy insurance online today. It currently has more than 200 employees. They have raised funding from some of the biggest VC firms in the country. Coverfox is an IRDA licensed brokerage platform for insurance in the retail space. Coverfox aims to be a single point contact for the consumers for their insurance needs, renewals and claims settlement.

2. Policybazaar

Policybazaar is an online insurance aggregator for comparative analysis of products from various insurers based on price, quality and key benefits. Currently, the website offers information to users to help them make informed decisions along with solution driven customer service. They feature content in various forms such as top five features of a product, best sellers and conversion rates.

3. ET Insure – www.etinsure.com

Launched by the owners of India's largest English newspaper The Times Of India. ET Insure claims to enable savings of up to 70% on premiums paid on vehicle insurance. The company is planning to soon introduce term and health insurance for the Indian market. On their website one can compare and buy from different policy providers.

4. Acko – www.acko.com

The company has already raised US$ 30 million even before it rolled out its first product. The main aim of Acko is to un-bundle the insurance market in India by making it more affordable for ordinary citizens. The company is inspired by InsurTech firms in the US and aims to launch new schemes for the Indian market. Acko is a tech-enabled automotive insurance company providing low-cost insurance products based on data analytics. Its insurance products include car comprehensive insurance, car third-party insurance, bike insurance, and Ola insurance. It offers cashless claims processing with doorstep pickup & delivery services (for repairing of damaged cars).

5. InsureFirst – www.insurefirst.co.in

This Kolkata based company was started in 2016. It has partnered with insurance firms like Aviva Life, ICICI Prudential and SBI to roll out it's products. The company offers diverse plans which can be tailored to suit users requirements via phone support. The website currently does not allow you to compare different plans but looks like it will be rolled out soon.

6. OneAssist

OneAssist is a platform for assistance and protection services. Offers solutions to individuals to assist and help protect data in the event of the loss of products such as wallets, payment cards and smart phones. Users can call OneAssist in case of product's theft or damage. The company assists the users and provides theft and damage insurance protection, including doorstep services to pick-up and repair services. Also offers repair and protection services for mobile phones, laptops and tablets. Offers warranty services and assistance services through partnerships with OEMs.

7. Digit Insurance

Digit is an IRDA licensed first internet based general insurer launched by Fairfax Holdings and Kamesh Goyal, a former executive from Allianz. Fairfax holds 45% stake in the company. It offers insurance for cars, mobile handsets, travel, and jewellery.

8. Turtlemint

Turtlemint is an aggregator of insurance products. Users can search and compare various insurance policies available in the market. Users can buy policies using the site and also get assisted in their claim settlement. The website allows the users to compare car insurance, bike insurance, health insurance and life insurance policies.

9. RenewBuy

RenewBuy is an IRDA licensed brokerage platform for motor insurance, registered with brokering firm name D2C Insurance Broking Pvt Ltd. It provides real time quotes from various motor insurance plans. The company has tie-ups with multiple insurers including HDFC ERGO, IFFCO Tokio, Bajaj Allianz, Bharti AXA, Reliance General and L&T Insurance to provide discounts and deals on its platform.

10. Easypolicy

Easypolicy.com, initiative of Sonnen Insurance Broking Services, is an online platform that allows users to enter the details of their insurance requirement and get instant quotes. The company sells different types of insurance online including car insurance, health insurance, travel insurance and life insurance, among others.

11. Agile Financial Technologies

Agile FT is an enterprise software provider that develops software products and solutions to the banking, insurance and financial services sector. Agile's Core General Insurance is an integrated comprehensive solution for insurance companies covering the entire business cycle from underwriting and claim management to reinsurance and accounting. It also provides software products in the space of investment management and lending management.

12. PolicyBoss

Policy boss is an online platform for users to compare and buy various insurance policies. It also offers other services such as brokerage and claim settlement assistance. Caters to 75k customers and has partnered with 35 insurance service providers as of July, 2015.

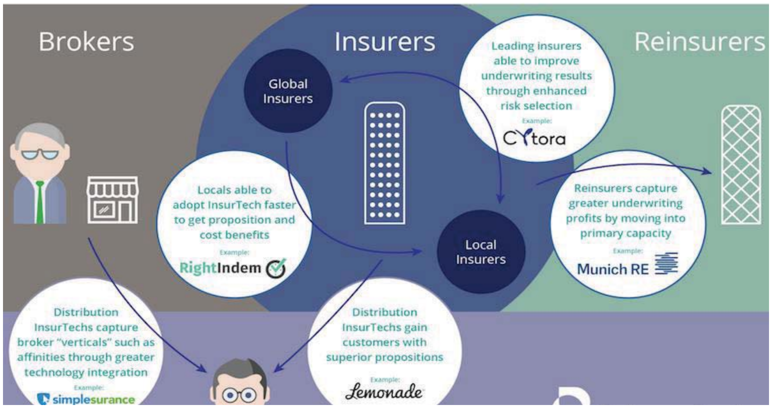
13. Insurance Self Networking Platform – IRDAI – isnp.irda.gov.in

This is an online portal that was launched in by the Insurance Regulatory and Development Authority of India. The portal allows for the registration of insurance brokers, online intermediaries and agents who are keen to sell policies.

Leveraging Insuretech Solutions

An expert panel has suggested that the insurance regulator, the IRDAI, set up a core sandbox committee to promote digital innovation in the insurance sector while safeguarding the interests of policyholders. The 10-member expert panel was formed by the IRDAI last year, tasked with raising recommendations for which regulatory sandbox approach to take to enable the experimentation of insurance products so that the industry could keep pace with fast-evolving FinTech. Other matters which need to be set out clearly include entry and eligibility criteria, process flow, timelines, success factors and exit parameters for applicants, along with appropriate controls for protection and risk management.

How InsurTech Could Shift Profits in the Industry



For traditional insurance players to transform into disruptive InsurTech companies, rapid adoption of disruptive InsurTech solutions is the only way to survival. There is a steady rise of tech-savvy players entering the insurance sector who are ready to challenge the traditional players and revamp the market dynamics. Like Fintechs, InsurTech players too are extending innovation throughout the sector, creating threats and challenging incumbent players to rethink their strategy. The good observation is start-ups offering disruptive insurance solutions are more than willing to collaborate with tradition players to catapult the industry on a speedy growth. Underwriting is one of the essential components of the insurance business and no matter what no machine can replace underwriters. Customers are becoming digitally savvy by each passing day, and they expect a compelling user experience for every digital transaction they make. The one thing that InsurTech will surely see in 2019 are policies that are customised depending on the needs of the insurants. Oxbow partners say:

"There is much talk of disruption in the insurance industry. We're not convinced that InsurTech is about to turn the industry on its head. We do, however, believe that InsurTech has the potential to shift profits in the industry. Our latest infographic provides some examples of how this might happen."

Digital Transformation of Insurance In India

India continues to be a country with prodigious potential for life insurers. It is a youthful country, with 65% of its 1.35 billion residents (the world's second most populous nation) aged 35 or younger (and 50% 25 or younger). The overall economy is healthy and growing, with gross domestic product (GDP) rising at an average of 7% per annum since 2012, a rate that is expected to continue until at least 2022. It is also rapidly urbanising: 30% of its population lives in urban settings, and the number is expected to increase substantially by 2050.

Technology

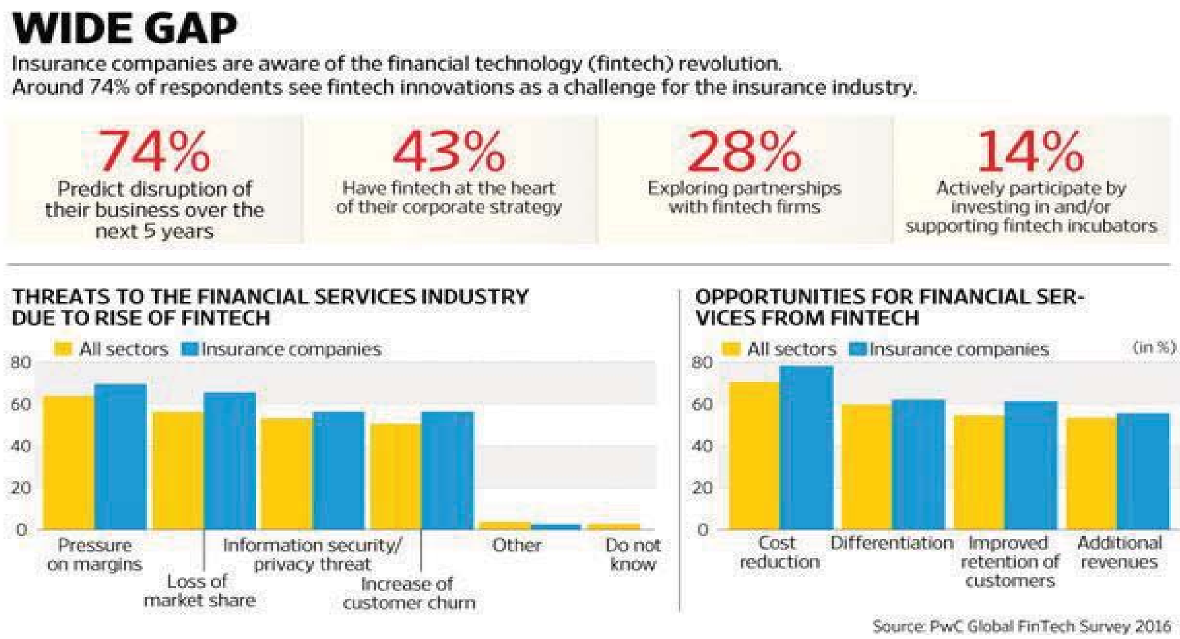
One of the possible keys to the future of India's insurance market is technology. Developments in the digital world are refocusing all forms of commerce to become more customer driven, which is altering business and sales models in industries from insurance and retail to telecom and banking. Infrastructure development in India has focused more on higher-speed, lower-cost mobile platforms than on broadband an approach fitting the rapid development of India's mobile market. Indeed, Indians today generally access the Internet on their smart phones. However, despite recent rapid gains, average internet speeds in India still lag the rest of the world.

Expectation of growth in e-commerce via mobile phones

Still, more than 70% of Indians interested in life insurance and with Internet access, are already likely to do their research online. And fortunately, India's internet speeds and access are likely to keep growing. Plans are underway to launch 5G services in 2018, and it is anticipated that by 2020, 70% of all of India's e-commerce will be transacted via mobile phones by 175 million online shoppers.

Aadhaar voluntary biometric identification system

In terms of digital, the government has sought to integrate its capabilities with economic activities, to augment and ease access. Seven years ago, it enacted the Aadhaar voluntary biometric identification system to enable cashless payments. Distribution has also gone digital. Currently, there are 20+ web aggregators and online insurance brokers in India and their businesses are growing faster than the industry average. These platforms are spurring greater awareness about types of insurance products.



Blockchain: a three-step path to adoption and maturation

While blockchain is not unique to the financial services industry, it was in the industry in which it was first utilized. The premise of blockchain (here is a more in-depth blockchain explained resource) is that all data is housed in a distributed ledger, which ensures the veracity of the data housed there by cross-referencing it against all the other ledgers in existence. There are a variety of use cases for blockchain technology within the financial services industry. One estimate puts the potential time savings in just the banking industry at 5.4 million hours per year by 2022.

1. **Internal proofs-of-concept:** Verify the technology by starting with internal reconciliation of customer data sets and internal claims processing with smart contracts.
2. **Customer-facing processes:** Seek partnerships in areas where there is leverage to drive adoption and develop the requisite legal, regulatory and tax frameworks.
3. **IoT enablement:** Strategize for the long term; study how sensor hardware can deliver near real-time performance and condition information to enable automated premium adjustments and smart contracting.

Digital Tech Is The Way Forward For Insurance Industry:

Ease and convenience of online channels are the major attractions. It's not just banking. Other financial services segments such as insurance are also taking to digital technology. With insurance penetration in India among the lowest in the world at an estimated 3.49 per cent in 2016-17, insurers are using digital platforms to expand their reach beyond metros. For instance, Reliance Nippon Life Insurance partly credits its turnaround over the last two years to digital. Its initiatives include a digital platform, Super Express, which issues policies in a 30-minute process and provides instant customised illustration.

Artificial Intelligence,Chatbots

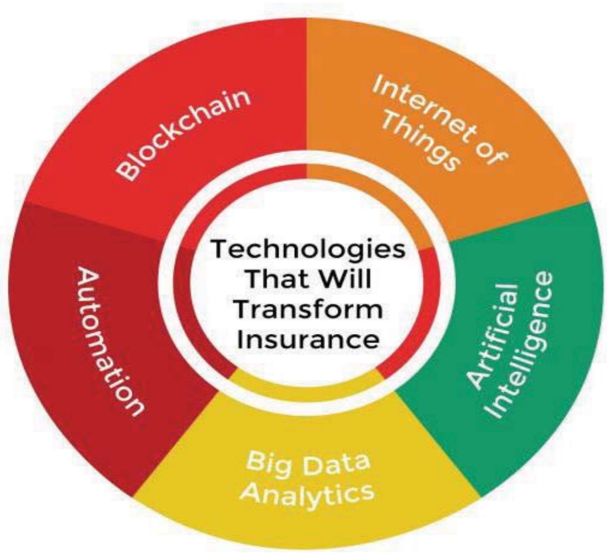
Most insurers have now also adopted technologies such as artificial intelligence (AI) and chatbots to provide a better interface to customers. In today's world, people don't have the time to wait for an agent. They want to log on, explore and understand products on their own and even buy policies on their own, noted an executive with a general insurer, adding that this has reduced mis-selling. From comparing policies for health and motor insurance, people also tend to go digital when buying small-ticket products such as travel insurance or home insurance. Insurers are also embracing digital technology in Tier 2 and 3 cities for training agents and helping customers understand policies.

Big Data Analytics

Big data programs also raise privacy risks and legal uncertainties as insurance companies increasingly rely on big data and AI to offer accelerated underwriting, to create finely segmented risk profiles to price insurance, or to target advertisements for insurance products. While these methods have the potential to reduce costs and increase efficiencies for insurers and their service providers, as well as some classes of insured's, companies using big data programs should be mindful of the complex legal landscape in which they operate. First, big data programs should ensure they provide transparency about what data is collected and how it is stored, analyzed, used and shared e.g. machine learning algorithms may be able to find novel correlations between consumer behavior and lower underwriting risk profiles.

Artificial intelligence and robotics will create new demand for insurance

Insurance will be in higher demand as businesses incorporating AI and robotics into their systems and processes will require adequate protection from a wide range of associated risks. Our world is becoming increasingly automated. Insurers have an opportunity to play a role in shaping the development of the AI and robotics and will no doubt be instrumental in providing solutions to some of the most complex risks associated with these technologies. Some of these risks have been well documented, however for insurers to respond AI could impact several lines of businesses such as product recall and liability, third-party motor liability, professional indemnity, medical malpractice, cyber, fidelity and political risks.



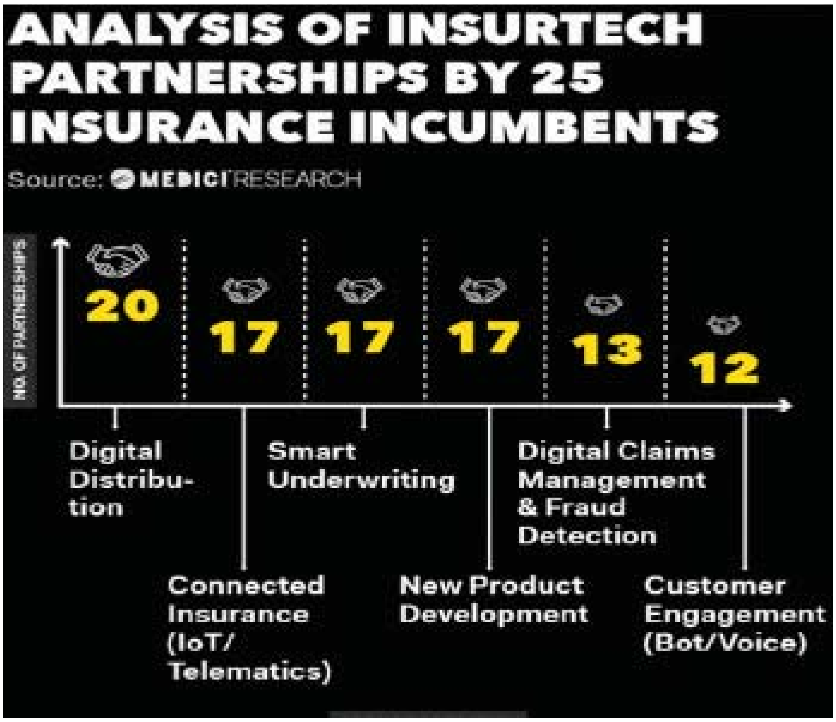
Areas of opportunities for insurers include:

- any company generally offering algorithm-based systems to data-rich companies (e.g. fraud detection in online sales) which possibly needs to be insured against the risk of the algorithms returning incorrect decisions and its impact on the AI companies' clients
- new companies emerging in the disinformation defence area who would require certain type and form of products (e.g. professional indemnity and cyber products) as they leverage technology to filter out fake news, detect and eliminate troll-bots as well as certify information and authenticity of images and videos
- increasing demand for AI knowledge experts who are able to provide risk management services as the AI field develops and applications increase. This has led to specialist service firms emerging that are aimed at loss prevention.
- acquiring the knowledge needed to provide insured parties with guidance on AI best practices by assuming a leadership role in this space and thereby shaping the development of the AI ecosystem in which they operate

There is also an opportunity for insurers to collaborate with clients since data from them will provide greater understanding of risk and offers opportunities for improved risks and pricing models.

Insuretech is the New Fintech

InsurTech is now a truly global activity. More than half of all deals still take place in the US (whose primary InsurTech hubs are Silicon Valley, San Francisco and New York), but the UK, Germany, China and India are now significant markets in their own right. London is already a big centre. And Dublin could ultimately become one too. InsurTechs are small and agile, and they prefer 'trying and seeing' rather than 'learning and doing'. At a more practical level, InsurTechs need



to remember that their technologies are inherently cutting-edge, whereas many insurers' legacy platforms are not. The adoption of tech, including IoT, robotic process automation, advanced analytics, AI, blockchain and wearables, to name a few, is having far-reaching effects on established business and giving birth to new business models and potentially sustainable, scalable business ideas. The regulator's recent steps in forming working groups to explore InsurTech applications and adopting a sandbox approach are steps in the right direction. While data privacy and cyber laws are being assessed, aspects like digital partnerships to enable a larger ecosystem connect, outsourcing backend processes and online talent marketplaces need a closer look. The insurance industry is at an inflection point undergoing massive transformation. With the abundance of capital flow in insurance, it is the biggest opportunity in recent times to change the mundane narrative of insurance from just protection to the role of a true risk avoidance partner of the customer. It's a golden opportunity for the insurance industry to insure its own future.

Is India Ready for Insuretech Start-Ups?

From banking to wealth management services, the finance sector is going through major disruption and the insurance industry is not immune to this. Insurance technology aka InsurTech companies have edged up the game and moved beyond merely aggregating policies. They have started to innovate using technology such as IoT, the blockchain, artificial intelligence and are trying to break the complexity around the product. According to a Research and Markets report, the global InsurTech market revenue was valued at $532 million in 2018. It also predicts that the revenue is expected to reach $1,119 million by 2023, growing at a CAGR of 16.0 per cent between 2018-2023. The opportunity in India is tremendous. Technology-led insurance is expected to play a significant role in the growth of the underpenetrated insurance sector in India.

Customer First

While new-age businesses are developing new and disrupting models around the insurance products, traditional companies such as HDFC Ergo, IndiaFirst, etc have also buckled up and are innovating with new technologies. So, in short the opportunity lies in the way a company sees its role in the consumer's life.

The Support System

The IRDAI now need to look at other aspects of this business. Take an example of access to data. Big data is believed to have a huge impact to the industry but access to important government records is currently unavailable for the industry or for that matter, a health record on an individual is all over the place. There needs to clarity on how this data could be stored and used while keeping privacy in mind. The regulator has started to take one step at a time. The IRDAI constituted a working group to examine 'Innovations in insurance involving wearable / portable devices'. It has also recently floated a discussion paper on 'Telematics' in motor insurance, which clearly meant there is an intent to understand the nature of this disruption.

Criticism of Insurtech

Although many of these innovations are long overdue, there are reasons why the incumbent insurance companies are so reluctant to adapt. Insurance is a highly regulated industry with many layers of jurisdictional legal baggage to deal with. As such, the major companies have survived this long by being incredibly cautious, which has made them shy away from working with any start-ups—let alone start-ups in their own, very stable industry. This is a bigger problem than it sounds, as many of the insurtech start-ups still require the help of traditional insurers to handle underwriting and manage catastrophic risk.

Key Challenges

The key challenges hindering the growth of the InsureTech industry could be primarily classified into three – first would be customer-related challenges; second the pace of technology adoption in the sector and dilemmas that come with it for the players and third the regulatory challenges. These new capabilities are likely to spur continuing strengthening and growth for India's life and health insurance markets. However, several challenges still need to be overcome.

- **Languages:** More than 75% of internet users in India expect to consume online content in their own languages. This could definitely pose a challenge: India has eight main languages, 22 official languages, and sizable speaking populations for approximately 122 languages. In addition, less than 15% (200 million) are conversant with English, and only 120 million are fluent.
- **Safety net:** A second challenge is the absence of a nationwide social safety net. Much of India's population – especially in rural areas – are on their own when it comes to individual and family financial security.
- **High mortality protection gap:** Life and health product penetration in India, although rising, is still low. The current sum assured to GDP ratio is 50%, indicating a wide protection gap. Although not the largest in Asia – China still has the largest – it is sizable compared to other countries in Asia, and it is growing.
- **Low persistency:** There is dissatisfaction with the current roster of savings-type products (five-year persistency of 39%).
- **Common obstacles in purchasing insurance:** Even with insurance aggregators, customers seldom complete their purchase entirely online. A telephone call or a visit from an agent is often needed to clarify, fill forms, and understand the inclusions and exclusions of each plan as well as to wrap one's head around obscure terminology.
- **Stressful claim processes:** Insurtech start-ups need to show that they can approach claims entirely differently, while following the prescribed guidelines. They want to approve claims with minimal information and trust their customers on face value. The assumption of an insurance company is that the customer is dishonest, while the precedent set up by amazons of the world has proven that trusting the customer is good business as well.
- **People and skills:** The insurance industry has historically struggled to attract quality talent and now faces an incremental ask of attracting digital natives. Insurers will need to focus reskilling / upskilling their existing talent or acquire requisite talent through talent market places/ gig workers. For example, in Singapore, a Tripartite Advisory on Human Capital Practices for Insurance was recently launched by industry associations along with the ministry of manpower. This advisory sets out HR best practices for the industry in areas of building a talent pipeline, skills-based hiring and managing retrenchment responsibly.
- **Prioritise:** With recent growth in the Indian insurance industry primarily driven by government-sponsored schemes, InsureTech interventions should be prioritised. For example, InsureTech can potentially augment crop claims and farmer insurance bonding by connecting farmers to the larger agri-ecosystem, including lenders, machinery suppliers, weather and crop price data insights.
- **A growing market:** Insurance for a typical Indian has always been about tight family bonds, counting on your relatives to come through for you and not something you have to buy. As huge joint families dissolve and migration weakens community bonds, there is little hope of relying on family and communities to come through to help in times of crisis.

- **Opportunity through challenge:** InsureTech start-ups also have the responsibility to deliver a powerful and pleasurable experience for first-time insurance buyers. They have to look at digitising, simplifying and automating the entire buying and claims processes for a seamless, end-to-end user experience so that insurance can be bought as easily as any product in the digital marketplace.

Conclusion

India is a fascinating market that has made tremendous strides over the past number of years in innovation within the financial services sector, primarily focused on financial inclusion for the 1.3 billion population. Insurance has always been a peculiar segment where the challengers, from the start, have positioned themselves more as an enabler rather than a disruptor. Insurance is indeed heading on the path of disruptive innovation. InsurTech start-ups have the potential to strengthen the tech infrastructure of incumbents and deliver value in terms of enhanced User Experience (UX), data-driven decision-making, smart underwriting, consumer-responsive product development, etc. Clients now expect personalised insurance solutions and adapting to this change can help insurers to fulfil this. Insurers also expect to see a growing need to enhance interactions with clients and introduce sophisticated solutions. Insurance is the most call-centre reliant of the whole financial sector, with 78% of clients contacting the companies by phone. But even though industry players expect significant changes in client habits, they are still rather reluctant to establish strong relationships with fintech firms. The report states that insurers lag way behind the banking sector which is much more active in addressing fintech. The general trend in the global financial services industry has been shifting from disruption to collaboration. While incumbents are looking for innovations, start-ups are looking for scale. As InsurTech start-ups continue to emerge across various components of the insurance value chain and business lines, incumbents are constantly evaluating opportunities to deploy these applications in the insurance industry today and in the future. This collaboration begins with investments. TJ

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Merit Winner

D. Subramaniam Award Essay Writing Competition

Telematics -The Future of Vehicle Insurance in India

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Abstract

In Indian Insurance Industry, the parameters for calculation of motor premium are very general. Important parameters such as mileage, driving behaviour and types of roads driven are not considered for the premium calculation. Development of advanced information and technology and communication systems as well as significant drop in the cost of ownership of technology and again, the necessity for market differentiation in the insurance industry, have all facilitated the appearance of new billing models in the motor insurance industry. The purpose of this article is to demonstrate these new models in the motor insurance industry and Telematics is one of them. Changes in consumer expectations and emerging technological trends such as mobile connectivity, digital, big data, and Telematics will change the insurance industry in near future. Insurers are operating in an environment where customers' expectation and technologies available to meet them are evolving rapidly. Advancments in technology has provided new methods to insurers for connecting with customers. Due to growing instances of vehicles, thefts and road accidents in India, Telematics can be one of the best solutions for the Indian insurance industry. Telematics market can be a huge hit In the Indian insurance industry,. Some of the

l In Indian Insurance Industry, the parameters for calculation of motor premium are very general. Important parameters such as mileage, driving behaviour and types of roads driven are not considered for the premium calculation. Development of advanced information and technology and communication systems as well as significant drop in the cost of ownership of technology and again, the necessity for market differentiation in the insurance industry, have all facilitated the appearance of new billing models in the motor insurance industry.

Insurers have already conducted pilot programmes by installing devices in insured's vehicles and have started obtaining data on insured' driving and behaviour. Telematics products are most common in countries with high rates of theft (Italy, Brazil, South Africa) or in expensive, sophisticated markets (UK, Western Europe, United States). Penetration of Telematics products is globally very low but expected to grow gradually until the product is commonplace (10-20 year timeframe). Insurance may traditionally be seen as a slowpoke as far as new technology is concerned, but that perception is quickly changing among people and that is due to the Internet of Things (IoT) and the arrival of new business models and Telematics insurance is one of them.

Keywords

Pay how you drive, Pay as you drive, Insurance Telematics. Usage based Insurance, black box.

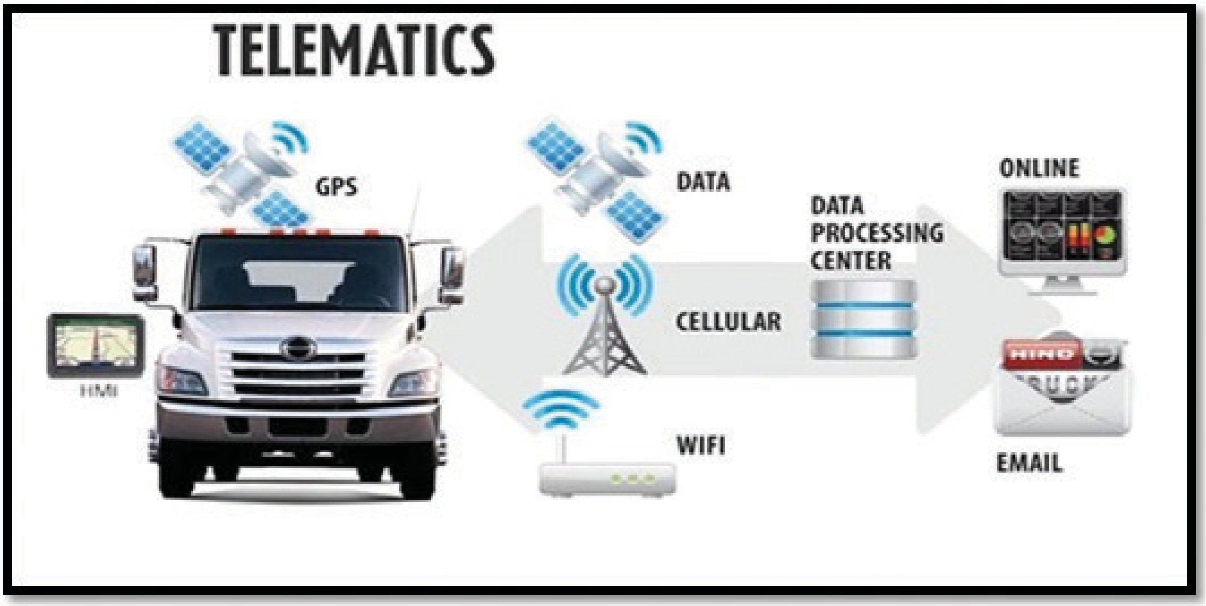
Italy is having the highest numbers of Telematics equipped cars in the world and Italy is one of the markets wherein highest number of usage based insurance (UBI) policies are being sold. Some of the top companies wherein Telematics technology is getting used are Allianz, AXA, Progressive Corporation, Metromile, Generali group and Aviva plc. There is no doubt about the fact that the traditional cars and semi-autonomous cars are likely to become fully autonomous cars in the future and one of the reason will be development of telematics. Telematics is all about collection of data –but the data, which is being collected, is only raw material. The Insurance companies can turn this collected data into actions by ensuring better risk segmentation and pricing. The data collected from the vehicles describes the real-time behaviour of drivers. Telematics also helps in facilitate claims handling.

Telematics is definitely going to help the individuals in getting fair pricing for their motor insurance policies. This will also help in improving driving behaviour because individuals also know that their careful driving will rewarded by the insurer through discounting in their motor premium. Consequently, not only insurance companies but also customers will benefit from telematics. Therange of services available under telematics for customers arevery wide in nature. It gives benefits to customers like alerts in case of emergency, high-speed signals, Alerts related to weather based on geo locations. One of the S model of Mercedes has given several sensors in the car, which read the road and accordingly help in adjusting steering, speed and brakes. One of the Model of Tesla is having a software installed in the car which can enabled the driving with autopilot mode and also having auto brake functionality ion the case of emergency.

What is Telematics?

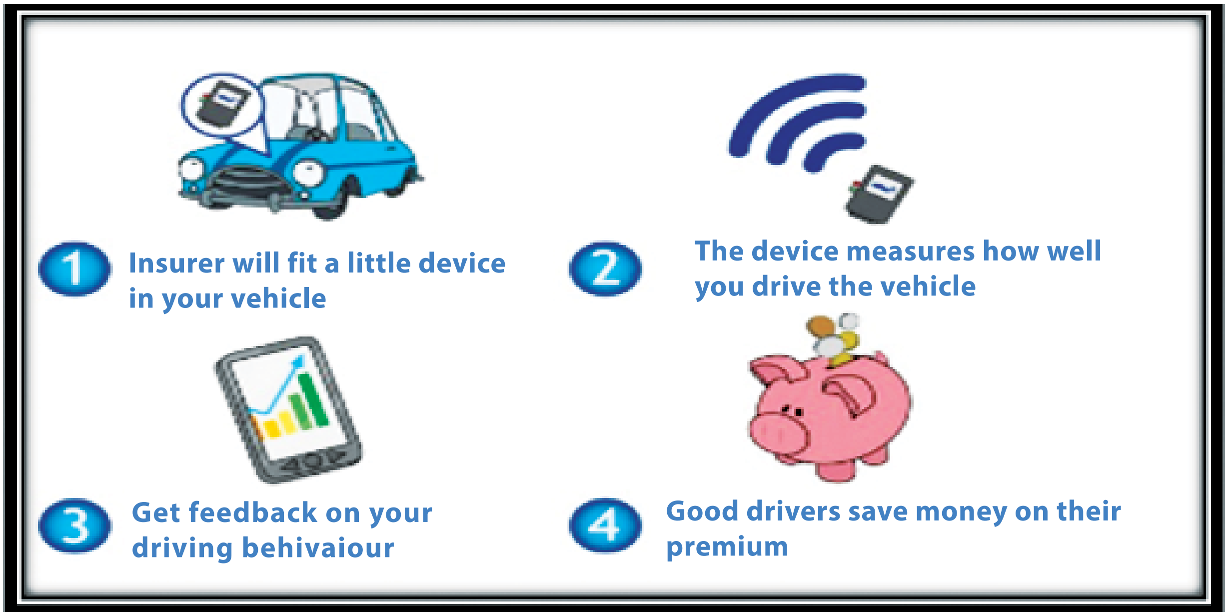
Telematics is a combination of the words telecommunications and informatics. Telematics, in a broad sense, is any integrated use of telecommunications with information and communications technology. It is the technology of sending, receiving and storing information relating to remote objects – like vehicles – via telecommunication devices. Telematics is a general term that refers to any device, which merges telecommunications and informatics. Telematics includes anything from GPS systems to navigation systems. From simple devices to tracking driver's speed and mileage to advanced data recording tools, telematics has evolved a lot in the past few years. Insurance companies are employing it to monitor driver's behaviour while driving to assess risks and charge insurance premiums accordingly.

According to ABI Research's report, global insurance telematics subscriptions will be more than 107 million in 2018, almost 20 times of the 5.5 million in 2013. Insurers are coming with promises of cheaper premiums as rewards for safe driving and as per experts, real-time tracking will be compulsory by the next decade.



Different Types of Telematics Devices

A telematics device is generally a system that you install in your car that records information about your driving habits, such as the number of miles you drive, your speed, and how quickly you brake. These systems sometimes analyse the time of day when you drive, as well.However,there are currently few types of fleet tracking devices that are available in the market and each one has its own benefits and downsides



What is telematics insurance?

Telematics insurance is vehicle insurance where a telematics box is fitted to your vehicle. The telematics box (also commonly known as a black box) then measures various aspects of how, when and where you drive.

How does it work?

Whenever the customer buy vehicle insurance from any insurer, information is collected from a little telematics box also called as black box that the insurer fits into the customer's vehicle. The SIM card inside the telematics box works like your mobile phone - it sends the information to the insurer and the insurer analyses that telematics data to find out how safely you drive. The customer can also get the information (Collected by the Black Box) through SMS or through mail and can look at the data to see how he is driving the vehicle. The Insurer has developed telematics technology to help the insured to drive the vehicle in a safer and more positive way. If the insured drives safely, then he gets bonus points and he gets more discount at the time of renewal if he is having more points.

What is inside the box?

There are four main elements to the telematics box.

- GPS system - Tells the insurer where and when you drive, and the type of road you're on
- Motion sensor (or accelerometer)- Provides information about impact on the car – this could be from heavy braking or even an accident
- SIM card- Sends the information to the Insurer's database
- Computer software- Controls how the information is analysed and transmitted

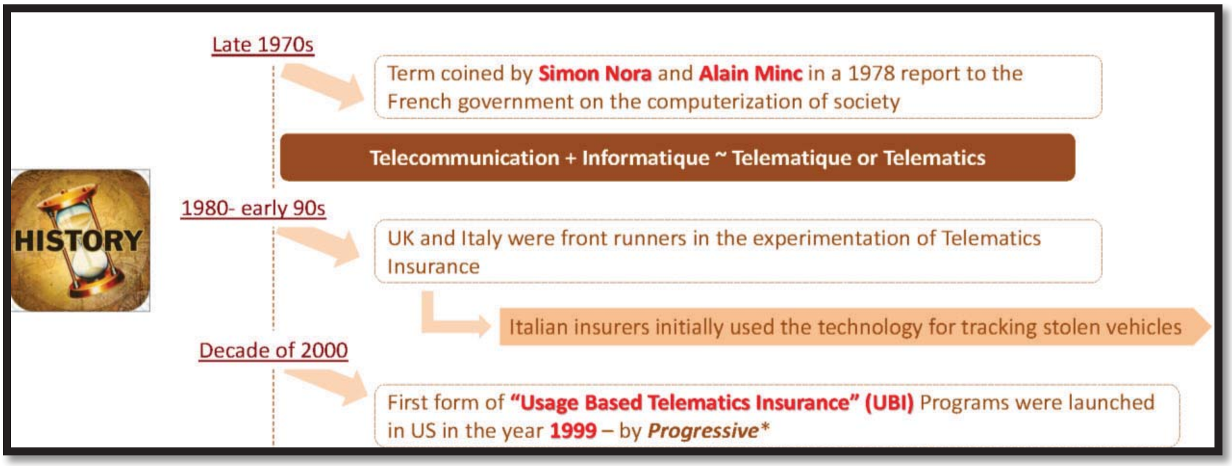
What information does the telematics box record?

It tells us:

- Timing of your driving- day or night
- Speed you drive at on different sorts of roads
- Pattern of brake or acceleration – Sharply or Not
- If you take breaks on long journeys
- Vehicle's total mileage

Whenever the customer buy vehicle insurance from any insurer, information is collected from a little telematics box also called as black box that the insurer fits into the customer's vehicle. The SIM card inside the telematics box works like your mobile phone - it sends the information to the insurer and the insurer analyses that telematics data to find out how safely you drive. The customer can also get the information (Collected by the Black Box) through SMS or through mail and can look at the data to see how he is driving the vehicle.

History of Telematics Insurance



Type of Telematics Insurances (Usage-based insurance)

- Pay as you drive (PAYD) insurance,
- Pay how you drive (PHYD) Insurance
- PAY When You Drive (PWYD) insurance

Pay as you drive (PAYD) insurance

PAYD means that the insurance premium is calculated dynamically, typically according to the amount driven.

There are following types of PAYD insurance:

- Coverage is based on the odometer reading of the vehicle.
- Coverage is based on mileage aggregated from GPS data, or the number of minutes the vehicle is being used
- Coverage is based on other data collected from the vehicle, including speed and time-of-day information, historic riskiness of the road, driving actions in addition to distance or time travelled.

Pay as you drive will have advantage for office goers who usually travel by app based taxi services / metro / public

transport and use their own vehicles sparingly. It is assumed that such cars are mostly driven by the owner himself and driven primarily with family as passengers and hence will be driven more responsibly.

Pay How You Drive Insurance (PHYD)

Another form of usage-based insurance is PHYD (Pay How You Drive). Similar to PAYD, but also brings in additional sensors like accelerometer to monitor driving behaviour.

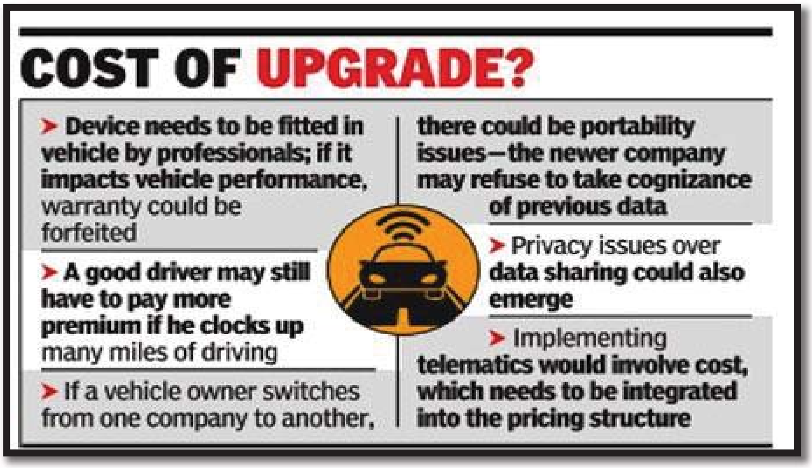
Pay when you drive insurance (PWUD)

Millions of people buy their mobile phone service on a pay when you use contract – and now insurers are offering vehicle insurance in the same way, paying just for the miles you drive.

Under this, the insured pays a flat monthly fee to cover the basic fire and theft element of the insurance, and then an extra charge on top to drive the car. The driver pays for each journey made, with it all being managed through a mobile phone app on a rolling monthly contract.

Regulatory aspects and challenges

IRDAI (Indian regulator on insurance) had put out a draft report on telematics on August 3, 2017 with all the insurance companies. IRDAI had



Evolution of Usage based telematics insurance globally

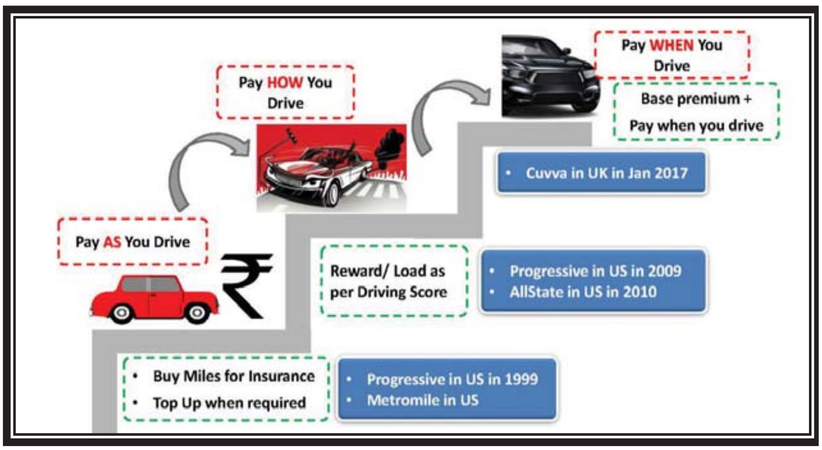
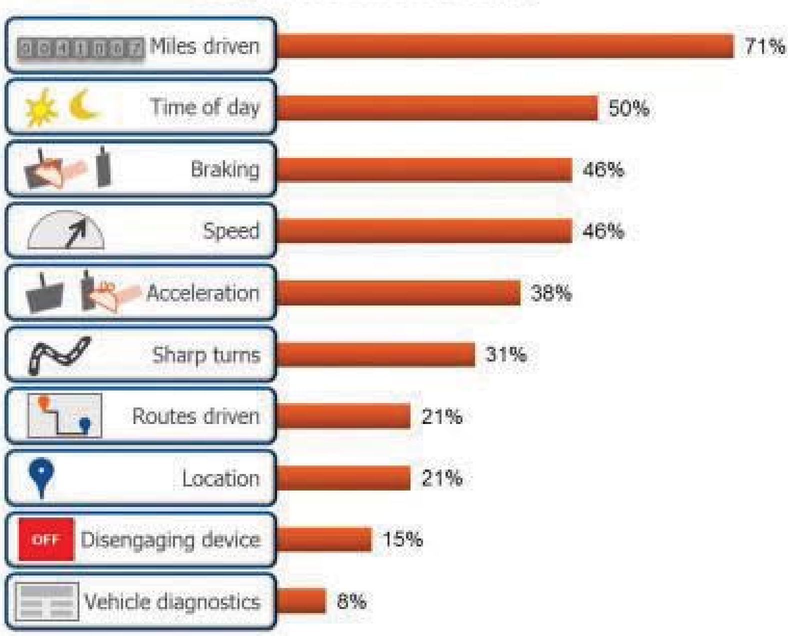


Figure 5. Percent of Insurers Using Specific Telematics Data for Pricing



asked the insurers to send their views, recommendations and suggestions on implementation of telematics technology in motor insurance. Currently a careful driver of India who does not drive his car with many miles is paying the same premium, which the other driver who is driving his car recklessly is paying. A discussion paper on telematics insurance was also shared by IRDAI with all the insurance companies and IRDAI raised the concern of the insured in that paper that all those customers who are using their vehicles for lesser duration, or lesser distances should pay lesser premium to the insurer as they are less prone to road risks and those customers who are using their vehicles for longer durations and longer distances should pay more premium as they are more prone to road risks. The unfortunate part of the industry is that both sets of customers are today paying the same premium for a particular vehicle. IRDAI has asked the insurance companies to revisit their pricing methodology. IRDAI has also told insurance companies to look at alternatives to other conventional telematics devices like smart-phones with mobile apps, Bluetooth, dongles and black boxes etc.

Some of the insurers in India has already launched a telematics project but some of the biggest problems, which were faced, by most of the insurance companies was the reluctance from car service centres. **Some of the challenges faced by them are as follows.**

Other tracking devices (Alternatives to Telematics)

Smartphones

Almost every insurer offers a smart phone application these days. Apart from these, there is a multitude of applications that can be synced with your car's dash cam, record videos of an accident, record conversations with witnesses and capture any other document on the scene.

Apps offered by insurers also provide facilities like online chats, video chats, etc. to streamline and accelerate the process of claim settlement. Also, reporting an accident scene in such detail will reduce insured's chances of claim rejection. Thus, insured will not need to justify the insurer against the other driver at the time of assessment.

Emergency alerts

Modern cars are incorporated with software that automatically alerts emergency contacts and services in case of a serious accident. Insurers and emergency contacts are notified about the details of location, number of passengers and are asked for an appropriate response.

Several cab providers also provide emergency alerts services where a rider can share estimated time of arrival and the location with emergency contacts. There are also apps that allow the rider to reach the 24 X 7 helpline directly during an emergency. Soon, this emergency call technology would be a mandatory feature in all cars.

Dashboard cameras

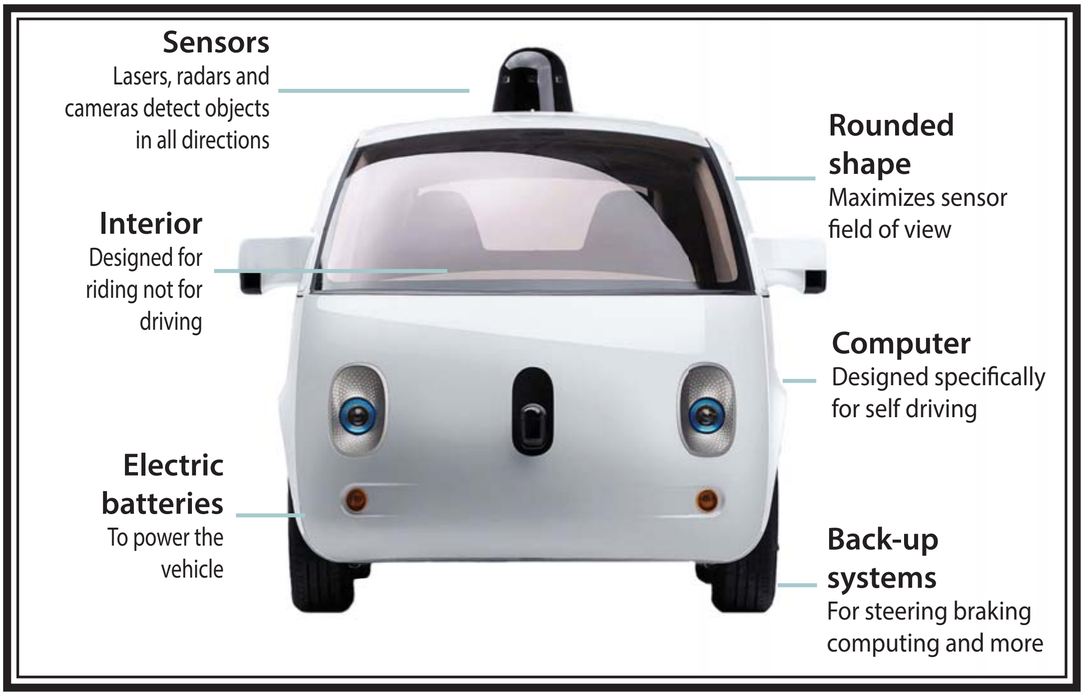
Dashboard cameras are amazing devices that can record forward, sideward and even rearward videos. These recordings are extremely helpful and can be used as evidence if you get involved in an accident. It gives the insurer an insight into the accident and the causes that led to it.

A high - quality evidence allows insurers to fasten the claim settlement process. It also reduces the risk of fraudulent and excessive claims. Not only four wheelers but also several manufacturers are providing helmet cameras for two wheelers to record an accident scene.

Driverless cars

Autonomous cars with features like self-driving and self-parking are no longer fiction and are likely to hit the roads by next decade. Google has already been driving driverless cars since 2009 and other manufacturers like Tesla Motors, BMW, Mercedes and Infiniti are also working on fully autonomous cars.

The modern hi-tech software takes control of the vehicle and reduces the chances of human error. Information obtained from radar, auto steering, lane assist, controls speed limit, etc. can be used to address the cause of an accident. However, who will hold the liability of the accident is still unanswered. Considering the pace of transition of the automotive sector, it is best to opt for a comprehensive car insurance that adapts future technological advancements along with providing basic coverage.



Advantages of Telematics Insurance

(For Insured)

- Through telematics, the insured enjoy many benefits in his vehicle on a daily basis such as roadside assistance and remote unlocking of your vehicle. Let's say the insured forgot the car keys in the vehicle, with telematics and a quick phone call the insured could get their car unlocked.
- Telematics can also provide real-time information on air bag deployments or car crashes and locate stolen vehicles by using GPS technology.
- Improve customer service
- Reduce unauthorized vehicle use
- Gives feedback about behaviour of a vehicle
- An insured who drives his vehicle very carefully and does not cover many miles could see a reduction in the premium at the time of renewal.
- It will also facilitate the insured to determine the most efficient route, saving them costs related to personnel, fuel and maintenance

(For the Insurer)

- Increase productivity of insurer's business
- Reduces operating expenses
- Monitoring the Location and Speed of vehicle
- up-to-the-minute knowledge of Vehicle in one centralized, web-based interface
- Through telematics insurance, the insurer can offer personalise policies in line with individual driver profiles to offer fairer and more transparent premiums to low-risk customers. This increases brand loyalty, improves customer retention and can win new businesses
- Telematics insurance can boost the profitability of an insurer by redesigning of policy based on driving behaviour rather than demographic information and reduce exposure based on the amount of usage & travel pattern
- Presents cross-sell and up-sell opportunities to policyholders like breakdown assistance, usage-based maintenance, theft protection and remote vehicle control
- Telematics can help you assess risk more accurately, price it into policies and minimise your exposure
- It also helps in reducing fraud claims

For Nation

(Society)

- The same will make the insured more aware of driving techniques and ultimately contributes to providing better drivers to the nation.
- The same will encourage safer and more considerate driving which will ultimately lead to safer roads for all citizens and reduce traffic congestion and pollution.
- There is around one death every 4 minutes in India due to accident, promoting safe driving through insurance with help of black-box will decrease traffic accidents.
- Telematics boxes are GPS enabled, meaning your vehicle can be tracked if reported stolen. Therefore, the same will help in reducing thefts in the country.

Disadvantages of Telematics Insurance

There is no doubt that there are so many advantages under telematics insurance but it also has a flip side. One of the very real "new" risks that all these connected devices pose is the risk of being hacked.

Security in this rapidly evolving and very complex field is a big issue. Only recently, we saw this when hackers were able to "override" the intelligence in a certain self-driving car leading to taking over the handling of the car. This may seem like a scene from a science fiction series, but is now a reality. The potential cascading effect can make this into an even more impactful event. This observation leads to another threat and that is the threat to data privacy.

Some of the Main disadvantages are as follows.

1. Telematics policies that monitor driving performance are designed to award good drivers. The flip side to this is of course that drivers with bad habits will see their premiums increase.
2. It is not good for long distance drivers. In case you have to ply long distances often for work and other activities, telematics recording will not be in your favour and car insurance might get expensive for you as compared to a normal car policy.
3. Drivers who are already considered safe e.g. middle-aged individuals with good driving history will not stand to gain much under black box insurance policy.
4. Telematics devices can monitor what speed you're driving at, so those who regularly go over the speed limit will see their premiums increase or even the insurer cancelling their policy. One off speed limit violations typically aren't going to affect your premium, but regularly speeding certainly will.

5. Technology and monitoring costs may outweigh potential revenues
6. Dangerous drivers may opt out
7. Telematics car insurance aimed at individual customers won't usually be able to tell who is driving the insured vehicle. This means that if there's a secondary driver who isn't a particularly good driver, even their infrequent driving could negatively affect the entire insurance policy premiums. An example of where this could happen is if a new driver, for instance a son or daughter who just passed, occasionally drives their parents car which has a telematics insurance policy.
8. Telematics devices also cost money. Even if the insurer gives you a box for free, you'll be paying for the equipment in another way: through higher premiums. It's likely that good drivers will still get lower insurance, but their premiums will be covering another expense that non-telematics premiums don't have to pay for
9. Privacy concerns have also been raised around telematics. While data is treated with the upmost privacy and security by insurers, there is also a risk that hackers could get hold of it no matter how many precautions are put in place. Furthermore, with fleet telematics your boss could be keeping an eye on where you drive even out of working hours. There's also the possibility that the intelligence services are keeping an eye on your whereabouts, or that a court could order the insurer to disclose the information during a trial. Even if none of this actually happens, the stress of fearing that it might can negatively affect some drivers
10. At the moment, the installation of black box monitoring technology is voluntary. This can cause a problem however, in that good drivers will receive the benefits of lowered premiums but bad drivers may not be penalized to the same degree. For good drivers there is a financial incentive to have their behaviour monitored and so they are likely to opt into a black box insurance system.
11. However, for bad drivers that may be part of a low premium demographic, there is an incentive not to have the technology used. Insurance companies need to be able to match their lowered premiums for the good drivers by similarly increasing the premiums for the bad drivers. If they only lower their premiums, then overall running a black box system will be more expensive for insurance companies.

Telematics Affects Everyone

The view from underwriting:

The convergence of different data types leads directly to increased precision in assessing risk, pricing policies and estimating necessary reserves. There are clear advantages over current approaches, which rely on backward-looking claims data and historical risk studies. Through constant monitoring, underwriters can recommend real-time pricing and policy term modifications.

The View from Claims

Telematics is likely to drive further evolution in claims, as it orients more toward active loss prevention. For instance In-vehicle sensors can also be useful in providing warnings in case of dangerous driving patterns.. There are also data driven opportunities to enhance incident management and claims service, such as proactively offering towing or "loaner" vehicles in the event of an accident, rather than just covering these costs

Challenges

Data privacy concerns and insured consent will be starting point. Data storage & confidentiality should in line with prevailing laws. A Person opting for PAYD and PAWD will normally be comfortable in sharing data of kilometres driven , speed at which the vehicle was driven and how it was driven etc. but an individual might not be comfortable in sharing personal information like his location, where he drivers, his geoofence details, family details etc . However, these are not the showstoppers for telematics insurance;

customers will have the option to switch off this personal information from being transmitted.

The installation and monitoring of black boxes has a cost. If this cost exceeds the potential savings and increased revenue that results from that technology, then it may not be in the best interests of insurance companies to have the monitoring devices installed. This is particularly true if the scenario mentioned above occurs, where bad drivers choose not to use the system and are consequently not accurately penalized. The device would need to be fitted in the vehicle by that installer who is professional. When an insured will switch from one insurer to another insurer, there could be issues relating to portability of data—the newer company may refuse to take cognizance of previous data. There could also be issues related to privacy of data and what data can be shared and what cannot. Moreover the Implementation of Telematics would involve cost and this cost need to be integrated into the pricing structure.

What Does the Future Hold?

The data produced by telematics is vast and provides valuable insights and all those insurance companies who are using the same are getting benefits of less frequency and severity of claims. The same has also resulted in increasing customer retention and less claim cost for the insurer and less premium for the customer. Policyholders of telematics are very less prone to accidents, but when it actually happens, telematics can reconstruct it and can present it to the insurer for assessing actual liability and reducing chances of fraud. Telematics data also opens up the possibility to help the driver in new exciting ways. For example if we see that a customer regularly goes on the same route that includes a accident hot spot, telematics might warn him and reduce the risk of an accident. Few years before, the consensus was that telematics would not work, as drivers would not want their journey “monitored. The fact is that today, black boxes are the most reliable option and the best way to provide quality claim management, counter fraud protection and effective safedriving. The cost for manufacturing and installing the device has also been falling. In 2012, the cost of the Box was roughly around Rs 10000, But now the same is easily available with the cost around Rs 2500.

Way Forward

Things are changing very fast in India and Indian telematics market has started growing and the main credit goes to the advancement of technology in mobile communication .Telematics is not only about vehicle tracking. The technology is also being used for some other innovative purposes. For example Some states are using telematics for assisting their woman to reach their destination safely. Some of the states have designed their taxis with internet and mobile based convergent technologies, through which , it is easy to track and monitor the movements of the passenger and drviers. Indian telematics market is estimated to reach $301.23 million by 2021. The Insurance regulator (IRDAI) is also taking initiative in promoting telematics and more and more insurance companies will come forward and will provide telematics based insurance services to their clients. The cost of the device can be

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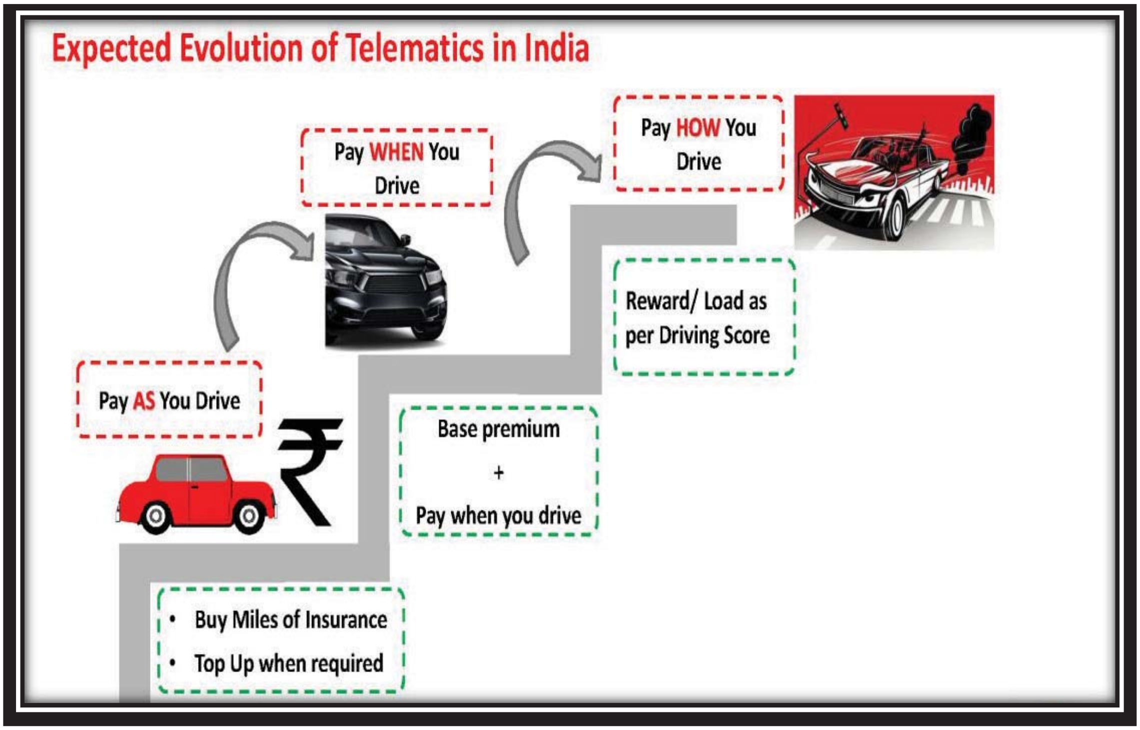
one of the main barriers for growth of telematics in india, but if all the insurance companies come together and offer telematics insurance, the same may result into saving in insurance premium of customers as well as reduction in claims. The role of IRDAI will also be important for providing growth under this segment. In India, as of now, only few insurance companies are offering telematics based insurance. One of the insurers is offering it free of cost to those customers who purchase PA policy or other policy of that company. But In Future, we should hope that customers and insurers will know more



about the advantages of this technology and will come forward and will start buying telematics insurance. In future if customers opt to use telematics, the same will give some satisfaction to them because they will be ware that their renewal premium will depend on the basis of their driving behaviour and not on the basis of averages from lacs of other drivers. The same will also build long term loyalty between the insurer and insured. The same will also encourage the safe driving. In India, Telematics will play a vital role for the future of the automotive and motor insurance industry. This will be achieved by ensuring renewed customer satisfaction, delivering cost efficient, fair policies that prioritise safety as a driving value in the future automotive experience. In India, initially the telematics based insurance should be promoted in motor long term products so that the device cost can spread across years. In the first phase, the industry should start with pay as you drive (PAYD) and the same can further evolve to a Pay When you drive and Pay how you drive Underwriters and actuaries should work on this concept and should come up with formulae for calculation of premiums based on kilometres driven (distance) first and then driving behaviour later. In an economy wherein focus is shifting from people operated vehicles to autonomous vehicles, Insurance will also shift from people based to vehicle based. There is no doubt that importance of data will be more crucial than ever. Only those insurers will give superior service who will develop their expertise in telematics technology. TJ

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Merit Winner

Technical Paper Essay Competition (Life)

InsurTech- A Tool for Insurance Penetration

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Abstract

Insurance in India is at the lowest when compared to other countries which is at 3.69%. However, the score was even low at the start when the industry was opened to the private insurers, where it stood at below 1%. It has thus shown an increase with the changing environment. We are here to talk on insurance and the use of technology which has been on the verge of disrupting the industry. We would also see how technology has shaped the world around us and has helped few insurance companies to revamp their entire business of insurance, helping them to capture a huge market.

The World is contingent and there is no true way of perceiving it. Replace world with India and the statement remains as valid.

When we ponder at the definition of insurance, we find it defines as people helping people when they are struck by life. If we turn the coin and look at the other side of insurance, we would find exemplified there, the head of "Humanity". As the Earth revolves and nature is subject to change, so is the business of insurance.

Insurance in India is at the lowest when compared to other countries which is at 3.69%. However, the score was even low at the start when the industry was opened to the private insurers, where it stood at below 1%. It has thus shown an increase with the changing environment. We are here to talk on insurance and the use of technology which has been on the verge of disrupting the industry. We would also see how technology has shaped the world around us and has helped few insurance companies to revamp their entire business of insurance, helping them to capture a huge market.

Insurance has been a push product rather than a pull product, and the issue gets more complex when life insurance comes into picture, since it requires people to think about their "Death" without even promising any immediate return.

Insurance in India has been following the adage "Change is the only constant" and is still rolling on the wheels of innovation, change and disruption. Insurtech is referred to as the combined technical and strategic work of technology and insurance, which has considered Fintech as its idol. In the latter case, technology has joined hands with the financial services sector for its better functioning and ease of the customers, resulting in a much better level of satisfaction. Insurance has witnessed the first wave of insurtech, when insurers had started taking help of the internet for the purpose of providing better offers to the customer.

Looking at a baseball game I wondered that the invention of insurtech in the insurance industry is like the game of Baseball, where we have three kinds of people. The first category involves the one those who make it happen (is/has been using technology in the business); the second category consists of those people who watch the things that takes place or watch it happen (includes companies who are still watching its competitors using technology in their business); and the last category of people are the ones who keep wondering what has/had happened.

We (insurtech) are currently working in the stealth mode in the insurance industry where few are aware of our walk through the roads while we are perturbing the old manual process of working. We have been joining hands with the companies and are continuously helping them to steal the show by offering various facilities such as use of Internet of things, Chatbots, Drone and may other.

Now looking at our various services offered, you would come to know the exact benefits of our usage in the industry. Let us now take into consideration the various disruptions that we have instilled in the business of insurance.

You would have come across the 'most in the air' term "**Machine learning**" which means the use of algorithms and other statistical data to help the computer to function automatically without the use of external programmes or directions. Now when we use Machine Learning technology, we make many processes automated - some of the examples of automations are the Self Driving Car, Practical Speech recognition and many more.

Machine Learning is the process of performing some specific tasks where there is no use of external data or in other words, data is not provided explicitly, due to which the model must be dependent on the patterns so created. To understand the concept more clearly, we can take an example of a small child who is made to learn things around him with the help of display models i.e. he is shown pictures of various items and asked to identify it. Similarly, the concept of machine learning prevails, where the machine analyses and scrutinizes the images before it, and identifies with the help of data already fixed into it.

Now, talking on how Machine learning can be used in Insurance is what makes us scratch our head. There have been companies using the technique of Machine Learning for the ease of business and have recorded that there has been an improvement in one or the other way to them. Mutual Insurance an American insurance company has been experimenting regularly on machine learning where it has created an application which helps the drivers meeting with the accidents to quickly determine the amount of refundable claim amount by clicking the pictures form smart phone and the application reads on the images so clicked and identifies the damaged car and also provides the calculated damaged specific repair cost of estimate.

Talking of another insurer "Allstate insurance" in America has been successful in implementing the use of machine learning where the company works on creating a virtual assistant called "ABle" which has been assisting the agents on selling commercial line products and helps the agents in collecting more business by eradicating the long queue of call centres. This process has helped the company in shifting its business from personal lines to commercial lines successfully.

Bharti-AXA general insurance company has recently declared that they will be selling Two-wheeler motor insurance through WhatsApp and has joined hands with the web Aggregator "Wishfin insurance" for the speedy delivery of the service. The insurer will be using the arm of wishfin called Wish-policy for the purpose. Now, Bharti-AXA has chosen to be a part of digital world where the Indian population has been spending around 3hrs every day on smartphone. This surely will help the company in grabbing the customers and increasing the reach to a very large extent including the rural sector.

Now, let us look at the case of Lemonade insurance company based out in New-York when it was in news for settling the claim within 3seconds. Is that imaginable? They have proved it to be doable.

Ladder Life insurance company is another example which has used Google home to offer insurance policies to the customers as the machine learning technology answers questions to the customers verbally and delivers the premium amount to be charged within few seconds.

Technologies that can Disrupt Insurance

Considering another example of Insure-Tech is the use of "**Internet of Things (IoT)**". IoT is nothing but the interconnection of internet and the daily usable devices enabling them to send and acquire various data. The best example is the smart watch used by us these days for keeping a count on our walk, heartbeat, blood pressure and many more.

Internet of things has been helping the insurance company to control the extent of various kinds of losses and expenses. Now if we take a glance at the few examples, we would get to know the actual data relating to it. Consider the example of Progressive insurance company an American car insurer that has been using Telematics to monitor how the driver has been driving the car, which helps the company to determine the amount of premium on the basis of risk the driver is exposed to by his/her habits rather than calculating it with the traditional method of deciding the type of car used by the holder. Now this in turn will help the company in keeping an eye on its holders, letting them know the fraudulent cases if any.

Taking another example of Liberty insurance, the company has helped its customers in reducing the amount of premium for home insurance with the aid of Google's Nest. Nest helps the customers by letting them know the exact location of a fire in the house. Moreover, the sensor segregates slow moving and fast burning fires by giving alerts on their phones.

Erie company, a U.S based company has been using Drones for the purpose of inspecting the homes in case of damaged claims being triggered by any policyholder. It not only improves the process of claim settlement but also saves the cost of fraudulent claims and wounded employees.

These are a few examples of how insurance companies use internet of things, which has helped them in some form of revenue generation.

Let us now consider the example of Aviva Life insurance who has been offering a discount to its customers for following better health practices such as exercise and a healthy weight. This helps the company in reducing its claim costs and is helpful to the customer, since now-a-days, everyone is fitness freak. This discount helps them to reduce the cost of premium.

"**Customised Products**" can be offered to various individual customers according to their needs and advances, helping them to secure their lives. This can be more exciting when it is offered over mobile so that the customer is not troubled by formal paperwork loads. Ladder life is a perfect example of this, It has been offering digital insurance covers to its customers, be it via premium payment options which are available online, or claim settlement process after the death of the customer. When the services would be digitalised, customers would be more interesting in purchasing the plans as it releases their burden of remembering the payment dates and keeping in hand the policy document.

Another technology that can be a part of insurtech is the multiple decentralised ledger function that is offered, in which each customer can have a copy of the ledger and the customer can have an independent transaction relating to claim settlement. This can be termed as the use of "**Block Chain**" where every transaction is backed by the previous transaction enabling lesser chances of fraudulent claims and better service to customers.

Life insurance can also vouch for the use of "**Cloud Technology**" which can store huge amount of data from various sources such as mobile phones, social media and other electronic devices and keep an eye on a customer's activity. This technology can also be helpful to the company for saving IT related costs which it has to incur for underuse and under capacity.

Factors of Insurance Penetration

Now let us consider the factors on which insurance penetration is dependent.

Investigating these factors we would find that they can be categorised into two types: Quantitative and Qualitative factors.

The qualitative factors affecting insurance penetration are as follows:

Knowledge availability: people have been till date unaware of different kinds of policies available. They consider insurance to be the same old paper pen material.

Trust: People have started losing trust in the private insurers because of large cases relating to claim fraudulency and improper services provided to the customers.

Business Environment: The environment that exists now within the industry is very competitive as no one wants to lose out their share of customer, for which the companies have a cut-throat competition among themselves, relating to solicitation of business and capture of market share.

Agents Quality: The quality of agents in the market have also been a challenge for the companies as they are neither well versed with the knowledge level about their and competitors benefits, nor are they skilled or trained properly to tackle the smart customers.

The Quantitative factors that determine the penetration level are as follows:

Inflation rate: The inflation rate of the country has a very big role in deciding the level of insurance penetration as when there is a rise in the inflation rate the price level rises and the currency that was used to buy certain quantity of a product helps in buying less now.

Real interest rate: Real interest rate refers to the rate of interest which the investor expects from his investment. When we look at the literacy level and awareness among the masses regarding insurance, they consider it to be another kind of investment tool expecting a return out of it which is completely contrary to the concept of insurance.

Literacy rate: When the population of the of the country is educated and financially well versed with the knowledge of different parameters and are keen to invest part of their earnings in social schemes like insurance the penetration is thought to be improved.

When we argue on the terms of collaborative working of technology and the insurance industry, we can conclude that there has been an increase in the usage of technology which has started disrupting the industry to a large extent.

Analysing the aforesaid technologies and considering the factors of insurance penetration and correlating them with each other, we would be able to find out the various methods of improving insurance penetration.

Let us dive into the findings and various correlations of insurance and technology.

The literacy rate and the knowledge availability of customers can be improved by the method of digitization as over 72% of Indians have been using internet for online purchase and payment options showing their trust on online platforms which will intrigue customers to avail insurance products online, and completing the cycle of purchasing to settlement of claims.

As we saw, Bharti-AXA selling its products through whats-App would make customers aware of it and encourage them to buy their products due to ease of availability, which is the need of the hour for the customer.

Ladder life using Machine Learning for providing better service to the customers is an excellent example which can be taken as an idol for life insurers.

Considering the factor of Environment of business and trust - it can be said that the concerned problem can be solved with the help of customised products being offered through digital platform such as mobile. It can be of great help to the customers and the company as well. Streamlining the products will help the insurers in analysing the risk individually, providing them with better claim experiences.

Block chain is the kind of technology which can help companies in gaining back the trust of the customers as it is more secure, and the customers have reliability over the transactions so made because of the visible accessibility. The use of wearables and smart watches by the insurance companies, to have a regular check on its customers, keep the customers on their toes, and this has been able to change the mindset of the policyholders regarding their health and lifestyle.

With the increasing number of mobile applications these days, life insurance companies can offer Micro, flexible and short-term life insurance policies to the customers by which the company can increase its area of operations to a larger extent and can also acquire customers with lower annual income.

Insurers Interest and Conclusion

When we seek interest of the Insurers in insurtech it would be interesting to know that a huge chunk of insurers are ready to invest in it. Take the example of Max-Life insurance company who has proposed for 100% stake in insurtech start-up companies thorough presentation to IRDAI, although the regulations impose a limit of 10% investment at present. This information helps us to know the increasing interest of insurance companies towards use of technology for not only soliciting business but also for serving clients, making them feel happy at the end of the day, which helps in maintaining the persistency of business, contributing in the improvement of insurance penetration.

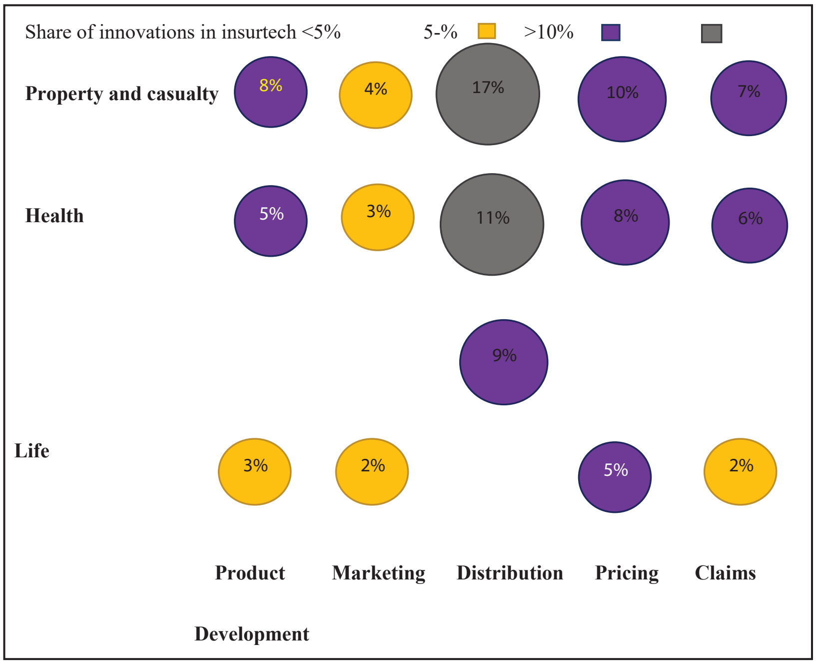
The use of technology in extensive form in our everyday life has been a new norm for us today. It has been our common habit of hailing an Uber from our smart-phone or to order food via Swiggy, Uber eats etc. Smartphone companies have now been more than just technology manufacturers and today are a way of life for us. We open our eyes in a world where every new day is loaded with technology and our needs our served with ease on its use. The use of technology has not only scaled up but has also helped companies like Alibaba, facebook, Amazon and many more to grab the market with incredible numbers.

Ping An a Chinese insurance company has started offering healthcare consultation services to its more than 350 million customers through a single customer portal called One Account. Ping An was also awarded as the most valuable insurance brand for his use of technology.

South African insurer “Discovery” has set a remarkable standard for insurers in the wellness insurance where it shows that performance tracking reduced its health risk by 22 percent and was successful in penetrating the international market with other insurers such as AIA, generali and PingAn shooting up to 31 percent growth rate in the international market.

When we look at the data regarding the use of technology and where the insurtech is focusing on we would find the following:

Number of innovations as % of total



The above data shows that Life Insurance has been at the back foot with respect to the use of technology while the other verticals of insurance industry are taking a leap in its usage.

When we look into the financial status of Insurers who are technologically ahead of others in the race, we come up with very awe-struck observations such as Ladder Life insurance company that has a revenue of $2.8million, BIMA a Health and Life insurance company serving its customers over phone announced a $100million investment from Allianz X, similarly Alan France based company received total funding of $13million which shows the growing interest of the investors and the customers expectancy which shall meet out of these companies.

To conclude on the above discussions we can see that the Indian population have been spending a lot of time on internet and has shown a huge amount of confidence on the online platform of services which can be a good sign for the life insurance companies as these and the above discussed findings can help in their business which in turn can help in the penetration of insurance in the country.

The factors when correlated with the technologies have been able to eradicate the problems of insurance penetration in our discussions. Insurance penetration can be improved only when we have happy and satisfied customers all around us who not only purchase policies themselves but also act as word of mouth promotion for the company regarding its ease of operations.

The insurers should now ride the vehicle of insurtech and start riding the vehicle for better future so that they can take a step forward in the game. Insurers should now act smart by starting the use of AI related technologies and should create technology infrastructure. When we look at the site at some of the insurance companies and their investments, we have observed that Allianz formed AllianzX Digital; Accelerator has invested in start-ups like Lemonade and Simpleinsurance. AXA invested in about 20+ start-ups in insurtech.. This shows us that insurers have started considering insurtech as their future taking the industry to new heights. IJ

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Merit Winner

Technical Paper Essay Competition (General)

NatCat Provisions – A Need for Relook?

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Abstract

India is amongst the top 5 natural disaster exposed country in terms of frequency and has been ranked amongst world's top five countries in absolute economic losses from the natural disasters. The effect of climate change and the unplanned infrastructure development has posed greater risk before us. However, the response of people of India towards recent cyclone "Fani" has proved India's resilience to the NatCat risk and its preparedness to such events. Even United Nations has appreciated our preparedness towards disaster risk reduction and response to the cyclone.

We are a participant of UN series of World Conference on Disaster Risk Reduction. After Sendai conference of 2015 India has released its first ever National Disaster Management Plan. It is based on the global blueprint for reducing disaster losses. We have enacted the Disaster Management Act, 2005 which provides legal and institutional framework for disaster management in India at the national, state and district levels.There are various funds with Indian Government that can be used for public help during calamity. The funds which are directly linked with natural disaster are NDRF & SDRF. However, the available funds are insufficient to take economy back on track. Impact of NatCat on GDP cannot be denied. The only option that seems viable at present is cushioning of insurance.

Existing insurance options that are available to people are product specific viz. crop insurance (providing financial help on crop failure), home insurance, fire insurance etc. There is no natural

India is amongst the top 5 natural disaster exposed country in terms of frequency and has been ranked amongst world's top five countries in absolute economic losses from the natural disasters. The effect of climate change and the unplanned infrastructure development has posed greater risk before us. However, the response of people of India towards recent cyclone "Fani" has proved India's resilience to the NatCat risk and its preparedness to such events. Even United Nations has appreciated our preparedness towards disaster risk reduction and response to the cyclone.

catastrophe insurance (NatCat insurance) per se available for all those who are exposed to risk. One suitable alternative that could make country financially strong against unexpected risk of large scale catastrophe is to have a specific NatCat insurance. This model may be a suitable combination of Government, Insurer, Reinsurer, Capital Market and Public.This model suggests an Insurance scheme where individual buys an insurance which also involves benefit of an investment. The insured will get triple benefit out of one investment (premium). This model works on the idea of donation (to the country) before occurrence of a disaster than after it.

Introduction

On 3rd May 2019, India witnessed a cyclone "Fani" with speed gusting to approx 180 kilometers per hour at east coast of India (mainly Odisha State). It was the vigilance of our agencies owing to augmented forecast capabilities in the last decades which assessed the formation of low-pressure area in Bay of Bengal and forecast that it had the potential to balloon up to a lethal cyclone. We not only reacted timely but were able to avoid large scale loss of precious human lives. Our swift response and competence with which this disaster was negotiated has garnered favorable response and applause by UN Agency for Disaster Reduction.

However, while we have been largely successful in mitigating this disaster by largely avoiding loss of human life, other tangible losses like crippled infrastructure, loss to economy, loss of standing crops and plantations, destruction of objects of daily necessity etc were inevitable and unavoidable due to the very nature of these assets. While it is possible to evacuate humans and livestock, it is utterly impossible to uproot concrete structures and standing crops and to see them to safety. Naturally, such devastation affects the people at individual level and the economy of the country too takes a hit. Its impact on GDP too cannot be denied. So the question arises; whether the present provisions for NatCat in our country are sufficient or is it high time to relook and introspect.

To this end we have leaped forward with the help of UNDRR (UN Disaster Risk Reduction). Implementation of Sendai Framework for disaster risk reduction is a mark of it. However, this does not take care of economic losses of the nation. The answer to it would be better provisioning for NatCat beforehand through the partnership of people (communities), corporate bodies, Government, and (re)insurance.

NatCat – As a Peril

NatCat is multifaceted and present challenge in various forms like earthquake, cyclone, flood, draught etc. Indian subcontinent possesses a unique blend of terrain with distinct economic and infrastructure development. Some coastal regions are inhabited by the village whereas few by large economic hubs (like Mumbai). An earthquake will have a different fate for people in New Delhi than people living in villages. Thus, there prevails distinct challenges for diverse NatCat blowing up diverse region. This rise in temperatures has led to higher incidences of storms, floods and droughts -- which have increased from 32 in the 1960s to 110 in the current decade[1]. Also, In the 1900s natural disasters affected approx. one million people which now have risen to affect approx 596 million.Today the country faces greater NatCat risk than ever before given the following:

- changes in social structures (like dense infrastructure and population growth),
- economic progress (industrialization),

[1] *https://economictimes.indiatimes.com/news/environment/global-warming/natural-disasters-impact-over-500-million-in-india/articleshow/64474156.cms?from=mdr.*

- technological progress and
- Climate changes and global warming (increasing the frequency and severity of catastrophes).

It would not be out of place to say that the NatCat vulnerability has risen with the expansion of trade and industry. Thus, there is greater need of alertness and preparedness; not only towards prevention and mitigation of loss but also towards post disaster aid and financial recovery.

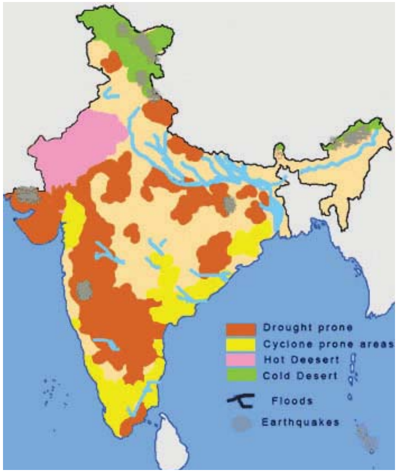
NatCat History in India: A Brief

Despite the fact that humans have made tremendous progress in various aspects in terms of technological growths, yet there is one area where they have not been able to surpass and that is the supremacy of Nature[2]. India has witnessed large number of disasters over the period of time. There are several zones over the entire region which poses specific kind of threat. Leaving the latest cyclone "Fani" of east coast aside, below table[3] shows a brief history of major NatCat affecting the country in the last several decades:

It would not be out of place to say that the deluge had damaged shelters, standing crops, trees and livestock, pulled up fertile land apart from causing huge loss of lives.

Disaster Prone Zones

India's geographical condition is such that it is vulnerable to a number of natural disasters. 55 per cent of the country's total area is in Seismic Zones III-V and is vulnerable to earthquakes[7], 68 per cent of net sown area is vulnerable to drought, 4 crore hectare mass is vulnerable to floods, sub-Himalayan/Western Ghat is vulnerable to landslides and the coastal States are vulnerable to cyclones[8]. A World Bank and United Nations report shows estimates that around 200 million city dwellers in India will be exposed to storms and earthquakes by 2050[9]. Disaster risks in India are further compounded by increasing vulnerabilities related to changing demographics and socio-economic conditions, poorly planned and shabbily implemented urbanization, development within high-risk zones, environmental degradation, climate change, geological hazards, epidemics and pandemics[10].



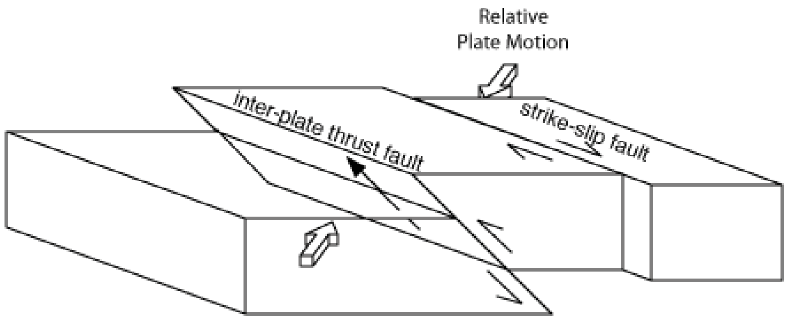
(Map Source: http://www.maps-of-india.com/india-climatic-map/india-natural-hazards-map/)

S. No.	Name of Event	Year	State & Area	Outcomes
1	South India Flood	2015	TN &AP	Above 500 deaths
2	J&K Floods	Oct-14	J&K	277 deaths, 2600 villages[4] affected
3	Cyclone Hud Hud	Sep-14	AP & Orissa	124 deaths; damages US$3.4 billion[5]
4	North India Flood[6]	Jun-13	UK, HP, UP	5,700 deaths
5	Kosi Floods	2008	North Bihar	527 deaths; 3.3 million persons affected
6	Tsunami	2004	TN, Kerala, AP, etc	10,749 deaths, 2.7 mln. people affected
7	Gujarat Earthquake	2001	Gujarat	13,805 deaths, 6.3 mln. people affected
8	Orissa Super Cyclone	1999	Orissa	Over 10,000 deaths
9	Drought	1987	15 States	300 million people affected
10	Cyclone	1977	Andhra Pradesh	10,000 deaths

[2] https://www.mapsofindia.com/my-india/travel/top-10-natural-disasters-in-the-history-of-india#.
[3] https://ndma.gov.in/en/disaster-data-statistics.html.
[4] https://www.bbc.com/news/world-asia-india-2912194.
[5] https://www.dnaindia.com/india/report-cyclone-hudhud-caused-rs-21908-crore-loss-agriculture-sector-worst-hit-andhra-government-2045435.
[6] https://www.cbsnews.com/news/india-raises-flood-death-toll-reaches-5700-as-all-missing-persons-now-presumed-dead.
[7] Zone V expects the highest level of seismicity.
[8] Tenth Five Year Plan, http://planningcommission.nic.in/plans/planrel/fiveyr/10th/10defaultchap.htm.
[9] https://economictimes.indiatimes.com/news/politics-and-nation/indian-cities-under-threat-of-storms-earthquakes-by-2050-world-bank-united-nations/articleshow/11039553.cms.
[10] https://ndma.gov.in/en/vulnerability-profile.html.

Earthquakes

India's increasing population and extensive unscientific constructions mushrooming all over, including multi-storied luxury apartments, huge factory buildings, gigantic malls, supermarkets as well as warehouses and masonry buildings keep - India at high risk. During the last 15 years, the country has experienced 10 major earthquakes that have resulted in over 20,000 deaths[11]. Of the earthquake-prone areas, 12% is prone to very severe earthquakes 18% to severe earthquakes and 25% to damageable earthquakes. The biggest quakes occur in the Andaman and Nicobar Islands, Kutch, Himachal and the North-East. The last two major earthquakes shook Gujarat in January 2001 and Jammu and Kashmir in October 2005[12].



Source : Report on Tsunami Generation from the 2004 M = 9.2 Sumatra-Andaman Earthquake, Pacific Coastal Marine Science Centre, USGS

Tsunami

The tsunami that occurred during 2004 Sumatra-Andaman earthquake of Mw 9.3 was primarily caused by vertical displacement of the seafloor, in response to slip on the inter-plate thrust fault. The earthquake and resulting tsunami in the Indian Ocean affected many countries in Southeast Asia and beyond[13] . The Government of India has put in place an Early Warning System for mitigation of such oceanogenic disasters under the control of Indian National Center for Ocean Information Services (INCOIS), Hyderabad.

Floods

India is highly vulnerable to floods. Out of the total geographical area of 329 million hectares (mha), more than 40 mha is flood prone. Floods are a recurrent phenomenon. It is a cause for concern that flood related damages show an increasing trend. On an average every year, 75 lakh hectares of land is affected, 1600 lives are lost and the damage caused to crops, houses and public utilities is ₹ 1805 crores due to floods. The maximum number of lives (11,316) was lost in the year 1977. The frequency of major floods is more than once in five years[14].

Floods in the Indo–Gangetic–Brahmaputra plains are an annual feature. Floods are a perennial phenomenon in at least 5 states – Assam, Bihar, Orissa, Uttar Pradesh and West Bengal[15]. However owing to climate change in recent years it may happen in any region (like 2006 flood in Rajasthan).

Droughts

Drought is another recurrent phenomenon which results in widespread adverse impact on vulnerable people's livelihoods and young children's nutrition status. About 50 million people are affected annually by drought. In India annually 33% area receive rainfall less than 750 mm (low rainfall area) and 35 % area receive between 750 to 1125 mm rainfall Medium rainfall) and only 32percent falls in the high rainfall (>1126 mm) zone[16] . It typically strikes arid areas of Rajasthan (chronically), Maharashtra and Gujarat states.

Cyclones

The Indian subcontinent with a long coastline of 8041 kilometres is exposed to nearly 10 per cent of the world's tropical cyclones. It is one of the worst affected regions in the world. On an average, five to six tropical cyclones form every year, of which two or three could be severe. Tropical cyclones occur in the months of May-June and October-November. Cyclones are characterized by their devastating potential to damage structures, viz. houses; lifeline infrastructure-power and communication towers; hospitals; food storage facilities; roads, bridges and culverts; crops etc. Cyclones typically strike the East Coast of India i.e. the states of West Bengal, Orissa, Andhra Pradesh and Tamil Nadu. But there are times when western part like Maharashtra and Gujarat at the Arabian Sea West Coast face the same.

Cyclones are classified into five different levels on the basis of wind speed. They are further divided into the following categories according to their capacity to cause damage[17]:

[11] https://ndma.gov.in/en/media-public-awareness/disaster/natural-disaster/earthquakes.html.

[12] http://www.simplydecoded.com/2013/10/21/india-disaster-profile-and-management/.

[13] https://ndma.gov.in/en/media-public-awareness/disaster/natural-disaster/tsunamis.html.

[14] https://ndma.gov.in/en/media-public-awareness/disaster/natural-disaster/floods.html.

[15] http://www.simplydecoded.com/2013/10/21/india-disaster-profile-and-management/.

[16] Ibid.

[17] https://ndma.gov.in/en/media-public-awareness/disaster/natural-disaster/cyclones.html.

Cyclone Category	Wind Speed in Km/h	Damage Capacity
1	120-150	Minimal
2	150-180	Moderate
3	180-210	Extensive
4	210-250	Extreme
5	250 and above	Catastrophic

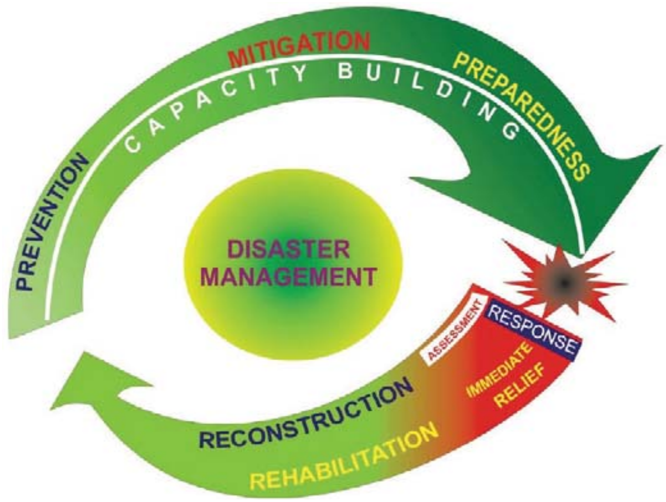


Image Source : https://ndma.gov.in

Disaster Management Cycle

The need of the hour is to sketch out a multidimensional strategy for total risk management, comprising prevention, mitigation, preparedness (capacity building) to (response and recovery) reconstruction and rehabilitation.

The country needs a comprehensive policy framework which could cater to following:

- Preparedness for Pre-event **Prevention** (form communities to reduce risk);
- **Mitigate** the effects of event(Capacity development in all spheres),
- Prepare to **respond**, (Consolidation of past initiatives and best practices); and
- **Recover** from disasters (Cooperation with agencies at national and international levels)

  The said cycle has been discussed time and again at various forums national as well as international. There are several frameworks prepared by organisations which are discussed forthwith.

NatCat Framework: How Vigilant Are We

1. United Nations: Provisions for NatCat

The United Nations General Assembly designated the **1990s** as the **International Decade for Natural** Decade for **Natural Disaster Reduction (IDNDR)**. Its basic objective was to decrease the loss of life, property destruction and social and economic disruption caused by natural disasters[18]. United Nations office for Disaster Risk Reduction (UNDRR) was established in 1999 by UN General Assembly resolution as a dedicated secretariat to facilitate the implementation of the International Strategy for Disaster Reduction (ISDR). UNDRR's mandate is to serve as the focal point in the United Nations system for the coordination of disaster reduction and to ensure synergies among disaster reduction activities[19] .

The World Conference on Disaster Risk Reduction is a series of United Nations conferences focusing on disaster and climate risk management in the context of sustainable development. The World Conference has been convened three times. The conferences bring together government officials and other stakeholders, such as NGOs, civil society organizations, local government and private sector representatives from around the world to discuss how to strengthen the sustainability of development by managing disaster and climate risks.

1. First World Conference on Natural Disasters in Yokohama, Japan, May 1994[20].

The main outcome of this conference was adoption of "Yokohama Strategy and plan of action for a Safer World". This provided guidelines for Natural Disaster Prevention, Preparedness and Mitigation. It established 10 principles for its strategy.

2. Second World Conference on Disaster Reduction in Kobe, Hyogo, Japan, January 2005.

The goal of the World Conference was to find ways to reduce the toll of disasters through preparation, and ultimately to reduce human casualties. Due to the proximity to the devastating Indian Ocean tsunami, developing a global tsunami warning system was high on the agenda.

Hyogo Framework for Action (HFA): was also introduced at this conference. The HFA was a 10-year plan to make the world safer from natural hazards[21].

[18] https://ndma.gov.in/images/pdf/COMPENDIUM-OF-LAWS-ON-DISASTER-MANAGEMENT.pdf
[19] https://www.unisdr.org/.
[20] https://www.unisdr.org/2005/wcdr/preparatory-process/why-wcdr.htm.
[21] https://www.unisdr.org/we/coordinate/hfa.

3. Third World Conference on Disaster Risk Reduction, Sendai, Japan, March 2015.

The conference adopted the Sendai Framework for Disaster Risk Reduction 2015–2030. The Sendai Framework is a 15-year voluntary, non-binding agreement which recognizes that the State has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government, the private sector and other stakeholders[22].

After Sendai conference India also released its first ever National Disaster Management Plan, a document based on the global blueprint for reducing disaster losses.

The plan is based on the four priority themes of the "Sendai Framework", namely: *1.* understanding disaster risk, *2.* Strengthening disaster risk governance, *3.* investing in disaster risk reduction for resilience (through structural and non-structural measures) and *4.* disaster preparedness, early warning and building back better in recovery, rehabilitation and reconstruction after the disaster.

2. India: Provisions for NatCat

India being a party to UN agencies and being vigilant and sensitive about the NatCat took various steps towards ensuring the better handling of disasters. In furtherance to our commitments we have included the disaster management in our 5 year Plans. Constitution of India also imposes a fundamental duty upon us to honor our international commitments. The legislation on disaster management has been related to entry 23 (social security and social insurance) in the Concurrent list of our Constitution and the States would also be able to make their own legislation on the subject [23].

The Disaster Management Act, 2005

The Disaster Management Act 2005 has provided the legal and institutional framework for disaster management in India at the national, state and district levels. S. 2 (e) of the Disaster Management Act defines disaster management as a continuous and integrated process of planning, organizing, coordinating and implementing measures for prevention of disaster, mitigation of disaster, evacuation, rescue and relief etc. The National Institute of Disaster Management (NIDM) has the mandate for human resource development and capacity building for disaster management within the broad policies and guidelines laid down by the NDMA. National Disaster Response Force (NDRF) is the specialized force for disaster response which works under the overall supervision and control of the NDMA. State Disaster Management Authority (SDMA) lays down policies and plans for disaster management in the State. District Disaster Management Authority (DDMA) is the district implementing body for disaster management at district level.

Current NatCat Funding

There are various funds with Indian Government that can outflow funds for public help during calamity. However, the fund which is directly linked with natural disaster is NDRF & SDRF. At present the State Governments are primarily responsible for execution of relief operations in the wake of natural calamities. The Government of India supplements the efforts of the State Governments by extending additional financial assistance.

1. The State Disaster Response Fund (SDRF), constituted under Section 48 (1) (a) of the Disaster Management Act, 2005, is the primary fund available with State Governments for responses to notified disasters[24]. The Central Government contributes 75% of SDRF allocation for general category States/UTs and 90% for special category States/UTs (NE States, Sikkim, Uttarakhand, Himachal Pradesh, Jammu and Kashmir).
2. The National Disaster Response Fund (NDRF), constituted under Section 46 of the Disaster Management Act, 2005, supplements SDRF of a State, in case of a disaster of severe nature, provided adequate funds are not available in SDRF [25].
3. National Calamity Relief Fund (NCRF), was formed in the 2000-2001 financial year and was supposed to be active until the 2004-05 financial year. to provide funds to the state governments in order to render immediate relief in the calamity-hit area. The NCRF was merged with the SDRF in 2010.
4. The Contingency Fund of India is established under Article 267 of the Indian Constitution. The Contingency Fund of India exists for disasters and related unforeseen expenditures. In 2005, it was raised from ₹ 50 crore to ₹ 500 crore[26]. Similarly, Contingency Fund of each State Government is established under Article 266 of the Constitution with separate corpus.

[22] https://www.unisdr.org/we/coordinate/sendai-framework.
[23] S.L. Goel, Disaster Administration :Theory and Practice, Deep & Deep Publications Pvt. Ltd., 2009.
[24] https://www.ndmindia.nic.in/response-fund.
[25] *Ibid.*
[26] https://economictimes.indiatimes.com/news/economy/policy/contingency-fund-limit-raised-to-rs-500-crore/articleshow/1048150.cms?from=mdr.

Its apparent the above funding are not sufficient to the provide relief to citizens in case of natural disasters. At least the recent examples of the NatCat present this picture. The south India flood of year 2015 alone has charged more than 14,000 cr. So, there is huge gap between what quantum of fund is required for disaster relief and what is available. Sharing of risk through insurance cover provides better solution to the distress that disaster may give to people and economy instead of leaving the burden on inadequate tax support and aid. This forces us to think the way out of this paradox. One of the possible answers to this is a suitable combination of Government, (Re) Insurance, capital market, voluntary groups and public.

Financial Impact of NATCAT in India

A natural disaster has two faces; one of short term economic losses and other of long term. Short term losses are essentially related to the individuals whose normal life gets uprooted whereas long term economic losses relate to the economic growth and development of the country. Unlike developed countries which are financially sound and adept in handling the NatCat, India being a developing economy still has to go a long way to become disaster proof. Any such natural disaster pulls the economy behind and the country takes years to recover from it. India suffered a whopping USD 79.5 billion economic loss due to climate-related disasters in the last 20 years[27].

The report titled *Economic Losses, Poverty and Disasters 1998-2017* was compiled by the UN Office for Disaster Risk Reduction. It states that the years between 1998 to 2017 have seen a dramatic rise of 151% in direct economic losses from climate-related disasters[28]. India has been ranked amongst world's top five countries in absolute economic losses[29].

The other side of the coin represents the fact that Natural catastrophe are most likely to emerge as an additional expenditure to what was already planned for the economy. This expenditure will be called up towards immediate adjustments towards relief, food supplies, medical supplies, restoration and rehabilitation etc. This unplanned expenditure will surely postpone the planned investment.

The natural answer to this financial impact is insurance. The way to protect the people and country out of this financial ruin is to get the country insured, wisely. The insurance cover would take the country out of financial crisis very smoothly and would provide instant support to the country and people without disturbing the GDP growth.

NatCat: The Way Forward

The above discussion clearly displays the gap which India is facing at present. In the sub-heading "disaster Prone Zones" of this paper we have discussed the *risk zones* and *factors* that can contribute towards NatCat. Its displayed there that almost the entire Indian subcontinent is prone to some or other variety of NatCat. Owing to climate changes the situation is worsen and now even non-prone areas cannot be deemed to be safe from NatCat. The example of Rajasthan flood of year 2006 is live example of it. Also man-made structures have added to this disaster. It's not hidden that the CAG (of India) has blamed the infrastructure for the losses caused by south India floods of 2015. Thus, it must be understood that it's not that particular regions require catastrophe insurance rather it's the entire country that needs it. Yes, it's true that few regions are more prone to disaster risk than others.

1. NatCat Pool

Thus, the brow raiser is how to make the country NatCat risk proof. While looking for a viable answer, IRDA (our insurance regulator) in the year 2009 proposed the setting up of a Natural Disaster Insurance Pool (NDIP). The pool is designed to provide insurance cover to the NatCat risk and is managed by GIC.

NATURAL DISASTERS IN INDIA POST-INDEPENDENCE[30]

Disasters	Events count	Total deaths	Total affected	Total damage (million USD)
Drought	13	1,500,320	1,391,841,000	5,441
Earthquake	29	51,915	285,656,623	5,297
Floods	283	70,343	861,462,744	58,332
Landslides/Avalanche	51	5,083	3,848,421	54
Storm	166	56,991	106,839,232	21,416

[27] https://www.moneycontrol.com/news/india/data-story-over-75000-deaths-rs-4-lakh-crore-lost-the-cost-of-natural-disasters-in-india-since-2000-2456611.html.
[28] Ibid.
[29] https://timesofindia.indiatimes.com/india/natural-disasters-cost-india-80-billion-in-20-years-un-report/articleshow/66156074.cms.
[30] https://www.moneycontrol.com/news/india/data-story-over-75000-deaths-rs-4-lakh-crore-lost-the-cost-of-natural-disasters-in-india-since-2000-2456611.html.

The pool would ensure that risks are shared by all insurers. However, the insurance companies were unable to arrive at a consensus on funding and pool size. The funding split between the government and all the non-life insurance companies operating in India is yet to be decided. Area of concern might be premium rate or product type or underwriting etc. But certainly the pool is not functional yet, leaving the finance of country prone to risk. Another point of concern is whether Insurers in India have the capacity to bear the NatCat risk on its own. The truth is "No". (Re)Insurers in India have not yet developed such capacity that they can manage the NatCat risk on their own. There may be quite a lot of reasons for it. Be it the unawareness of people taking insurance to contribute premium towards NatCat, or their unwillingness to take the cover, or the underwriting limitations (given the infrastructure outlook) etc.

2. NatCat Bonds:

Another solution to mitigate the risk is NatCat Bond. Its transfer of risks to the capital market through instruments: Cat bonds. Catastrophe bonds are issued by insurance companies which have exposure to property and calamity insurance. It's based on the model prevalent in USA. The investor will get a return over the bonds. Generally the investor in these bond are not retail investors rather business houses. This instrument reduces the stress on the balance sheets of the governments at the State and the Centre. India is yet to introduce such model.

"Pradhan Mantri FasalBima Yojna" is a crop insurance scheme which is aimed to help farmers cope with crop failure due to natural disasters. Under this scheme farmers and Government share premium in specific ratio. Thereafter, in case of crop failure insurance companies compensate the farmers. It has revealed that we can work together towards saving the people from financial implications caused due to catastrophes.

The Other Side of Risk Underwriting

It's well understood that every organization works to gain some profit in order to keep business alive. And unless the organization is alive no social welfare is possible. Gradually, there is now increased focus on scientific risk-based pricing and improving underwriting capabilities by the insurance companies. Before writing a risk, every insurer looks at both current exposure and past experience to determine possibilities of loss and their potential size. Every insurer assesses the frequency and severity of risk that they are about to insure. It also uses the tool of deductible, excess of loss, exclusion, warranty etc. to ensure consumer participation and do risk selection.

The de-tariff environment has allowed insurers also pick and choose the business. It's obvious that underwriting a loss portfolio will not make a healthy organization. Thus, those areas where frequency or severity of risk is very high the insurers may avoid underwriting it. And if they still underwrite the risk the premium will be very high thereby making it unaffordable for people to insure.

Thus, keeping insurance premiums low will cripple the insurers and a higher premium will make it unaffordable.

Natcat Model: Suggestion

Existing insurance options that are available to people are product specific like; crop insurance (providing financial help on crop failure), home insurance, fire insurance etc. There is no catastrophe insurance (Cat insurance) per se available for all those who are exposed to risk.

One suitable alternative that could make country financially strong against unexpected risk of large scale catastrophe is to have a specific NatCat insurance. This model may be a suitable combination of Government, (Re)Insurance, capital market, voluntary groups and public.

Model: "NatCat ROI Insurance" (NatCat Return on Investment Insurance)

We have already observed from above discussion that the climate change has made entire country vulnerable to natural disasters. Almost every State is susceptible to one or the other catastrophe. Thus, participation of every State is a requisite against the probable threat. The NatCat is not an individual risk rather a social risk, which at once has the power to eliminate entire community. Thus, entire community has to unite against it and participate. Yes, the behavior of one state (geography) may differ from other. One may be more vulnerable to risk than other.

It's a common knowledge that **post-disaster** we all try to accumulate as much funds as possible to provide relief to the disaster victims. Every institution, every government office, every NGO and even the foreign governments provide support through funds in the name of donations. Well, here is the option to do a **pre-disaster** funding that will not only make our country disaster-proof but will also make us a stable economy. It's like service to the nation with individual benefits inherent in it. This fund will help us in all the stages of disaster management; which are: Prevention, mitigation, preparation, reconstruction rehabilitation etc.

This model provides for **catastrophe insurance** i.e. on occurrence of **any** catastrophe the insured will get his **sum insured.** The **premium** will be charged (for) in the name of NatCat insurance (a product). The premium obtained will be invested in a **NatCat pool**. The pool will then do reinsurance (treaty based, excess of loss based etc.) of risk involving **international participants**. Thereafter, the option of retrocession will also be exercised. The NatCat Pool will involve **capital market** and generate income through appropriate investments. This diversification of risk will make economy more safe, secure and stable. The entire sum will be utilized for disaster relief.

NatCat insurance will be open to all. Even if the insured has already secured his property from specific risks like earthquake or flood though a separate insurance he may still buy the NatCat insurance.

This model suggests an Insurance scheme where individual buys an **insurance which also involves benefit of an investment** (though very low). The insured will get triple benefit out of one investment (premium); which are -

1st -Return on investment;

2nd-Financial Security by insurance against natural disaster;

3rd-Tax relief through Income tax rebate (for the premium) under IT Act (Sec 80C or 80G).

Point Wise Model Detailing

(*The model is of elementary level – it requires a detail analysis of risk zones, finances, taxation etc.)

1. Entire geography of country will be divided into **2 risk zones** according to the **risk factor.**

   Zone 1 – High Risk (Risk may be of any NatCat)

   Zone 2 – Low Risk

2. Zone 1 – inhabitants of this zone may buy NatCat ROI insurance at a certain price for a certain sum assured.

   Zone 2 - inhabitants of this zone may buy NatCat ROI insurance at a certain price lower than that of zone 1 for a certain sum assured which is also low (as their risk is lesser).

   Illustration:

   Zone 1 – Premium ₹ **1000** – Sum Insured of ₹ 5 Lacs.

   Zone 2 – Premium ₹ **500** – Sum Insured of ₹ 3 Lacs.

3. For those who fall under "below poverty line" or holds **JanDhan account** will also derive benefit of NatCat insurance and will get insurance at very reasonable rate of ₹ 10/20 for a sum assured of ₹ 1 to 2 Lacs. (Adhaar card may be used for identification)

   Illustration:

   JanDhan account holders – Premium of ₹ **10/20** – Sum insured of ₹ 1 or 2 Lacs.

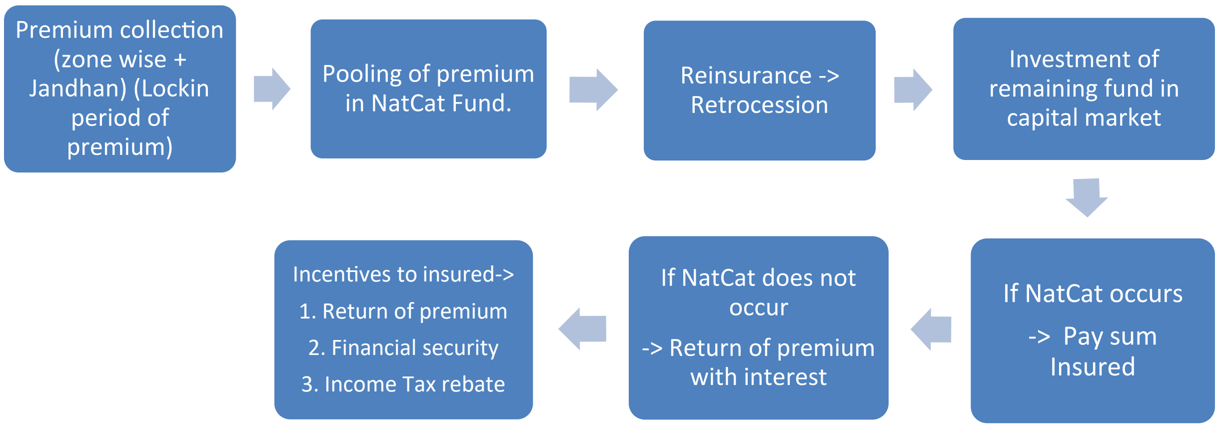
4. **Lock-in** and **Returnon Premium** - This premium contribution of ₹ 500 and ₹ 1000 will be refundable (not premium of Jandhan account) to insured after 3 years (lock in period) along with a fixed percentage of interest, ifthe **disaster does not occur**. Interest may vary from 3% to 5%.Lock-in period may also be kept different for different zones like;"2 years" for zone-1 and "3 years" for zone-2. Thereby, offering dual possibilities to insured; one of securing the insuredfinancially and other of returning the premium after 2 or 3 years with interest.

> While concluding I would like to emphasize that India has come a long way to safeguard the natives from any natural disaster. It is no less a feat that the country is earning praises from the United Nations. Praises were not only for the efficient handling of latest cyclone "Fani" but also for being amongst the first to Implement Sendai Framework for disaster risk reduction. However, it's also true that India is amongst the top 5 disaster exposed country in terms of frequency. Thus, we need a strong commitment to safeguard ourselves from the threat. The effect of climate change and the unplanned infrastructure development has posed greater risk before us.

5. **Insurance Organization** - This NatCat insurance may be purchased from anyinsurance organization.

6. **NatCat Pool** - This premium collected (₹ 10/20, 500, 1000) will be accumulated in NatCat Pool. NatCat Pool may be managed by **GIC** (as is the case with other pools like motor TP pool, terrorism Pool etc.)

7. **Reinsurance** - The NatCat Pool will then apply part of the fund for getting reinsurance through several



domestic as well as international Reinsurers (through treaty or excess of loss method).

8. **Retrocession**- Reinsurers may further insure the risk through retrocession. This retrocession will be done by some international organization. This international reinsurance and retrocession will ensure the diversification of funds so as to provide better cushion for the economy.

9. **Fund Manager** - Also GIC may appoint a "Fund Manager" who may manage the entire outstanding fund after allocating funds for reinsurance and retrocession. The fund manager may devise a strategy for investment of outstanding funds. For example: specificsplit of funds to be invested in *government bonds, corporate bonds, equity etc.*

10. **Triple Benefit:** This policy will be attractive as it will guarantee triple benefit to the policyholder cum investor.

1st - **Returnon investment**- The investor may be granted return of premium with certain percentage of interest after the expiry of lock in period. This makes country as well as insured economically strong.

2nd - **Financial security** of the insured from unexpected risk of catastrophe.

3rd - **Income Tax Rebate** (on the premium) under IT Act [either under Sec 80C or 80G].

(Section 80G of the Income Tax Act refer to tax relief for donations.)

11. **Donation which benefits the donator** - The above features provide sufficient incentives to attract people to secure themselves and country from unexpected risk of large scale catastrophe. This policy should be taken up as service to nation. It should be looked as a **donation to the country before occurrence** of a disaster rather than after it. The benefits attached to the donation/ premium are such that the donation will benefit the donator.

Conclusion

While concluding I would like to emphasize that India has come a long way to safeguard the natives from any natural disaster. It is no less a feat that the country is earning praises from the United Nations. Praises were not only for the efficient handling of latest cyclone "Fani" but also for being amongst the first to Implement Sendai Framework for disaster risk reduction. However, it's also true that India is amongst the top 5 disaster exposed country in terms of frequency. Thus, we need a strong commitment to safeguard ourselves from the threat. The effect of climate change and the unplanned infrastructure development has posed greater risk before us. Thus, our desirable is planned infrastructure development with selection of right area alongwith right architecture. However, it will not be out of place to say that NDMA has very efficiently worked upon the capacity building and now we are well prepared for prevention and mitigation of NatCat. The risk that is still prevalent is economic risk. India being a developing country needs a better financial protection, so that a NatCat may not drag the country few years behind in terms of growth and GDP. For the same one possible model has been discussed in the paper, which is at its elementary level. My belief is that we are a resilient society and will never stop to build a better and stronger India.

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Merit Winner

Technical Paper Essay Competition (General)

InsurTech- A Tool for Insurance Penetration

Abstract

The general insurance penetration in India is less than 1%. It is considerably low when compared with Asia, emerging markets or similar economies. Motor, health, and crop insurance contributes to 80% of the non-life market in India. However, majority of the general insurance sales today depend on the mandatory legislative or lender directive. In this context, insuretechs can play enabling, transformative and disruptive roles to enhance penetration.

While Indian insuretechs are making steady strides through digital offerings and superior customer experience, the space is dominated by aggregators and online brokers. Full stack insuretechs, who can bring in the much needed disruption is limited. The sector has seen several insuretechs in the enabling role (technology support and assistance) that can influence penetration.

Insuretechs can contribute to increasing penetration by tapping focused opportunities in the matured, emerging, mandatory and optional segments. However, to increase penetration, the current insuretech models need to evolve in India.

Chapter 1 - Understanding general insurance penetration in India

Insurance penetration (measured as percentage of premiums to GDP) is

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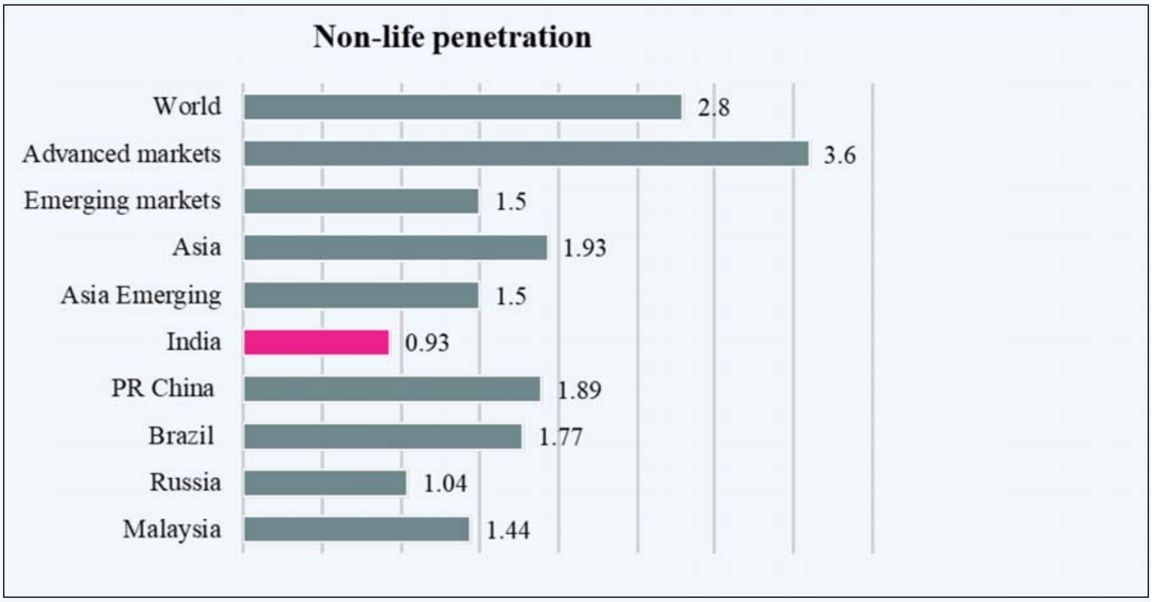
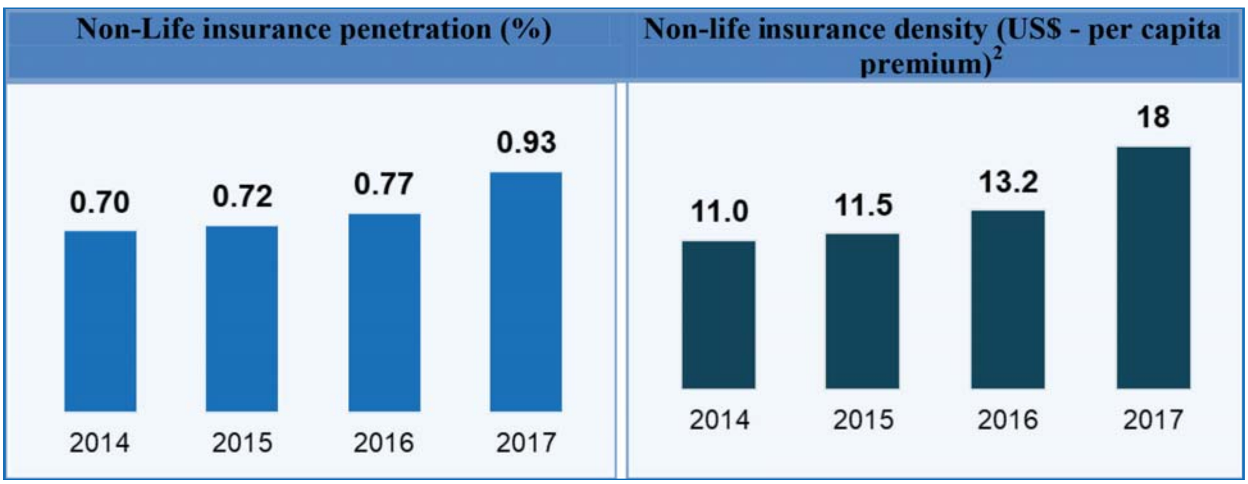
indicative of the significance of insurance industry to the national economic activity. Higher penetration also signifies better development of insurance industry in terms of adoption. In India, the insurance penetration within the non-life segment is below 1% (2017). The segment registered a growth of 16% in premiums (CAGR 2013-18) to ₹150662 crores (2017-18) and 11% in the number of policies (CAGR 2013-18) in India.

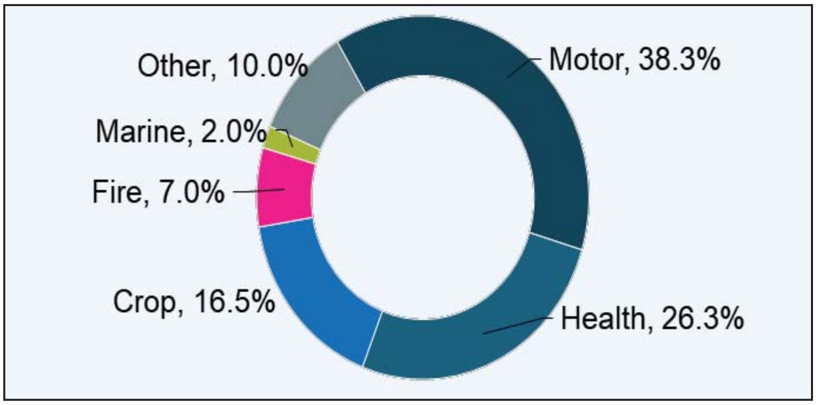
However, when compared with the global or even emerging markets, the penetration level in India is much lower[1].





The spike in premiums and penetration in 2017 is due to the increased uptake of crop insurance scheme.

[1] Source: Swiss Re
[2] Source:IBEF



Non-life insurance Gross Direct Premium Share (April 2018 - February 2019)[3]

Motor, health and crop insurance account for 80% of the non-life insurance premiums. For the purpose of this paper, we will exclude health insurance. A significant part of the revenue in motor and crop comes from the mandatory legislative or lender directive.

Motor Insurance

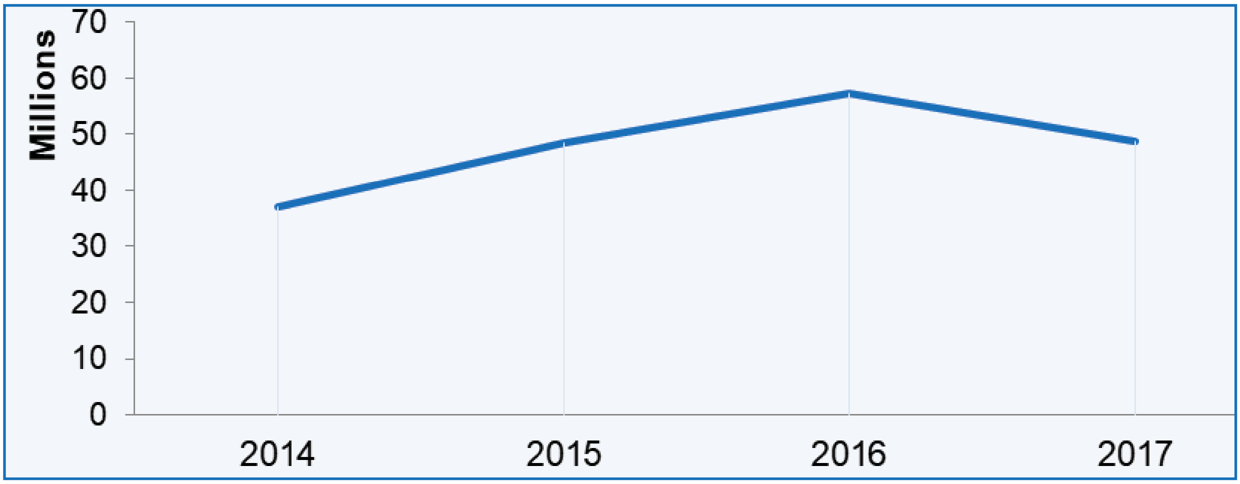
Third Party (TP) insurance accounts for nearly 60% of the motor insurance premium (2017-18) in India. However, the tariffs (premiums) in this sector are regulated. Despite the growth in vehicle sales, third party insurance remained mostly unprofitable (combined ratio >100%[1]). The government is taking various supportive measures such as longer duration TP policies (3 years for new cars and 5 years for new two wheelers) and auction of uninsured vehicle in an accident to compensate the victim. These measures are expected to induce a spike in the motor insurance premiums.

Cover for Own Damages (OD) is optional and the uptake of insurance is observed to slow down at the time of renewals. Tata AIG reported that the renewal rate of two wheelers is as low as 25%. According to industry estimates nearly 25% of cars and 50% of the two wheelers plying on the road are uninsured[2]. One way vehicle owners seem to get away is through fake policies[3,4]. Lack of strict enforcement in certain parts of India may have also contributed to relatively low penetration of motor insurance. But more importantly, matured motor insurance market needs product innovation to enhance penetration.

Crop Insurance

In India crop insurance is dominated by government schemes such as Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather Based Crop Insurance Scheme (RWBCIS). The premiums in both the cases are subsidized, where farmers pay only 1.5 to 5% of the premium amount and the rest is borne by central and the state governments. The government owned Agriculture Insurance Company of India Ltd (AIC) is the largest crop insurer accounting for over 30% of the share in premiums and number of farmers covered. These schemes were successful in bringing about 35% of the farmers under coverage[4].

Number of farmers insured under crop insurance schemes saw a decline in 2017[5]



[3] Source: IBEF, IRDAI

[4] Source: Agricultural Insurance Survey, 2018 AXA XL, https://www.thehindubusinessline.com/economy/agri-business/only-35-of-farmers-are-covered-under-crop-insurance/article26283601.ece

[5] Source: Ministry of Agriculture, statistics

Crop insurance scheme showed a sharp decline in uptake in 2017-18. One of the key reasons for lower enrolment is delay in the assessment and settlement of claims and large number of fraudulent claims. Technology could enable the coverage under crop insurance through increased awareness, risk analytics and prediction, estimation of yield, assessment of crop loss, etc[6].,

Another challenge in implementation of crop insurance is that it is mandatorily offered bundled with crop loans. As the number of farmers accessing crop loan are more, this distribution strategy is beneficial to crop insurance. At the same time, insurers may be overlooking non-loan farmers, who could increase penetration in the segment.

The penetration of different property covers is evidently low across personal, SME and commercial lines. While regulatory push is beneficial, it is high time that general insurance sector in India to penetrate beyond the clasp of artificial demand created by mandatory insurance and address the mass market.

Given this context, insuretech has a lot to contribute to enhance penetration of insurance.

Chapter 2 - The roles Insuretech can play

Insuretechs can assume various roles to address the challenges faced by the general insurance market and actively enhance the penetration of insurance. Penetration in the matured segments requires understanding of the specific challenges and building products and services to address them. Insuretechs can learn from the successes and mistakes of the existing players, rethink, and build niche products/ services. For e.g. digitalize auto insurance policies and use QR code scanning to curb the fake policies. Insuretechs can form complementary partnerships for offering bundled solutions. For e.g. tractor or livestock insurance to farmers offered at point of sale.

In emerging markets, insuretechs needs to develop customer segments, drive access and adoption of relevant insurance solutions. For e.g. tapping the aspirational segment for home / personal gadget insurance. Insuretechs are not tied by the legacy systems or strict division of risks. They can form a unique product covering for portfolio of risks.

Chapter 3 - Understanding the Insuretech wave in the Indian context

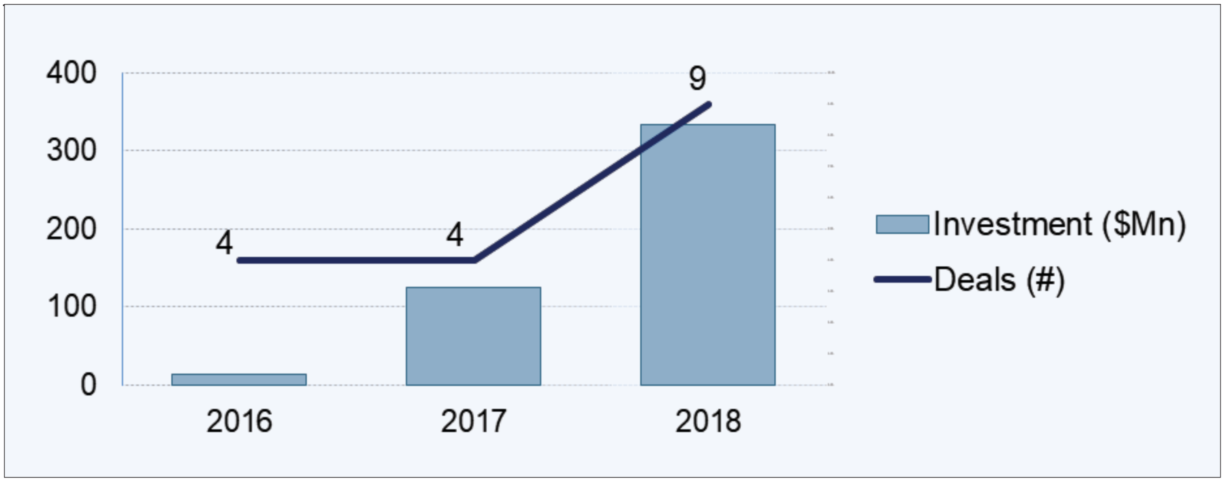
Indian insuretech sector is making steady strides in securing investments and premium growth through innovative offerings and customer experience.

The general insurance penetration in India is less than 1%. It is considerably low when compared with Asia, emerging markets or similar economies. Motor, health, and crop insurance contributes to 80% of the non-life market in India. However, majority of the general insurance sales today depend on the mandatory legislative or lender directive. In this context, insuretechs can play enabling, transformative and disruptive roles to enhance penetration.

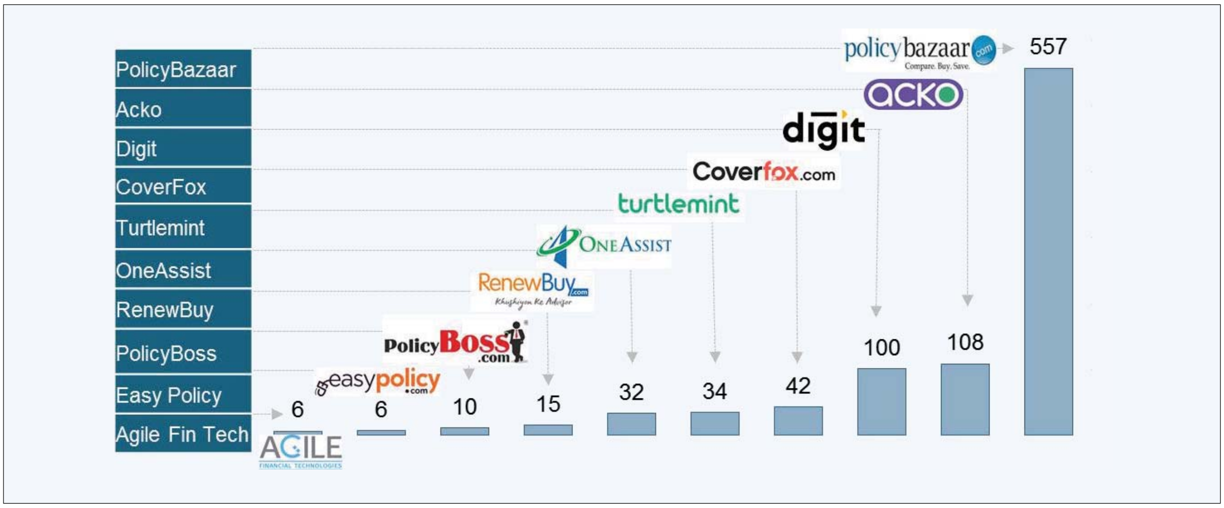
	Mandatory	Optional
Matured	**(Participaatory) Enabling role:** Capture more penetration by addressing the bottlenecks and offering tailor made solutions e.g. Motor TP insurance Provide last mile reach of insurance to masses through digital distribution and marketing to address the challenge of dropouts.	**Transformative role – Product/ channel innovation:** Address the challenge of adoption/ penetration through differentiated and ancillary offers e.g. Motor OD insurance Cater the market through relevant / niche products, differentiated customer experience and innovative distribution.
Emerging	**(Non-Participatory) Enabling Role:** Influence penetration through technology - assessment of risk, claim valuation, lack of awareness and slow enrolment. e.g. Crop insurance Support insurers in accurate risk estimation, prediction and operational efficiency.	**Disruptive role - Customer segment development:** Most emerging segments are significantly under tapped and suffer from lack of risk awareness and non-availability of attractive solutions. Develop relevant and relatable customer propositions. E.g. gadget insurance, home insurance, SME/ commercial property insurance

[6] Source: (https://www.thehindubusinessline.com/opinion/loan-waivers-derail-fasal-bima-yojana/article25313176.ece, https://www.livemint.com/Politics/nF2FiK4pHIjCzud5oMuphI/Enrolment-under-PMFBY-crop-insurance-scheme-sees-steep-decli.html, https://www.actuariesindia.org/SeminarDocs/8thCBSGI/ppt/Crop_Insurance_pricing.pdf)

Policy Bazaar, which entered the unicorn club with $200Mn. contributed to the growth in 2018[7]



Top insuretech companies in India and the funding raised ($Mn)[8]



The Indian story of insuretechs started with online aggregator platforms such as Policy Bazaar, Cover Fox, PolicyBoss, Easy Policy etc., which provide price comparison and online purchase of most policies. According to Tracxn, there are 142 insuretechs in India (Feb 2019), most of which are present in the aggregator and brokerage space. The digital distribution space has got crowded since 2015 with players such as Policy Tiger, Policy Bachat, PolicyX, Click2insure, InsurancePundit, Bima direct (acquired by Essel Finance), AskArvi, Turtlement, InsureMile and lately with the foray of MobiKwik and PayTm. The online aggregators and brokers are successful in catering to India's digital natives as customers compare and buy policies. In 2017-18, about 27 web aggregators in India sold close to 15 lakh new policies, about 90% of the policies sold were for motor cover. However, currently the sales through web aggregators represent less than 1% of the total number of policies sold.

So, web aggregator business model didn't bring much transformative change to the general insurance penetration in India.

Insuretechs in the disruptive role

The new-age digital insurers such as Acko, Digit, One assist, and Toffee are bringing in the disruptive changes to the industry through product innovation and relevance to everyday events. They target the tech savvy young population, who are looking for hassle free insurance to cover for their daily risks.

[7] Source: Yourstory Research
[8] Source: Tracxn

Acko	The Amazon backed company is a spin off from the aggregator CoverFox. It has secured total $ 107 Mn. since starting in 2017.
Product Innovation	Introduced usage-based insurance cover for rides with much lower premium E.g. ₹ 1 to 40 per trip based on the coverages. The product can cover against a breakdown or unpredictable traffic that can result in them missing a flight by paying a premium as low as Re 1.
Channel innovation	Partnered with Ola and DriveU to offer insurance for taxi rides. Has partnered with Amazon to offer mobile insurance in the website. Acko has forged over 15 such partnerships including redBus, Zomato and UrbanClap to sell their products.
Customer Experience	Acko offers 1 hr. pick up of the damaged vehicle and door-step delivery of the repaired vehicle in 3 days. If not, they will reimburse the car vouchers for the daily commute.
Digit	Established in 2017, The digital insurer focuses on motor, health and travel segments and has secured $94 Mn in funding so far.
Product Innovation	While the focus is on motor and travel, Digit offers innovative products in home, personal accessories (mobile phones, jewelry), bicycles, and pet insurance.
Channel innovation	The company has tied up with Cleartrip for travel, Xiaomi for screen protection, Tanishq for jewelry, Dr. Cycle for bicycles, ecommerce players (Amazon, Flipkart, Paytm Mall) etc.
Customer Experience	Digit can remotely scrutinize the mobile phone for any damages, inform customer the cost, and offer pickup and drop. To claim flight delays, customers can just click a picture of the boarding pass.
OneAssist	It is a specialized insurer and assistance provider for personal accessories / electronic items such as mobile, laptop, wallet, wearables, home appliances etc.
Product Innovation	It is insurance and assistance combined offering. For e.g. if the wallet is lost, make one call to block all the cards, replace the driving license/ PAN card, and get emergency cash assistance.
Channel innovation	The company has forged critical partnerships such as HDFC, Axis, ICICI, Kotak, YES, Pat, Amazon, Makemytrip, PlanetM, Airtel etc. to improve awareness and reach.
Customer Experience	The insurer provides pickup and drop services for repairs. The gadget Serv works like an AMC for all home appliances, where qualified technicians will perform service visits and repairs for prices as low as Rs.80/ month to ₹ 2500 per year.
Toffee	Toffee started in 2017 as a corporate agent. It works with traditional general insurance companies such as TATA AIG, Apollo Munich, Generali etc. to co-create innovative policies
Product Innovation	Event based products such as Dengue insurance, fitness insurance, salary protection in hospitalization, daily commuter insurance, renter's insurance, and backpacker insurance.
Channel innovation	Toffee has partnered with Sheroes (platform for women), 1mg (online pharmacy), Roaming Clan (traveler community), MTB Himalaya (mountain bikers) to roll out tailor made policies.
Customer Experience	In 90 seconds customer can buy insurance and the claim process is paper free. The customer can get outpatient expenses covered up to ₹ 5000, by showing the doctor's prescription.

The asset light digital model combined with automation efficiency makes these companies nimble and gives the flexibility to cover untapped areas in India. For instance, Digit offer services at 6,000 pin codes across India, while 97% of the offices of private general insurance companies are established in Tier I cities. Purely digital models enable insuretechs to scale cost effectively as compared to incumbents.

The key factors of insuretech products that appeal to the user:

1. High relevance as the products cater to everyday events
2. Positioned at a nominal price points (mostly not exceeding Rs. 100)
3. Smart partnerships/ product bundling – which increases the access and need
4. Superior customer service, paperless claims and use of common language

While the market share of these insuretechs may be small (1-2% each), their potential to tap and influence the 25-30 age bracket people, and thereby the future decision makers is high. This makes them ideal candidates to increase penetration of general insurance in India.

Insuretechs in the enabling role:

In the Indian startup context, it is still early days for disruptive insuretechs. There are several technology-driven start-ups operating as enablers in the industry. From connecting farmers and insurers through block chain, using drones for loss assessment, fraud detection, and risk analytics, the start-ups in India technologically enable the insurance ecosystem to cater to customers better.

Skyline Partners, UK & India	The insuretech firm plans to use blockchain to provide parametric based weather insurance in India. The company aims to be an agent and pass on the underwriting to Lloyds' and other insurers.
SkyMet, India	SkyMet uses big data and analytics to make weather forecast and crop-wise predictions. The company also uses drones to conduct field surveys to verify claims which are currently used by insurers such as ICICI Lombard, Tata AIG, Reliance general insurance etc.
Car IQ, India	Telematics startups such as Car IQ, Aeris, & Zyme Technologies povide vehicle tracking, remote vehicle diagnostics, and emergency assistance. Car IQ is partnered with Bajaj Allianz to provide premium discounts to safe drivers.
Arya.AI, India	ICICI Lombard is leveraging the deep learning and machine learning capabilities for Arya. AI to reduce the health claim processing. The cashless claim request approval time reduced an average of 60 minutes to under a minute now.
Aureus Analytics, India	Provides AI and a predictive analytics platform for the insurance industry, to measure the customer experience via SentiMeter score in real time. It has processed more than 40 million insurance policy data points. (Feb 2019)
Artivatic AI, India	Artivatic uses AI/ML/Deep learning to automate decision making in insurance for faster underwriting, fraud, disease prediction, risk profiling, KYC, claims processing in auto/ travel, sentiment/psychology behavior etc.
McXtra, India	McXtra, stands for "maximum and extra", is an insurance vault (which consolidates all the insurance policies) and offers assistance services across health, life, travel and motor, e.g. roadside assistance, ambulance service, claims assistance, video call with experts, etc.
SureClaim, India	SureClaim is an online platform providing claim assistance by filling in claim forms and ensuring maximum benefits are availed by the claimant.

These startups could be leveraged by insurers to provide integrated solutions that offer protection, prevention and assistance. Overall, these enablers can augment the insurance offerings today, thereby enhance the penetration.

Overall, insuretechs have a positive impact on the insurance penetration. However, compared to insuretechs in enabling role (aggregators, technology support, or pure assistance companies), insuretechs in disruptive role play an active part in enhancing penetration.

The global context of Insuretech

Insuretech investment has grown to $4.2 Bn. across nearly 260 deals in 2018[9], a steep rise from $2.3 Bn. across 203 deals in 2017. The average deal size has increased four times in the past five years as the start-ups move beyond seed funding. USA dominates the global investment share at about 60%, India's share of the insuretech investments (2013-18) is 4%. Insuretech activity is more on the P&C line of business, with a greater focus on distribution (~50% of the investments since 2014). Full stack insurers who are disrupting the market contribute to only 6% in share of investments (2014-18).

How are insuretechs penetrating the insurance market?

Oscar	The Alphabet funded health insuretech reported 257K enrolments and $1.2 Bn. in 2018 up from over $300 Mn. premiums in 2017.
Root	The usage-based car insurer reported $106 Mn. premiums in 2018 up from $ 4Mn in 2017.
Lemonade	The AI powered home insurance company has insured 425 K homes equating to $57 Mn. premiums in 2018 up from $10 Mn. in 2017.

Full stack insuretechs are recording significant growth in premiums and enrolments. They are contributing to the overall growth of the insurance industry. They are increasing the insurance penetration through their digital models, flexible usage/ incident-based policies, and affordable price points.

Chapter 4 - How can insuretech evolve to better the penetration of insurance?

Digitalization as a mega trend is potentially transforming the financial services landscape in India. The adoption of fintech including insuretech is on the rise.

Bank on the early fintech success: Smart phone explosion and access to internet has accelerated the digital payment space which registered ~1000% growth in value to ₹ 5.79 Tn in 2018[10] compared to 2017 and accounting for ~4 Bn. mobile wallet transactions. This is an important milestone in achieving awareness and steering mass adoption of fintech in India. Even insuretechs can count on the under insured, emerging and aspirational market segments who are venturing into digital space.

Cater to the new Indian consumer: Indian customer expectations are changing with the advent of shared economy, preference for prevention than protection, incident/ usage-based risk coverage, hassle free experience (e.g. tap to cover) etc. Like fintechs, insuretechs need to make serious in roads into providing usage relevant solutions and services.

Use new tech to break the access barriers: Technology can break the barriers created by society and spur adoption of insurance. In India, many fintech startups are operating in the area of financial inclusion. Insuretechs are beginning to realize the opportunity (e.g. Sureclaim) in some areas. Going forward they can rethink how insurance can leverage the technology to identify value pools and deliver compelling solutions.

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For e.g. BIMA, the micro insurer in Sweden used the reach of highly penetrated mobile market to get to the underinsured population.

Insuretechs globally are leveraging new technologies such as blockchain, AI, RPA, telematics, Internet of Things, augmented reality etc.

Innovative and tailor-made product concepts: New technology adoption has enabled insurers to develop

[10] Source: 'Digital Payments Report' 2018, Worldline India

new products such as telematics-based motor policy (for e.g. Root, MetroMile), or smart health policies, which minimizes the risk of diseases (e.g. Discovery), or IoT enabled home insurance (e.g. Neos). New product concepts also paved the way for unconventional partnerships that steered more ways of customer access and engagement. Insuretechs such as Lemonade and Root have partnered with lending platform Sofi to offer bundled solutions. Cyber insuretech OZONE is offering its product to banks, brokers and insurers as white label.

Superior digital customer experience: Most insuretechs are positioned as agents of change to mend the gap:

- → On the supply side where insurance is a complex proposition
- → On the demand side where millennials need relevant, quick, and hassle-free solutions.

'Making insurance simple, better and easy' has been the slogan for insuretechs across.

- Policy genius - *easy way to compare and buy insurance*
- Ladder – *life insurance just got easier*
- Ethos – *Life insurance that is simple and faster*
- Lemonade – *the insurance that doesn't suck or forget everything that you know about insurance*
- BoughtByMany – *better insurance for everyone*
- Oscar – *the new kind of health insurance company*
- Cuvva – *insurance the way it should be. Car insurance for an hour, day or a week*
- Trov – *Swipe to protect*
- Hippo- *Finally, home insurance done right.*

In most of these cases, insuretechs were quick to address customer pain points and offer superior experience that led to gaining some share of market. Indian insuretechs can learn from the global insuretech models, their engagement strategy, social media presence etc. Customer experience is one of those critical factors that can address the lack of trust in insurance, increase retention and loyalty, eventually leading to more penetration.

Conclusion

Insuretechs can contribute to increasing the penetration of General Insurance by tapping focused opportunities mandatory and optional segments in the matured and emerging markets. However, to increase penetration, the current Insuretech models in India need to evolve.

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Technical Paper Essay Competition (Health)

Ayushman Bharat – A Giant Step Towards Universal Healthcare in India

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Abstract

Health is a state of wellbeing both physically as well as mentally. It is basic human right to seek access to affordable healthcare. Universal healthcare essentially means equity in access to quality of healthcare without putting financial hardship. It is government which steer the goal of Universal healthcare towards realisation through various available means. Our constitution also calls for affirmative action by State to provide for good health of the subjects. We in India have inherited rich traditional medicine system of Ayurveda as well as Yoga. Modern medicine was introduced by Europeans and today India has robust modern medicine infrastructure and trained manpower. The public system of healthcare in India consists of Primary level healthcare which includes Sub centres and Primary health centres, Secondary Level and Tertiary Healthcare. The sub centres, primary health centres and community health centres are mostly to serve the rural India at local level. The government initiated healthcare services focussing on reproductive and child care as well as communicable diseases like vector borne diseases, tuberculosis, leprosy and HIV/AIDS. With time, India witnessed epidemiological transition from communicable diseases to non-communicable diseases like cardiovascular disease, diabetes, accidental deaths and disabilities. The burden of disease shifted more ton on-communicable diseases for which public health system failed to address

> Health is a state of wellbeing both physically as well as mentally. It is basic human right to seek access to affordable healthcare. Universal healthcare essentially means equity in access to quality of healthcare without putting financial hardship. It is government which steer the goal of Universal healthcare towards realisation through various available means. Our constitution also calls for affirmative action by State to provide for good health of the subjects. We in India have inherited rich traditional medicine system of Ayurveda as well as Yoga.

due to its inherent focus and design to tackle reproductive and child care and various communicable diseases. Private sector developed at much faster rate to fill this service gap but it concentrated more in urban and big towns. The costly private healthcare due to lack of public healthcare facilities and erosion in quality, lack of insurance coverage led to self- financing of health care expenditures. The out of pocket expenses formed major share of health expenditure pushing millions of people into poverty. With formulation of New Health Policy 2017, Ayushman Bharat Scheme was envisaged and started implementing from Sep 2018.It consists of two parts : Health and Wellness Centres to provide comprehensive primary healthcare to all citizens by transforming existing sub-centres and PHCS and Pradhan Mantri-Jan ArogyaYojana (PMJAY) to provide five lakh financial protection to economically vulnerable 10.74 Crore families, as per latest social and economic caste census for seeking secondary and tertiary care at public and private empanelled hospitals. There is no limit on family size, almost all diseases are covered which are divided into more than 1350 packages, no exclusion of pre-existing diseases and free care includes medicines, procedures and diagnostics. The health and wellness centres will be equipped to provide existing healthcare services as well as basic healthcare for non-communicable diseases, geriatric care and availability of essential medicines. National Health Authority is responsible for guiding the implementation of Ayushman Bharat in alliance with states. With the level of healthcare provided under Ayushman Bharat at no cost to beneficiaries, is path breaking initiative by government in direction of universal health care.

Health: a comprehensive term which reflects the wellbeing of human at any point of time. Health is a state of wellbeing both physically as well as mentally. Everyone wants to be healthy in order to live one's life to the fullest. A healthy person is a great asset to the society. Healthcare in simple words is the delivery of health services as per the need of a person. Human beings have different health care needs from the time they are in mother's womb, to birth, infancy, adulthood, and lasts to the very late phase of life when geriatric care is needed. Health is inseparable from life and hence, healthcare is very important aspect of a society.

Universal Healthcare: It means addressing the healthcare needs of citizens at all stages of life. Healthcare has been institutionalized which has only grown more complex with time. Health is the state of wellbeing which is fundamental to life and hence, is the right of every human being. Our Constitution has not specifically mentioned health as a fundamental right but Supreme court has held that the right to live with human dignity, enshrined in Article 21-protection of life and personal liberty, derives from the directive principles and therefore, includes protection of health. Also, it has been held that the right to health is integral to the right to life and the government has a constitutional obligation to provide health facilities. Failure of a government hospital to provide a patient timely medical treatment results in violation of the patient's right to life. Many public interest litigations have been filed from time to time concerning various health related rights of different sections of society like HIV patients, children, and mentally ill persons[1].

Universal health care means existence of the quality health services which are required without burdening the receiver with financial hardship. It necessarily means that first, there should be availability and access to health services that one needs and secondly, use of the healthcare should not be a financial hardship for the user. As world health organisation defines it as "Universal health coverage (UHC) means that all people and communities can use the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship."

The three principles enunciated by WHO regarding UHC are Equity in access, Quality of health services and protection against financial-risk [2].

Universal Healthcare has also been defined by high level expert group in Indian context as: "*Ensuring equitable access for all Indian citizens, resident in any part of the country, regardless of income level, social status, gender, caste or religion, to affordable, accountable, appropriate health services of assured quality (promotive, preventive, curative and rehabilitative) as well as public health services addressing the wider determinants of health delivered to individuals and populations, with the government being the guarantor and enabler, although not necessarily the only provider, of health and related services*" [3].

The very important aspect of Universal healthcare is that the state is the main actor which has to formulate the policy, implement it through inclusive institutional setup and ensure equitable access to every citizen. Our Constitution also directs the policymakers and the state to ensure healthcare through following articles under directive principles:

"Art. 39. The State shall, in particular, direct its policy towards securing—(e) that the health and strength of workers, men and women, and the tender age of children are not abused and that citizens are not forced by economic necessity to enter avocations unsuited to their age or strength;

1 [(f) that children are given opportunities and facilities to develop in a healthy manner and in conditions of freedom and dignity and that childhood and youth are protected against exploitation and against moral and material abandonment.]

Art. 41. The State shall, within the limits of its economic capacity and development, make effective provision for securing the right to work, to education and to public assistance in cases of unemployment, old age, sickness and disablement, and in other cases of undeserved want.

Art. 47. The State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties and, in particular, the State shall Endeavour to bring about prohibition of the consumption except for medicinal purposes of intoxicating drinks and of drugs which are injurious to health."

Healthcare in India has evolved with time and today we have strong network of modern medicine hospitals as well as presence of traditional healthcare systems like ayurveda which continue to prove of immense value world over especially in the present times. We look at the major highlights of this evolution to present times as follows:

History and Evolution of Healthcare in India

Healthcare is the integral part of life. As humans evolved themselves into social systems, various health care systems also developed peculiar to those societies. In ancient civilisations of Indian sub-continent, Ayurveda system of medicine developed. The first systematic and comprehensive record of Ayurveda is given in Atharva Veda of Vedic period (1500 BC to 500 BC) which contains the description of diseases with their cure. In later Vedic period, many Upanishads particularly Yogapani shads record great degree of anatomical and other knowledge .Charaka Samhita is complete compendium of medical information dealing with medical aspects as etiology, symptomatology, treatment and medical care in health and in disease. Susruta Samhita is another treatise which deals with surgical diseases and diseases of special organs such as eye, ear etc. These treatises are still taught and practiced in Ayurveda system of medicine [4].

A great Discipline connected with health and wellbeing known to everyone today is Yoga which is essentially a spiritual discipline which leads to harmony between mind and body, man and nature. Yoga is believed to have started with the dawn of civilization.The Indus valley civilization (3300-1300BC) suggests presence of yoga in ancient India with many seals and fossils found performing Yoga Sadhana [5].

Lord Buddha also took keen interest in supporting science of medicine and created Viharas (monasteries) at different places where care of sick and medical education was given special attention. King Ashoka had built outstanding hospitals during his reign. Vaidyas are known from ancient time who still administer Ayurvedic Indian Medicine. During Medieval era 'Hakim' physicians were brought by foreign invaders. Roots of modern medicine systems in India were established by Europeans. The Portuguese founded Royal hospital in Goa between 1510 and 1515 which was later in 1842 converted into school of medicine and surgery. With British taking control of India, dispensaries were established at sub division and district level whereas hospitals along with medical colleges were established at provincial level. At time of Independence, there were 7400 Hospitals and Dispensaries with 113000 beds with ratio of 24 beds per lakh of population [6].

The principle of universal health care though rooted in culture of India in traditional medicine, it was first envisaged in report of Health Survey and Development Committee headed by Sir Joseph Bhore which was submitted in 1946.It had stated in this report that health service should be available to all citizens irrespective of their ability to pay for it. It should provide complete medical service including domiciliary and institutional with facilities for the treatment and prevention of disease as well as promotion of positive health. The report also recommended for establishment of primary health centres at the village level, secondary health at sub-division level and district hospital with specialist services at district headquarters [6].

Post-Independence health was put in States list and hence, it was left to respective states to device their own healthcare plans suited to the population. Community development programme initiated by centre government was multipurpose which included agriculture, education, transport, social welfare, industries and health and sanitation. It established many sub-centres and primary healthcare centres (PHC) with one PHCfor one community development block of 100 villages and 1 lakh population which was very inadequate. Later, Mudaliar Committee, Jungalwala Committee, Kartar Singh Committee, Shrivastava Committee were formed between 1956 and 1975 to suggest reforms in existing healthcare system. Rural health scheme was launched in 1977 to strengthen the healthcare delivery at village level. National Health Policy, 1983 made provision for universal comprehensive primary health service. In year 2000, National Population Policy stressed on development of basic reproductive and child healthcare services at village level through government partnership with voluntary and NGOs. National Health Policy 2002 set goals for eradicating many diseases like polio, leprosy, kala-azar, lymphatic-filariasis and containing HIV/AIDS, tuberculosis, malaria etc. It also directed for increasing the government expenditure on health care and establishment of integrated system of surveillance, national health accounts and statistics[3].

Next reforms came in primary healthcare when National Rural Health Mission was launched in 2005 for strengthening the Rural Infrastructure and healthcare at grassroot level and augmenting its capacity. It focused on Reproductive, Maternal, New-born, child Health and Adolescent (RMNCH+A) services for continuous care to maternal and child Health. Asha (Accredited Social Health Activist) workers were instituted to promote access to improved healthcare at Household level. Mainstreaming of AYUSH (Ayurveda, Yoga,Unani,Siddha and Homeopathy) systems of traditional medicine was also focussed to revitalize them. Janani Suraksha Yojana under NRHM was launched in 2005 to promote institutional delivery among poor pregnant women and reduce neo- natal and maternal mortality. RSBY (Rashtriya Swasthaya Bima Yojana) launched in 2008 to provide health insurance coverage to unrecognized sector workers and their families belonging to below poverty line. It restricted size of family to 5 members and provided for inpatient medical care for up to ₹ 30000 per family in a year in any empaneled public and private hospitals. It covered all pre-existing diseases with cashless facility. Smart cards were issued to beneficiaries for identification and facilitating hospitalisation. National Urban Health Mission as submission under National Health Mission was launched in 2013 to address the health concerns of urban poor specially those living in slums. Due to overcrowding of Public Health facilities in cities and costly healthcare in private hospitals, urban poor are most vulnerable to lack of healthcare.

Keeping in sight the global developments on healthcare in form of sustainable development goals (SDG 3) and need for large scale government led programme came National Health Policy 2017 with goal of universal access to healthcare services without financial hardship. It focuses on professionalism, integrity and ethics in entire system of healthcare delivery with equitable, affordable, universal, patient centred quality healthcare. It seeks to progressively achieve universal health care, reinforce trust in public healthcare system and align growth of private healthcare sector with public health goals [7].

Ayushman Bharat is an ambitious scheme launched in September 2018 to realise the goal of universal healthcare as envisaged in national health policy 2017.It has two components: health and wellness centre and Pradhan Mantri Jan ArogyaYojana. It has a holistic approach to provide healthcare by moving away from sectorial and segmented approach of healthcare delivery to a more comprehensive need-based health care service. It improves upon the existing scheme of things with path breaking initiatives.

Why India needs Universal Healthcare schemes like Ayushman Bharat can be *understood only by studying existing scheme of things and their major characteristics as mentioned below:*

Existing healthcare system in India and its major characteristics

India is land of diversity with its vibrant democracy, multi religious and ethnic population and diverse cultures which are always proud of. But it is also a fact that there are also very large gaps in incomes, living standard, education, availability of job opportunities, gender inequality and many more. These disparities are much more reflected regionally i.e. Rural and Urban areas. As per Census 2011, 68.84% of Indian population lives in rural areas whereas only 31.16% are in Urban. The primary occupation in rural areas is agriculture and allied sector whereas urban population is engaged in manufacturing and services sector.

A. In India Public Healthcare is provided at three levels [Figure 1] Primary Level, Secondary Level and Tertiary Level. At primary level, healthcare is provided by sub-centres, and primary healthcare centres (PHCs) which are established closer to communities. Indian government has developed extensive system of primary healthcare centres and sub-centres at local levels in rural areas. They are first point of public contact with public healthcare. They are primarily focussed on providing Reproductive, Maternal, Newborn, child and Adolescent Health (RMNCH+A) services as well as Communicable Diseases control and Prevention.

i. **Sub Centres-** These are established at local level serving around 3000 population in rural hilly areas to 5000 in plains. There are more than 1.5 lakh health sub centres all over India providing basic health facilities like mother and child care, safe delivery, immunisation programme, family welfare activities thus delivering preventive and primitive care with basic curative care. They are required to be manned by at least one ANM(Auxiliary Nurse Midwife), Female Health Worker and One Male Health worker.

PHC: These are first referral unit for six Sub centres and provide integrated curative and preventive health care to rural people. There are more than 25000 PHCs in country manned by a Doctor supported by 14 Paramedical and other

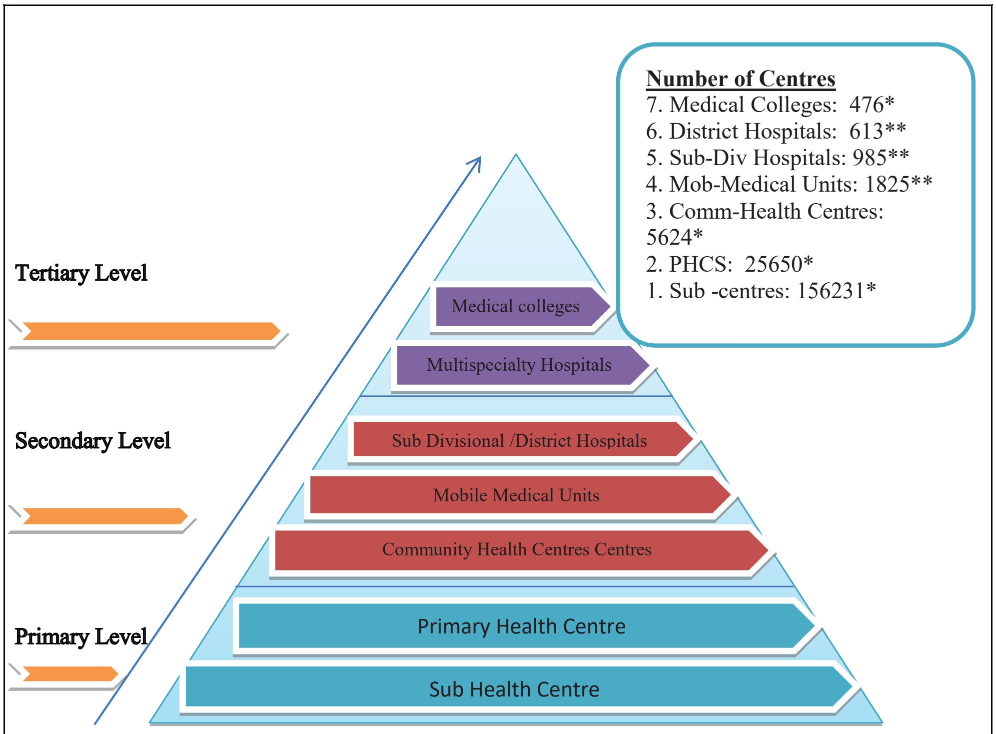


Figure 1. Existing Public Healthacre System in India

***National Health Profile 2018:Central Bureau of Health Intelligence DGHS, Min of Health and Family Welfare**

****https://data.gov.in/resources/sub-divisional-hospitals-district-hospitals-and-mobile-medical-units-functioning-march-0 (Data for 2011-13)**

staff to deliver Healthcare services. They serve 20000 populations in difficult terrain areas and about 30000 in plain areas.

ii. Secondary Care: It is 2nd tier of three tier structure of Indian Healthcare system in which patients are referred from Primary Healthcare to the specialists in better hospitals. It includes CHCs, Mobile Medical Units, Sub-Divisional and District Hospitals. **Community Health Centres(CHCs):** First Referral Unit for 4 PHCs manned by four medical officers including Surgeon, Physician, Gynaecologist, and Paediatrician with 21 paramedical and other staff. They are required to have facility with 30 beds, X ray machine, Operation Theatre, Delivery rooms and Labs. Currently more than 5600 Units are established. Each Community Health centre covers population of 80000-120000.depending on terrain.

District Hospital is used here to mean a hospital at the secondary referral level responsible for a district of a defied geographical area containing a defied population. The bed strength also varies from 75 to 500 beds depending on the size, terrain and population of the district.[9]

iii. Tertiary Healthcare: At Tertiary healthcare specialised care is given to patients referred from Secondary level. It includes Multispecialty Hospitals, Medical Colleges and advanced medical research institutes. These are multi-speciality hospitals.

B. Total Disease Burden: It is the disease profile of the population which reflects what type of diseases are faced by the population. We analyse the disease pattern in India under three heads:

i. Reproductive, Maternal,Newborn,Childand Adolescent Health

ii. Communicable Diseases

iii. Non communicable Disease

i. Reproductive, Maternal, New-born, Child and Adolescent Health Indicators:

Definitions: *MMR: Maternal death of a women while pregnant or within 42 days of pregnancy termination. It is represented per Lakh Live births.*

NMR: Number of deaths among all live births during first 28 days of life. It is represented per 1000 live Births.

IMR: It is number of deaths below 1 year of age for every 1000 Live Births

U5MR: It is number of deaths below 5 years of age for every 1000 Live Births

TFR: It is average number of children that would be born to a woman, if she experiences the current fertility pattern throughout her reproductive span(15-49 years).A TFR of 2.1 is considered as replacement rate of population.

References: [13]*: National Health Mission: Ministry of Health and Family Welfare website: RMNCH+Acomponent. [14]**: http://censusindia.gov.in/vital_statistics/SRS_Bulletins/MMR_release_070711.pdf[15] ***: http://nipccd.nic.in/reports/imr.pdf.

The above Health indicators in Table 1 show improvements with time. This has been due to universal Immunisation drives by the Government both at Centre and State and focus on Reproductive Health care for Mother and Child at Primary level[21].The Sub centres, Primary Healthcare centres coverage has improved with time resulting in more institutional deliveries as well as accessible care to mother and child. But, it is also a matter of concern that we still have not achieved the global target under Sustainable Development Goals – SGD 3 set for Health.

ii. Communicable Disease: Diseases like Malaria, Kala Azar, Dengue Chikungunya and similar others are causes of greatest concern to Public. Government has in past and present started many programmes to contain the spread of such diseases. The programmes like National Programme for vector Borne

Table 1.HealthCare Indicators for RMNCHA+ current status

Health Indicators *[13]	Value At time of **[14]	Current Status	National Health Policy Target	SDG-3Goals for 2030
Maternal Mortality (MMR)	398 (1997-98)	130	100 by 2020	Less than 70
Neonatal Mortality(NMR)	51***[15]	24	16 by 2025	Less than 12
Infant Mortality(IMR)	80 (1990)	34	28 by 2019	-
Under 5 Child Mortality Rate(U5MR)	118 (1990)	39	23 by 2025	Less than 25
Total Fertility Rate	3.8(1990)	2.2	Replacement Level(2.1)	-

Disease control have been able to contain these diseases to much extent. The Morbidity and Mortality from Vector Borne Communicable Diseases is shown below in Table 2.

Table 2. Communicable Diseases (2017- Cases Reported and Casualties [16]

Vector borne Diseases	Case Reported (2017)	Deaths
Malaria	842905	104
Chikungunya	63679	0
Kala Azar	5758	0
Acute Encephalitis Syndrome	**13036**	**1010**
Japenses Encephalitis	2180	252
Dengue	157996	253
Total	**1085554**	**1619**

Communicable Diseases	Cases	Deaths
Cholera	494	3
Acute Diarrhoeal Disease	12927212	1331
Enteric Fever(Typhoid)	2221190	493
Acute Respiratory Infection	40742018	3163
Tetanus	4997	88
Diphtheria	5293	148
Whooping Cough	23379	6
Measles	17068	28
Viral Hepatitis	159675	507
Rabies	97	97
Pneumonia	702705	3281
Meningococcal Meningitis	3251	205
Syphills	19808	1
Gonococcal Infection	59266	0
Influenza A H1N1(swine flu)	38811	2266
Chicken Pox	74035	92
Encephalitis	12485	626
Viral Meningitis	7559	121
Total	**57019343**	**12456**

TB : Tuberculosis is one of very old disease. The high incidence level of TB infection had attracted the attention of colonial British Government and many NGOS. Many TB associations were opened at province level under TB Association of India before independence. Post-Independence Tuberculosis Chemotherapy Centre at Chennai 1956 , National Tuberculosis Institute 1959, were setup and District Tuberculosis Programme prepared in 1961 as no part of India was free from this disease. Revised National Tuberculosis Control Programme launched in 1992 is dedicated programme to control this disease[17].The Present reported cases in a single year are shown in Table 3.

Table 3. TB Cases in Year 2017 [16]

Total Patients Registered for Treatment in 2017	1444175
Microbiologically confirmed	695078
New Smear Positive Treatment Success Rate	79%
No of Patients notified by Private sector	383784

Other serious communicable diseases being faced are Leprosy and HIV AIDS. The figures below represent the prevalence of these Diseases:

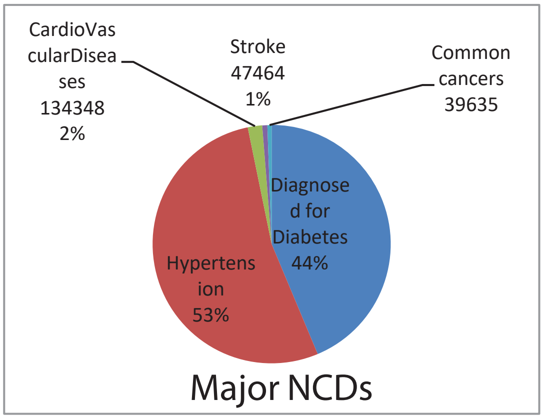
Table 4: HIV/AIDS and Leprosy Cases in India in 2017

Other Major Diseases Cases	In 2017
People Living with HIV/AIDS on ART (centres:533) till 2017	1181125
No of General Clients Detected Sero-Positive for HIV in FY 2017-18 till Dec 2017)	136776
Leprosy (New cases Reported in 2017)	98682
Cases Discharged/cured in 2017	82851
Under Treatment	99084

We have witnessed significant focus on reproductive and child care as well as communicable diseases for long time. There have been significant improvements in them due to government initiatives and support of various non -government agencies. Also the education and awareness level has increased manifold resulting in large scale coverage though we still need more efforts to contain many diseases like Malaria, Dengue, AIDS,TB etc. and augment our capacity to deal with new emerging diseases like Zika Virus, Bird Flu and Ebola.

iii. <u>Non Communicable Diseases:</u>

In last few decades there has been accelerated growth in numbers of cases of Cardio-vascular disease, Diabetes, Cancer, Mental Health Disorders , and Accidental injuries. The morbidity and mortality from non-communicable diseases is much higher than Communicable Disease. The high prevalence of these diseases including Accidental and Disabilities suffered by a large section of society show alarming situation as represented below :(Fig 2& Table 5,Table 6 and Fig 3)



No of Persons Screened at NCD labs in 2017	35723660
Diagnosed for Diabetes	3006443
Hypertension	3654099
Cardiovascular Diseases	134348
Stroke	47464
Common cancers	39635
Total Diagnosed Persons	**6881989**

Fig 2 & Table 5 : Major Non Communicable Diseases(NCD) Cases in India in 2017 Source : compiled from National Health Profile 2018 [16]

Table 6. Reported Accidental Deaths

Accidental Causalities	2005	2015
Accidental Deaths due to natural calamities	22415	10510
Accidental Deaths due to un-natural reasons like fire, Road crashes etc.	271760	402947
Suicides	113914	133623
Snake Bites	142366	948
Total Accidental Deaths	550455	548028

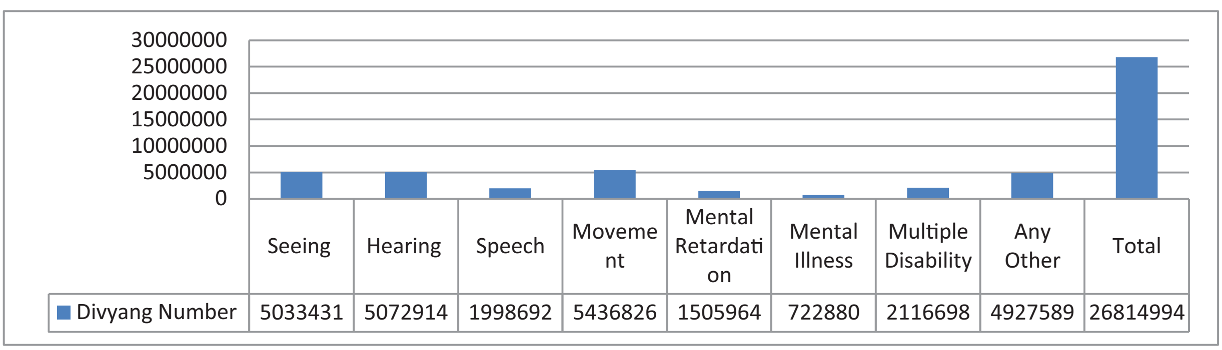


Fig:3 Indian Population with Disabilities

It is observed that the disease burden due to communicable, maternal, neonatal, and nutritional diseases has considerably reduced in last two decades. In the same period, disease burden from non-communicable diseases has increased at alarming rate. This epidemiological transition, however, varies widely among Indian states. The situation of Non-Communicable diseases is a public health challenge In India as it only focussed on Reproductive and Child care and control and management of Communicable Diseases. WHO estimates that these diseases (with mostly preventable risk factors) account for 60% of all deaths and significant morbidity in India. Government has initiated National programme on Non-Communicable Diseases but the efforts are still in nascent stage which need to be up-scaled and integrated. They require renewed focus on prevention and management. Transformation of existing Primary level Healthcare centres into Health and Wellness Centres which provide Non communicable care under Ayushman Bharat is much needed reform in India.

C. Expenditure on Public Healthcare and Out of Pocket Expenses: Health is in state list so its responsibility of each state to provide healthcare services suited to its people. Although Bhore committee has envisaged universal health coverage to every citizen, Indian governments have not given adequate attention to Healthcare. The Planned allocation in five years for Health has been very low and subsequent Government also kept it on low priority [6].

i. The Total health expenditure of the India in FY 2015-16 is 3.84% of GDP which calculates to Rs.4116 Per capita of health expenditure [19]. The world average of Current Health Expenditure is 10.021 % of GDP, for China - 4.98% whereas in India Current Health Expenditure is only 3.66% of GDP [18]. The Per capita world average for current Health Expenditure in dollars is $1355, for China -$761.49 whereas it is only $241.48 / Capita for India. Hence we have low expenditure on healthcare which means that many persons in society are still excluded from healthcare.

ii. The share of the Government both Centre and States in total health expenditure is 1. 18% of GDP .This includes all expenditure on health services being provided under various Centre and State schemes such as Central Govt. health schemes for central Government employees, railways, Defence, Ex -service men, ESIS and other schemes for general public. The Table 9 shows the current Health expenditure on major schemes. The low allocation of 1.18% of GDP to Health is indication of low priority given by Governments to Health sector which is not in line with Universal Healthcare vision where Government is Guarantor and enabler.

iii. The Government share is only 30.6% in total health expenditure (Table 7) and around 24% in current Health expenditure including centre, state and local bodies (Table 8 &Fig 4). Excluding various organised sector Enterprises and Donor agencies the Household expenditure (including insurance premium contribution) is 69% of Current Health Expenditure amounting to Rs. 342257 crores (Table 8).This high out of pocket expenditure on health is a big economic burden on the households which is pushing millions back into poverty in case of serious ailments in family. One of the main reasons for catastrophic Health expenses is low Insurance coverage.

Table 7: Expenditure Indicators on Health

Capital Health Expenditure	33294 Cr.
Current Health Expenditure	495190 Cr.
Total Expenditure on Health	528484 Cr.
% of GDP	3.84%
Per Capita Expenditure	₹ 4116
Govt. Expenditure on Health	161863 Cr.
Govt. Share of Total Health Expenditure	30.6%
Govt. Health Exp. Share in % of GDP	1.18 %
Govt. Share per capita	₹ 1261

Table 8: Health Expenditure by various stakeholders

Health Expenditure Share	**In Crores**
Union Govt.	38416
State Govt.	75785
Local Bodies	3808
Household OOP including insurance contributions	342257
Contributions by Enterprises including Insurance	23691
NGOs	7708
External/Donor Funding	3525
Total	**495190**

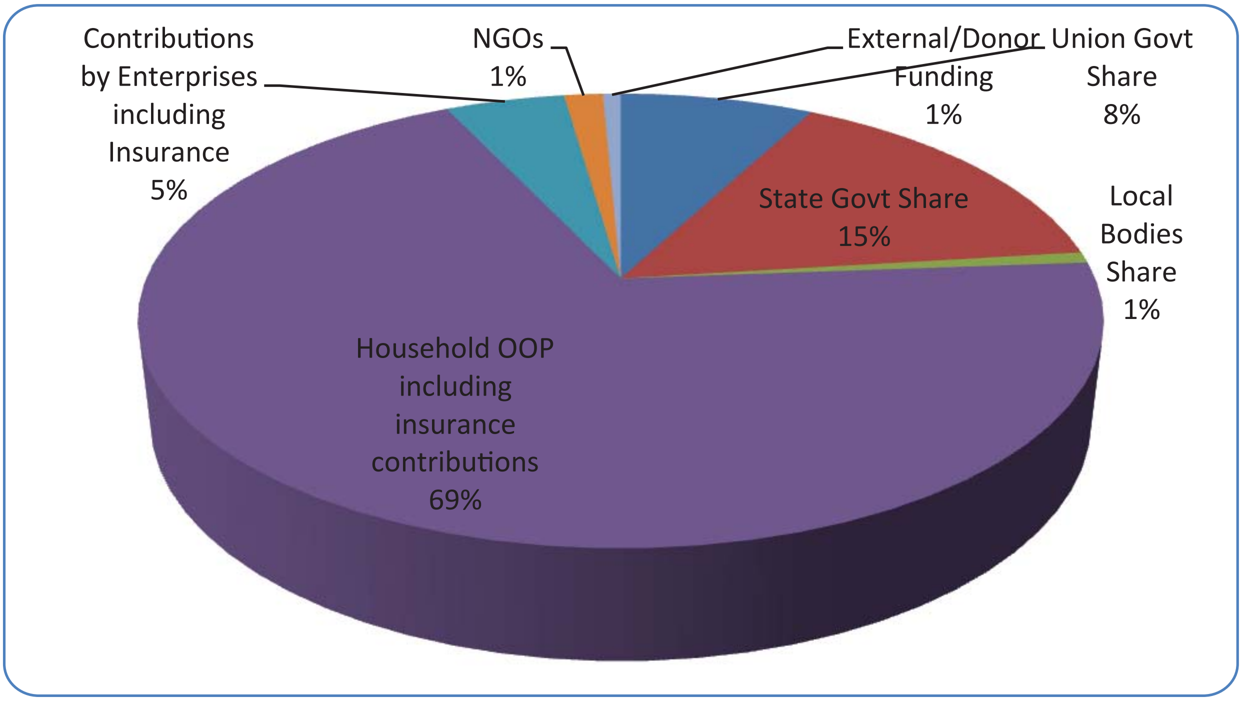


Fig:4: Health Expenditure by Various Stakeholders

Source: National Health Accounts Estimates for India FY 2015-16,,(Nov 2018) -National Health System Resource Centre, Ministry of Health & Family Welfare[19]

Table 9: Current Health Expenditure on Major Schemes

Current Health Expenditure-Major Schemes	**In Crores**	**%**
Centre Govt. Non-Employee-For General Public Health Schemes like National health mission, AIDS control, Family welfare etc.	33730	6.8
Centre Govt.for Employees (Defence, Railways, Dept. of Post etc.)	9134	1.8
State Govt. Non-Employee healthcare Schemes for General Population	52259	10.6
State Govt. own Employees and dependents	3101	0.6
Local Rural bodies healthcare services to General Public	2662	0.5
Urban Local bodies healthcare services to General Public	6045	1.2
State Social Health Insurance -Central Govt. Health Scheme	2885	0.6
State Social Health Insurance-Employee State Insurance Scheme	10298	2.1
State Social Health Insurance-Ex Servicemen contributory Health scheme	2558	0.5
Govt. Financed Health Insurance schemes like RSBY/State specific schemes	5064	1.0
Non Profit Institutions serving Households on Philanthropy	9196	1.9
Resident Foreign Agencies schemes	1488	0.3
Enterprises -own health network for employees or reimbursement	14544	2.9
All household Out of Pocket Payment-at point of receiving healthcare	**320211**	**64.7**
Employer based Insurance -Private Group Health Insurance-(IRDAI)	11621	2.3
Primary Individual Health Insurance (IRDAI)	10353	2.1
Community Based insurance including Micro-insurance	39	0.0
Actual Total -490190 (Less due to Rounding error)	**495188**	**100**

Table 10.Premium and Number of Persons covered by Insurers [23]

Health Business(IRDAI Registered Insurers)	Premium in Crores (2015-16)	Persons covered in lakhs (2015-16)
Group Business (Other Than Govt. Business)	11621	570
Individual Business	10353	287
Government Sponsored Schemes including RSBY	2474	2733
Total Persons Covered	**24448**	**35.90 Crores**
Public Sector General Insurers	15591cr.	
Private sector General Insurers	4911 cr.	
Stand Alone Health Insurers	3946 cr.	
Total	**24448**	

iv. In India Commercial Insurance sector is regulated by Insurance Regulatory and Development Authority IRDAI and it includes Public sector companies, private sector companies as well as Standalone Health Insurers in the market. These companies provide hospitalisation health insurance through many product and plans such as family floater, Individuals Health, Group Health , Top up and Super top up plans although there is low penetration and awareness. Though plans offered by insurers are comprehensive but there are some exclusions like Pre - existing diseases, Waiting period, Cap on expenses, Dental and OPD exclusion. For early entrant there are many incentives also but for old aged citizens it is difficult to purchase good plans due to adverse selection. In case of Group Health Policies where the Employer seek insurance protection for their employees and family members, the insurers waive most of exclusions and provide additional covers based on demand of client. These products provide reasonable financial protection in case of major ailments but they are not in nature of universal coverage due to inherent limitations of Insurance. The products have improved with time and recently IRDA has proposed Draft Guidelines on Standardisation for Individual Health Insurance which will make Health insurance attractive. The market share of insurers is represented in table 10 [23].

v. The Private healthcare sector has emerged as major player in India. The Government hospitals account for 14.3% of current healthcare market whereas Private hospitals with high presence in urban cities and major towns account for 26% share of Current Health Expenditure (Table 11). One of the major reason of high share of private sector is inadequate healthcare services in Public hospitals. This has resulted in high out of pocket expenses as Private sector healthcare is expensive large sections of society lack adequate Insurance coverage.

vi. The other major area of concern is high expenditure on medicines and drugs. With lack of government provisioning for drugs and medicines in Public hospitals, Pharmacies contribute around 28% of Current expenses on Healthcare. (Table 11).

Table :11: Current Expenditure as per Healthcare Services Provider [19]

Healthcare Providers(Expenditure)	In Crores	% share of CHE
Govt. Hospitals	70954	14.3
Private Hospitals	128590	26.0
Exp. incurred on other Govt. providers like PHCs, Family planning centres, Dispensaries	38644	7.8
Other Private providers including private clinics	24490	4.9
Patient Transport and Emergency Rescue	21604	4.4
Medical and Diagnostic labs	22715	4.6
Pharmacies	**138061**	**27.9**
Other Retailers	792	0.2
Providers of Preventive care	25048	5.1
Administration and Financing	15483	3.1
Others Health Providers not classified	8809	1.8
Total	**495190**	**100.0**

Source: National Health Accounts Estimates for India FY 2015-16, (Nov 2018) -National Health System Resource Centre, Ministry of Health & Family Welfare[19]

vii. The other major issue is High Out Patient curative Care or OPD expenses (Fig:5). The total OPD expenses incurred in both Public as well as Private sector are Rs.85750 crores which is 17.31 % of Current expenditure. OPD expenses are borne by the patient at point of service and not covered in health Insurance policies. If we add prescribed medicines and Over the counter medicine without prescription, the total OPD care costs Rs. 223811 crores contributing 45.50 % of the current expenditure. Out of Pocket expenses for households including insurance premium is Rs.342257 crores. The OPD expenses which include pharmacy expenses are 65.4% of Household expenses. Hence significant expenses of households are incurred on OPD care [22].

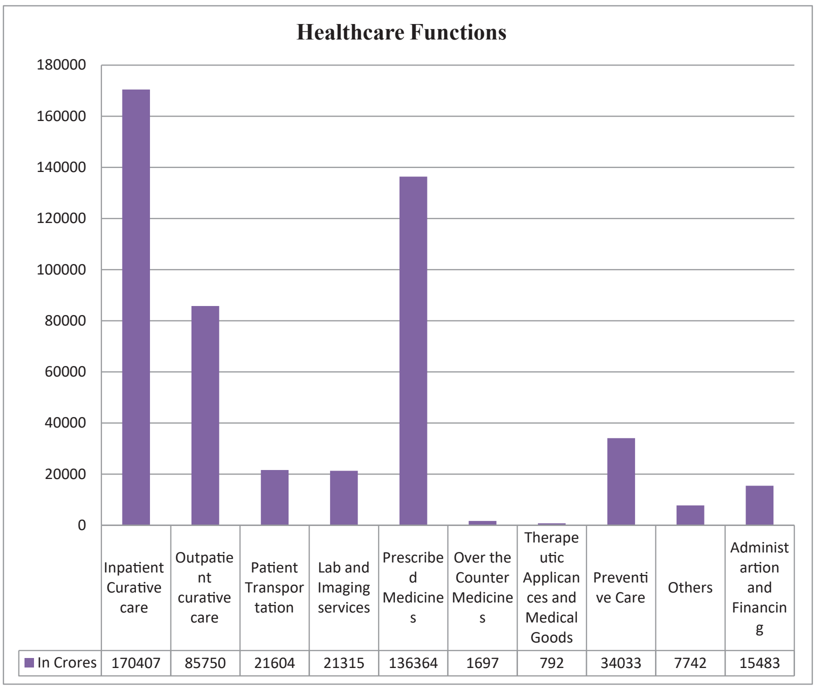


Fig: 5 Current Healthcare Expenditure as per Functions Performed

Source: National Health Accounts Estimates for India FY 2015-16, (Nov 2018) -National Health System Resource Centre, Ministry of Health & Family Welfare[19]

viii. The Total expenditure on Primary healthcare is 45.1% of Current Expenditure, whereas Secondary and tertiary care costs around 35.2 % and 15.2% respectively (Table 12). The Government expenditure is more in Primary healthcare due number of Disease control programmes and its high presence in form of Sub centres, PHCS,CHCs in rural areas.

Table 12: Expenditure on Type of care (% of Total Health Expenditure)

Expenditure on Type of care (% of Total) [19]	Government	Private	Total
Primary Care	51.50%	43%	45.10%
Secondary Care	22%	40%	35.20%
Tertiary Care	13%	16.20%	15.20%
Governance and Supervision			3.10%

There are many shortcomings in Indian Healthcare systems due to which a large section of society which is economically poor could not afford healthcare. The Government through Ayushman Bharat scheme is making Healthcare inclusive, accessible and affordable to the most deprived persons of society. The major characterstics of this scheme are as follows:

Ayushman Bharat Scheme

Ayushman Bharat Scheme has two components : Health and Wellness Centres and Pradhan Mantri Jan ArogyaYojana.

Health and Wellness Centres: Under this the existing Sub centres and Primary Health Centres are to be transformed into Health and Wellness centres which will provide Comprehensive Primary Level Health care. It is proposed to develop 1.5 Lakh of such centres providing people centric, holistic primary healthcare to ensure the principles of equity, quality, universality and no financial hardship. These will also provide free essential drugs and diagnostic services.

The HWCs are to provide preventive, promotive, rehabilitative and curative care for an expanded range of services encompassing reproductive and child health services, communicable diseases, non-communicable diseases, palliative care and elderly care, oral health, ENT care, and basic emergency care. The services in HWCs will be provided through a Mid-level Health Care Provider (MLHP)/Community Health Officer (CHO) placed at a HWC-SHC and Medical Officer at PHC (Rural/ Urban). The MLHP/CHO will undergo a Certificate in Community Health through IGNOU or Public University [10].

Pradhan Mantri Jan ArogyaYojana (PM-JAY): The 2nd component of Ayushman Bharat provides health protection cover of ₹ 5 Lakhs to 10.74

Crore (Approx 50 crore beneficiaries) Poor and Vulnerable families. It is focused on Secondary and Tertiary Healthcare which can be availed at any of Public Health Institutions or empaneled Private Hospitals across country.

It is entitlement based scheme which covers poor and vulnerable families on Deprivation and Occupational criteria as per latest SECC data.(Table 13 & 14). It also includes left out families of RSBY in some states.

Table 13: Rural and Urban Households as per SECC [12]

Households In India	**In Crores**
Total Households in country(Rural and Urban)	24.49
Total Urban Households	6.51
Total Rural Households	17.97
Rural Households	
a. Total Excluded Households (based on fulfilling any of the 14 parameters of exclusion)	7.07
b. Automatically Included Households (based on Fulfilling any 5 parameters of inclusion: 1. Households without shelter. 2. Destitute, living on alms. 3. Manual scavenger families. 4. Primitive tribal groups. 5. Legally released bonded labour.	0.1595
c. Households with any one of the 7 deprivation	8.73
d. Households not reporting deprivation	2.01
Total Rural	**17.97**

Table 14: Beneficiaries of PMJAY Scheme[11]

			In Crores
A	**Families in Deprivation Criteria-Rural Households**		**8.03**
	D1	Households with one or less room, kuccha walls and kuccha roof	
	D2	No adult member in household between age 18 and 59	
	D3	Female headed household with no adult male member between 16 and 59	
	D4	Households with differently able member with no other able bodied adult member	
	D5	SC/ST Households	
	D7	Landless households deriving a major part of their income from manual labour	
B	**Rural Households Automatically Included (based on fulfilling any 5 parameters of inclusion:**		**0.1595**
	1. Households without shelter. 2. Destitute, living on alms. 3. Manual scavenger families.4. Primitive tribal groups. 5. Legally released bonded labour.		
C	**Urban Households-Families belonging to 11 occupational criteria:**		**2.33**
	1. Occupational categories of workers 2.Rag picker or a beggar 3. Domestic worker, a sweeper, a sanitation worker or a mali 4. Home-based worker, artisan, handicrafts worker or tailor 5.Construction worker, a plumber, a mason, a labour, a painter, a welder, or a security guard 6.Coolie or earn a living by another head-load work 7.Street vendor, a cobbler, a hawker, or provide some other service on streets 8. Transport worker, a driver, a conductor, a helper to drivers and conductors, a cart-puller or a rickshaw puller 9.Shop worker/assistant/peon in a small establishment, a helper, delivery assistant, attendant, or a waiter 10.Electrician, mechanic, assembler or repair worker 11.Washer-man or chowkidar (Ref:		
D	**RSBY Left out Families (Mainly in States of Karnataka, Himachal, Kerala, Chhattisgarh etc.)**		0.22
Total Beneficiary Households			**10.74**

Ayushman Bharat and Universal Health Coverage: A Giant Ste

a. To achieve universal access to healthcare services,Ayushman Bharat has two components.The Health and Wellness Centres form the base and second component builds on first component toprovides financial protection(Fig 6). The Health and wellness centres(HWC) focus on providing comprehensive primary healthcare services. There has been change in disease profile of population with more burden of non- communicable diseases. Due to lack of other healthcare services at primary level there is crowding in Secondary and Tertiary healthcare level. It also leads to households seeking primary care in Private hospitals resulting in high expenses from pocket.Health and Wellness Centres seek to address this situation by expanding the scope of services at Primary level. Apart from providing Reproductive and child care, Communicable diseases management, they will also provide screening, prevention,control and management of non- communicable diseases,care for common ophthalmic and ENT problems,basic oral healthcare,elderly and palliative care, emergency medical services,and screening and basic management of mental health ailments.The idea is to make available the maximum services at local level and and refer only serious cases to higher Secondary and Tertiary Care.HWCs also seek to empanel all households in their catchment area by utilising the services of ASHA and MPW (multipurpose workers). The empanelment of individuals and families will ensure improved coverage and continuum of care.

b. HWCs providing screening and basic management of various diseases will also organise referral for consultation and follow-up with MBBS doctor at linked PHC –Health and Wellness centre. The PHCs and CHCs –Health and Wellness centres at block level will provide similar services to Sub-centres –HWCs but with higher order of complexity. The serious and more complicated cases will be referred to District Hospitals by PHC/CHC.Where there are chronic conditions which require periodic specialist referral to tertiary care, the same may be initiated by medical officer at PHC level in consultation with specialist. This requiresquality IT infrastructure for better communication.

c. The care is not credible if essential medicines and free diagnostics for various diseases are not available at these centres. HWCs will ensure that there is adequate supply of medicines as per expanded services and national list of Essential Medicines 2015.Medicines for chronic diseases, Mental ailments, Palliative care will be dispensed at Sub centre –HWC to avoid patient hardship. HWCs are to be equipped to provide free diagnostic services for screening and testing of expanded range of services.

d. To ensure quality care, Mid Level Health Provider (MLHP) with requisite qualification as Community health officer or Nurse (GNM/B.SC) or trained and certified Ayurveda practitioner will man the Sub centres –HWCs.They will be supported by ASHA and multipurpose workers. The PHCs will be manned by two medical officers supported by trained nurses,Pharmacist, Lab Technician, Lady Health Visitors.The HWCs envisage elaborate use of ICT infrastructure for seamless flow of information, Medical Mobile Units for accessing remote and difficult areas. There are programme monitoring indicators and management at District and state level to ensure high quality of care.

e. Non communicable diseases like Cardiovascular, Diabetes, High Blood Pressure account for highest number of morbidity and mortality in India. With healthy lifestyle and nutrition from younger age they are preventable. They are also manageable for already affected person with proper advice from specialists and changing their lifestyle. In recent times there has been very positive response towards Yoga and Ayurveda world over. United Nations have even declared 21st June as International Yoga Day realising its potential in achieving healthy balanced lifestyle which is antidote to Non communicable Disease. HWCs will also benefit people through integrating India's rich traditions of Indigenous health system and Yoga into mainstream healthcare delivery, by involving its practitioners for conducting regular classes for example of Yoga, Ayurveda clinics etc.

f. Health and wellness centres are expected to completely transform the way Healthcare is delivered. By focussing on Comprehensive health care it is expected that it will reduce the burden of high out of pocket expenses(OOPE) especially the out patient care (OPD) expenses which constitute more than 65% of OOPE as there has been under utilisation of public primary healthcare leading to diversion to private clinics and hospitals. It will also improve access to healthcare due to registration and empanelment of individuals and families by HWCs and expanded range of healthcare services, better Medicine and diagnostic facilities at local level. The Principle of time to care being not more than 30 minutes will go long way in ensuring quality health care at HWCs.[10]

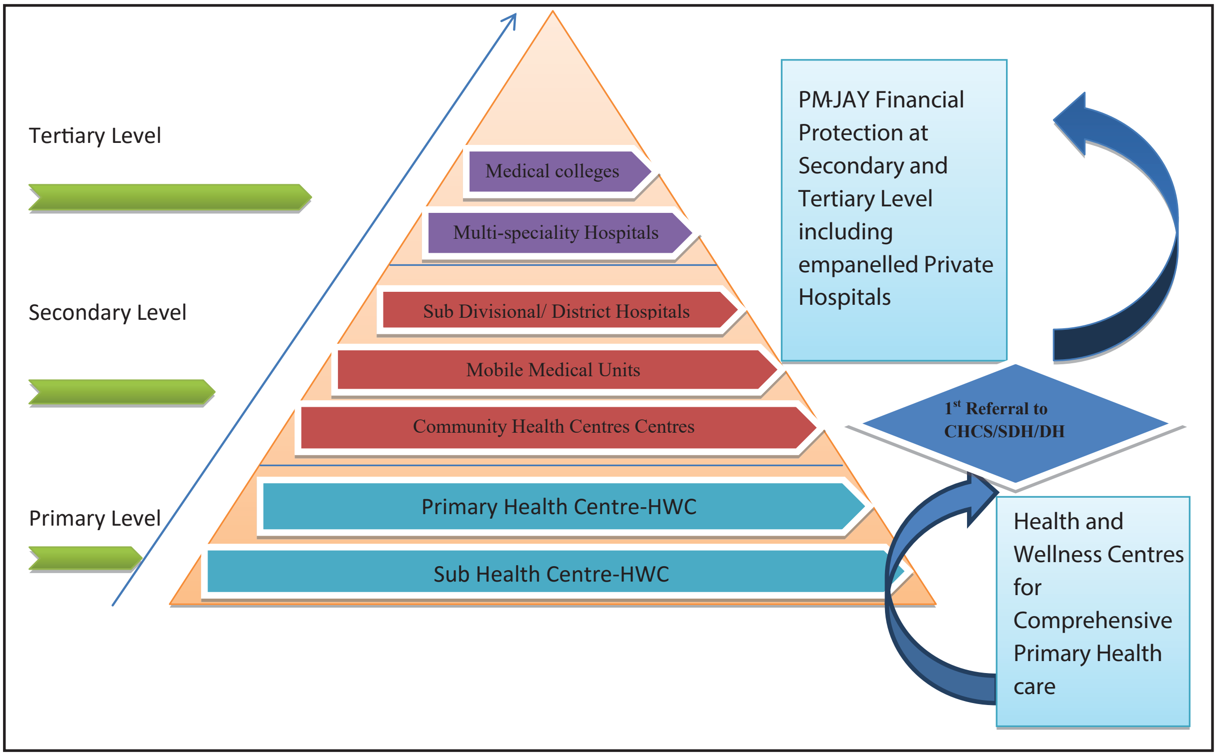


Figure 6 :Ayushman Bharat Scheme

a. The second part of Ayushman Bharat –PM Jan Arogya Yojana provides financial protection from expenses incurred on Secondary and Tertiary Healthcare services. By providing 5 lakh health cover to 10.74 Crore poor and vulnerable families (Approx.50 Crore citizens), it has provided the much needed access to higher level healthcare which is expensive. The delivery of healthcare service under PMJAY is through empaneled hospitals both in public and private sector. There is simple empanelment process for hospitals who meet the standard of care guidelines as set by National Health Authority(NHA). The participation of private sector will boost the access and quality of health care thus realising the goal of New Health Policy 2017 of aligning the private healthcare sector growth with Public health goals.

b. It is common knowledge that poor sections of society are most vulnerable to lack of Secondary and Tertiary healthcare as public financed infrastructure is not adequate to support high demand. The private sector has been able to fill this gap but this comes at cost of savings or mortgage. The health insurance penetration is poor and limited to organised sector. Also the coverages in Commercial health products have various riders in form of capping, exclusions and waiting period. By covering the population at bottom of pyramid, PMJAY has brought the most neglected section of society under health Insurance protection at free of cost

c. The PMJAY is true in the spirit of universal coverage as it is entirely financed by Government both centre and state and offers comprehensive coverage in form of 1350 medical packages covering surgery, medical and day care treatments including medicines, diagnostics and transport. The benefits also include pre and post hospitalisation expenses on diagnostics and medicines. The healthcare has been divided into 1350 packages under various speciality departments numbering23 including cardiology, oncology and mental disorder packages which are generally excluded under commercially available health insurance. The package rates have been fixed for each type which includes drugs, diagnostics, consultations, procedure, stay and food for patient. The Hospitals cannot charge any additional money from patient. The pre-existing diseases are also covered without any waiting period.

d. RSBY(National Health Protection Scheme) launched in 2008 also targeted poor and vulnerable families but the family size was limited to 5 members including Husband,Spouse,Three Dependent children or parents. Ensuring the universal coverage goal there is no such cap on number of family member. It also accords priority to women, girl child and senior citizens.

e. One of the major features of PMJAY is use of Information and Communication Technology for implementing the scheme. The beneficiaries of the scheme have been clearly defined as mention in Table 14.Database of beneficiaries have been prepared from latest Social and Economic Caste Census and RSBY. Any eligible families left from coverage can also covered. E-cards to beneficiaries are being issued at various contact points like Common Service Centres, PHCs, Gram Panchayat offices, Empanelled hospitals or any other as declared by respective states. There is beneficiary identification system in place at empaneled hospitals for easy identification. The process of Admission to claim settlement is completely online with real time updation. There are PM Aarogya Mitras at hospitals to guide the beneficiaries in whole process. This makes the process inclusive and patient oriented leading to high level satisfaction and quality care.

f. For effective implementation and focussed approach, National Health Agency was constituted at centre level which was upgraded as National Health Authority attached to Ministry of Health and Family Welfare. It has fully functional autonomy to provide vision, design, roll out and manage Ayushman Bharat in alliance with state governments. It has come out with many guidelines and model agreements for implementation of PMJAY. States are important stakeholders in the whole scheme. States can have their own State Health Agencies and there is flexibility to states to implement the scheme through Insurance Company or directly through Trust/ Society/Implementation Support agency or mixed approach. Since Health is a State subject and there are disparities among states on coverage, healthcare needs of population, public private infrastructure, differences in health indicators, the state can implement the scheme best suited to citizens.

Challenges for Universal Health Coverage in India

Ayushman Bharat is state financed world largest healthcare programme. To achieve and sustain this ambitious programme on entirely government funding is difficult due to magnitude of population covered and almost every disease condition covered. In past, there has been constant criticism of government over low spending on healthcare and giving it low priority. At161863Crores (Table 7). Government total expenditure on Health is only 1.18% of Gross Domestic Product(GDP). India being one of fastest growing economy in world with high GDP growth rate, increasing the share from 1.18 % to 2% as articulated in various studies and government reports, will provide enough funds to implement Universal Healthcare to most vulnerable section.

The health infrastructure in the country has developed more in the private sector which is concentrated in Cities and big towns. The rural Health centres including Sub-Centres, PHCs, CHCs provide limited healthcare services mainly for Reproductive and Child care, and communicable diseases. The District hospitals and medical colleges are overcrowded. The MBBS doctors are generally reluctant to serve in remote areas as they find attractive opportunities in Private hospitals in urban areas. There is also shortage of beds, multi - speciality hospitals, human resource including Nurses, Certified Health practitioners in AYUSH, community health workers, and allopathic doctors. The HLEG has recommended increasing healthcare workers including Doctors, Nurses and Midwives to at least 23 per 10000 of population.[3]

The expenditure on Medicines contributes more than 28% of total current health expenditure(Table 11). It constitutes major share of out of pocket expenses of households as OPD care including medicines is more than 65% of total household expenses. The most of this expenditure is incurred due to very low availability of drugs and medicines at Public hospitals as well as shifting of patients to Private health care which prescribe more branded drugs than Generics. As per international usage the branded drugs are patented drugs whereas Generics are similar drugs which are off patent and hence cheap. India is world's one of largest producers and exporters of drugs by volume which are amongst lowest priced in world[25].In India before 2005 there was process patent and no product patent hence all drugs were Generics only. But many big companies spend millions to market their drugs to create impression of brand which is superior to generics although the chemical formulations and their effects are similar and hence inflating the costs of medicines[20]. Since the introduction of Product Patent regime in India as it is party to International Trade law GATT (General Agreement on Trade and Tariff) which requires itto follow intellectual property rights under TRIPS(Trade Related aspects of Intellectual Property Rights). Patent regime though encourage innovations in medicine is also responsible for misuse by monopolizing the drugs market leading to high costs and less accessibility of medicines .On one hand United Nations Organisation declares access to essential and affordable medicine as basic human right and very essential step for achieving universal healthcare but Patent laws hamper cheap Generic drugs production and distribution. In India we have National Pharmaceutical Pricing Policy 2012 and Authority to regulate supply and affordability of essential medicines and drugs in the market but still pharmacies account for major share of expenditure. As per the national commission on Macroeconomics and health recommendations, purchasing drugs in bulk through central pooling and distributing them through public institutions may lower costs by 30-40%. This will be big step in keeping the costs of Universal Health Programme like Ayushman Bharat low and also reduce out of pocket expenditure.

HLEG has recommended direct provision or direct provision plus contracted in services to provide Universal Health care and not to use Insurance Companies or Independent Agents on behalf of Government [3]. It further states that although the Insurance companies have been able to achieve expected enrolment, utilisation levels and fraud control under RSBY but it is not suitable for UHC. This is because of basic design flaws and difficulties in this approach as with time they fragment the nature of care being provided leading to high healthcare cost inflation and lower level of wellness.

It is also suggested to engage them in managed care framework. But it is also a fact that the contribution of Insurance companies in healthcare sector has been growing with time. The growth in the Group Healthcare of Organised sector of economy has been very high as represented below in Table 15 & 16 Fig 7& 8. Also with introduction of IRDAI approved Third Party Administrators (TPAs) in healthcare have resulted in timely and efficient claim handling process. Insurance industry has implemented many schemes at state and national level including RSBY which is now subsumed under PMJAY. Althoughthe universal health coverage requires Government playing lead role and provide finance, Insurance companies provide their expertise in implementing such schemes at various levels. Their role further increase as there are large numbers of persons who still are not covered under any type of health protection and hence vulnerable to high amount of Out of pocket expenses.

Table 15: Number of Persons covered by Insurers (In Lakhs)

Class of business	2013-14	2014-15	2015-16	2016-17	2017-18
Govt. Business	1553	2143	2733	3350	3593
Group Business	337	483	570	705	894
Individual Business	272	254	287	320	333
Total	2162	2880	3590	4375	4820

Source: IRDAI Annual Report 2017-18[24]

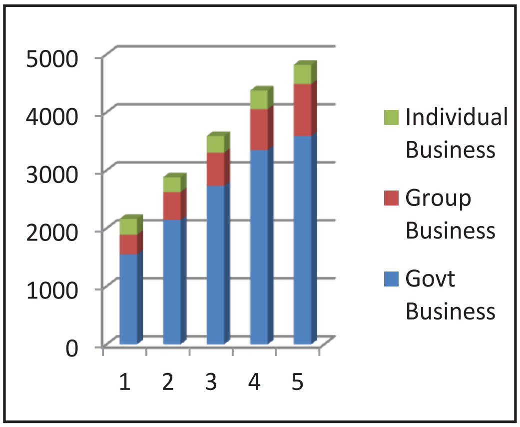


Fig.7: No. of persons covered (in lakhs)

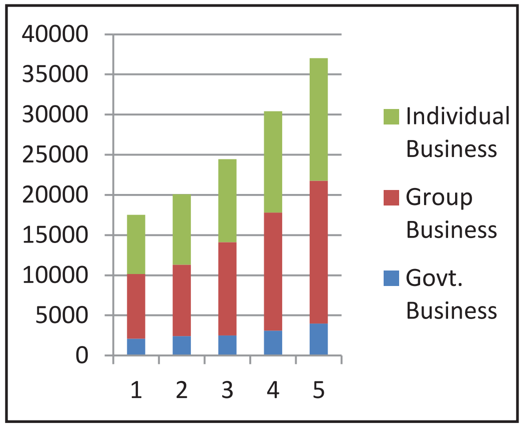


Fig.8: Health Premium segment and year wise

Table 16.Health Insurance Premium segment and Year Wise (₹ In Crores)

	2013-14	2014-15	2015-16	2016-17	2017-18
Govt. Business	2082	2425	2474	3090	3981
Group Business	8057	8898	11621	14718	17757
Individual Business	7355	8772	10353	12584	15291
Total	**17495**	**20096**	**24448**	**30392**	**37029**

Source: IRDAI Annual Report 2017-18 [24]

Conclusion

To achieve Universal Healthcare is an ambitious but much required goal of society. For fast developing country like India, it is of paramount importance as nation building requires a healthy work force. India enjoys demographic dividend with 37% of its population under 19 years of age and only 8.5% population above retirement age of sixty[14]. Providing quality healthcare at affordable rate will be a major factor in utilising this situation. Already more than 23 lakh citizens have benefitted from this scheme since its launch in 2018[11]. Providing comprehensive primary health care through Health and Wellness centres to all has made it truly universal at Primary level. Expanding the scope of financial protection to rest of population under PMJAY may be the next step in few years. To sustain it financially, apart from budgetary provisions additional source of revenues are required such as mandatory charging of premium from salaries or Cess. To reduce expenses on medicines and diagnostics, state sponsored institutions may be setup to manufacture and supply them. With so many stakeholders involved in this scheme, governance of the scheme is challenging task and National Health Authority at apex has been more than successful in executing it. IJ

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Merit Winner

Technical Paper Essay Competition (Micro)

Block Chain in Micro Insurance

Abstract

This paper discusses the application of Block chain technology in the insurance industry with special reference to Micro Insurance Products. The paper starts with a brief overview of insurance operations and use of technology in the insurance industry, going on to discuss the development of block-chain and the ability of the block-chain process to create unidirectional-immutable data record. Finally, we look into how Block chain technology can be used to leverage the micro-insurance operation.

Introduction

This paper is written keeping in mind the application of Block-Chain, a much talked about technology, on a not-so-much-talked about product- Micro-Insurance. It often happens that beneficiaries of the latest technologies are the products which have an impact on the profitability of a company or products which are in mass use. Expenditure on technology is considered as an investment and the companies expect a return out of it. In this race for profits, the less attractive or profitable products are usually neglected. Micro-Insurance products are difficult – they have low premium, difficult operations and low yields on investment – making them perfect products to be neglected in the race of technology. This paper tries to turn that neglect into an opportunity.

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Block-chain process can bring an unseen automation in Micro-insurance underwriting, making it easier, cheaper and profitable. Importance of micro-insurance does not end with a strong bottom line. It has huge social implications as well since it provides coverage to the underserved and financially weaker sections.

Scope of Micro Insurance

What is Micro Insurance?

Micro-insurance is the provision of insurance coverage to economically vulnerable sections of society. In India, it is a general or life insurance policy with a sum assure of Rs 50,000/- or less[i]. Micro-insurance products are simple, with low premiums, fewer terms and conditions, and have an easy claim process. The products are simple because target audiences are from lower income groups and have limited knowledge of insurance products. In India, the micro-insurance products are filed with Insurance Regulatory and Development Authority of India. Besides the products filed by insurance companies, the Government Sponsored Socially Oriented Insurance Schemes[ii] also fit under the IRDAI definition of micro insurance, even though they are not under the product list published by IRDAI. These schemes include Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), Pradhan Mantri Swasthya Beema Yojna and Pradhan Mantri Fasal Bima Yojana(PMFBY).

Delivery models for Micro-Insurance

The micro insurance business is done through NGOs, Self-Help Groups and Micro Finance institutions. The premiums and coverage are usually low while the number of transactions and insured for higher. The various delivery models for Micro-insurance are[iii] :

1. **Partner-agent model** – A partnership between the Insurance Company, which designs the product and marketing agent which markets the product.
2. **Full-Service model** – The marketing agent develops the product itself and markets it.
3. **Community based/mutual model** – The policyholders or clients are in charge, managing and owning the operations, and working with external healthcare providers to offer services.
4. **Government/State backed model** – The government, for the social benefit, runs insurance schemes through traditional insurance companies. The government comes out with specifications of the product under a scheme, which is further tendered to an insurance company.

Micro Insurance Operations

Conceptually, micro-insurance is similar to traditional insurance business and follows a standard procedure for risk transfer. An outline of the process of underwriting risk is the following:

1. **Proposal Stage:** Proposal of risk transfer by the insured whereby the insured proposes to transfer her risk to the insured in exchange for a premium.
2. **Risk assessment:** The insured analyses the risk proposed by the insured. The insured verifies the insurable interest of the insured and considers all the information in utmost good faith
3. **Underwriting:** If the risk is up to the satisfaction of the insured, the insured underwrites the proposal by charging a premium.

> This paper is written keeping in mind the application of Block-Chain, a much talked about technology, on a not-so-much-talked about product-Micro-Insurance. It often happens that beneficiaries of the latest technologies are the products which have an impact on the profitability of a company or products which are in mass use. Expenditure on technology is considered as an investment and the companies expect a return out of it. In this race for profits, the less attractive or profitable products are usually neglected.

4. After the underwriting, the insured and the insurer are in a contract. The insurer indemnifies the insured against the losses arising from the risks covered in the policy.
5. In case of a claim, the insured intimates the insured. The insured verifies the loss and if the loss is due to the covered risks, the insurer makes good the insured's loss.

Databases in Insurance Industry

Databases are used to store the information generated during the underwriting process. Most of the firms in the in the insurance industry use a centralized in-house server to store and serve their data to clients. The costs of these servers could run into hundreds of crores. For example, in 2007, United India Insurance Co Ltd entered into a Rs 100 Crore with Hewlett Packard for implementation of a complete turn-key solution for core insurance[iv].

Understanding block-chain

A Block-chain is a distributed database of records or public ledger of all transactions or digital events that have been executed and shared among participating parties. The transaction ledger could be financial – monetary transaction, buy and selling of financial products – or it could be non-financial – recording the ownership of physical assets like houses, cars, legal documents.

History of Block-chain

The concept of Block-chain was first introduced by Satoshi Nakamoto in his paper Bitcoin: *A Peer-to-Peer Electronic Cash System (2008)*, which introduced Bitcoin as a peer-to-peer electronic cash system "based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party." [vi] The paper generated much interest – academically as well as professionally – as it introduced a altogether a new currency called Bitcoins, and a novel way to transact that currency online. Bitcoins are controversial till date because of lack legal control. Since Bitcoins are generated via a computer program, the underlying value of the currency is subject to debate. Moreover, there are variations in the value of Bitcoin due to speculations and market bubbles. Hence few countries, including India, have moved to ban this digital currency altogether [vii]. Nevertheless, the technology behind the bitcoins, i.e., Block-chain was found to be more useful and practical. Very soon after the introduction of Bitcoin, there were concept papers floating around in every industry on the application of Block-chain computing.

What is Block-chain?

A Block-chain is a decentralized, distributed and public digital ledger that is used to record transactions across many computers so that any involved record cannot be altered retroactively, without the alteration of all subsequent blocks [viii]. To understand it further, we will discuss the two components of technology, viz, blocks and chains, separately. The Block-chain process consists of the following steps:

1. Creation of blocks
2. Storage of blocks
3. Retrieval and verification of blocks

1. Creation of Blocks:

A ***block*** is piece of information containing data of a transaction. The transaction could be of a monetary or non-monetary nature or a simple equation like 2+5=7. Each transaction or block has a reference to the previous block through a hash functions, thereby creating a ***chain of blocks***. A series of Block-chain transaction would look something like Figure 1:

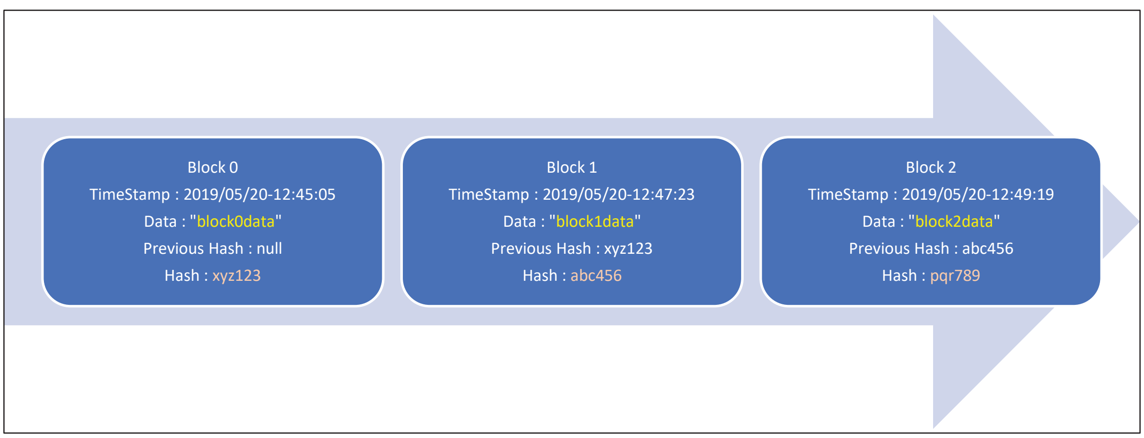


Figure 1 : Block Building Process in Block-chain

In the figure 1, "block0data", "block1data" and "block2data" represents the transaction that has to be recorded. The Hash [ix] is the unique value of each block and is an output of a simple hash function containing details of transaction, the time at which the transaction takes place, and the hash of the previous transaction.

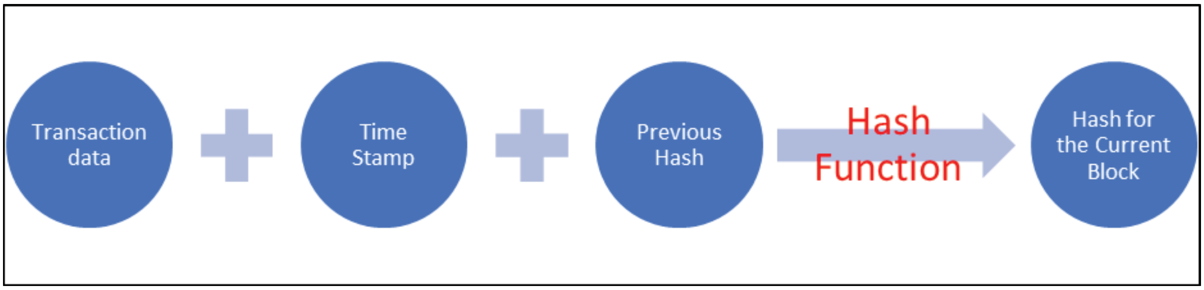


Figure 2 : Creation of Data in a Block

Since each block of data contains hash function of the previous transaction, the transaction blocks form a continuous ***chain***. The hash function is cryptographic and one cannot extract information about the transaction unless the data of previous block is available. The data of previous block can only be available if the data of the block before is available, and so on. Therefore, to decipher a block without authentication, one has to decipher all the transactions before that block. This makes the Block-chain transaction unidirectional and making it impossible to manipulate the Block-chain. It is computationally impossible to get an unauthenticated access to Block-chain data. This distinctive security feature of Block-chain is also known as **immutability of data** (Singhal, 2018).

2. Storage of blocks

The blocks formed in the step above are stored in a distributed ledger shared amongst the participating peers. In its simplest form, a distributed ledger is a database held and updated independently by each node (or participant) in a large network. The distribution is unique: records are not communicated to various nodes by a central authority, but are independently constructed and held by every node. That is, every single node on the network processes every transaction, coming to its own conclusions and then voting on those conclusions to make certain the majority agrees with the conclusions. Once there is this consensus, the distributed ledger has been updated, and all nodes maintain their own identical copy of the ledger. This architecture allows for a new dexterity as a system of record that goes beyond being a simple database.[x]

Sharing of data at such a large scale might sound counterintuitive initially but this sharing is what enhances the security of Block-chain. The Block-chain encrypts the data at the point of origin, making it safe to transmit and store the data publically. More the number of the participating and storage nodes, better are the chances of retrieving it correctly and validating it.

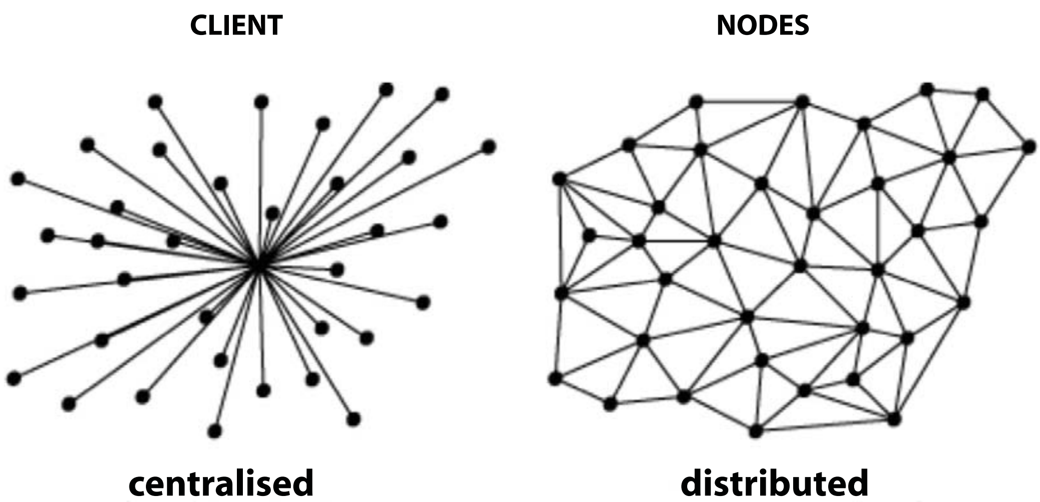
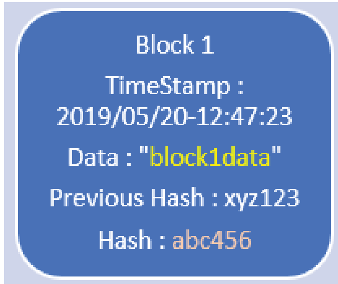


Figure 3 : Centralized vs Distributed Network

This is in stark contrast with the traditional Data Base Management System (DMBS) which are built around the concept of data centralization, where the users generate data, which is further transferred to a centralized server and stored until it is retrieved. The centralized database systems need high speed connectivity to connect with its client. If the connectivity from the central server is cutoff, the whole operations can come to a standstill. Besides this, there are peaks and lows of queries reaching to the central server. Queries reaching during an off season would be far less than the queries [xi] reaching during a busy time like annual accounts closing. The server has to respond to all the queries, and during a busy season it is very likely that not all the queries are answered in a timely manner. However, it is neither easy nor practical to increase the capacity of a server as the cost of doing so would be prohibitive.

3. Verification of blocks

When the data blocks stored into the Block-chain network is retrieved, it has to be authenticated and checked for its integrity. The verification is done by calling onto peers and matching the data stored with them. Let us suppose that we have to process a request from a Block-chain participant to verify the information of *Block 1* in the *Figure 1*. The hash of this data block is *abc456* and this hash will be matched with Block 1's previous and subsequent data block. Given that only one unique hash is possible for a given Time Stamp, Block data and a Previous Hash (i.e. *abc456* in this case), the participants information will be authentic if its hash matches with the value stored with the peers.



In the current network architecture, the verification is done by Trusted Third Parties. The peer verification model of Block-chain does not require Trusted Third Parties as the data is already verified against multiple peers, bringing down the cost of transactions substantially.

Block-Chain and Micro Insurance Industry

Having discussed both – Micro-insurance and block-chain technology, we can now further discuss the synthesis of the two. Technologically oriented institutions are already on their way to integrate and upgrade their IT infrastructure to block-chain. However, one thing which is crucial to mention here is that block-chain itself is not a complex technology and does not have to be limited to the tech-oriented firms. Rather, block-chain leverages existing processes and technology through innovative methods. Technology has been out of reach from the microfinance institutions due to cost issues. Block-chain can reduce the cost associated with data management and the smallest of the institutions can avail the benefit of this technology. Some of the areas which are going to impacted are discussed under:

Smart Contracts

Smart contracts are self-executing contracts with the terms of the agreement between buyer and seller being directly written into lines of code [xii]. A smart contract is an automatable and enforceable agreement. Automatable by computer, although some parts may require human input and control. Enforceable either by legal enforcement of rights and obligations or via tamper-proof execution of computer code. [xiii]

Because of the simplicity of micro-insurance products, they can easily be converted into smart contracts. Once the satisfying inputs for underwriting are met, and the payment is confirmed, the contract will be executed. The claim procedure shall be automated as well. The details of the loss will be shared by the third parties (like hospitals and government institutions) with the smart contract database. Since this shared data will be digitally signed, there would be no further requirement of verification. If the conditions defined in the contract are satisfied, the claim will be settled.

Smart contracts have a great application in remote and rural areas. Adverse selection is always a risk in such remote locations and an insurer's agent may not be always available to verify the profile of the customer. Here smart contracts will come in play. The capability of verifying customer's data through the shared ledgers would make sure that there is no misrepresentation of facts and underwriting is done correctly.

At present, execution of the contract has been automated but Block-chain technology provides ways to automate the settlement process as well. However, even after all this automation, the channel of dispute resolution may remain open through the traditional methods like ombudsman, consumer forums etc.

Insurance Claim Processing

Anyone who has made a claim on insurance policy would know how lengthy and complex the claim process is. There are plenty of compliances a claim has to fulfill and these compliances have to be met within the insurance company and with the third parties as well. Add the onslaught of fraudulent claims, and we would understand why "quick" is not the word associated with claim settlement. Let us examine a (motor) claim process closely:

1. Intimation of claim by the Customer
2. Spot Survey by the investigator
3. Loss assessment by Surveyor
4. Repairs by the workshop
5. Re-inspection report by (another) Surveyor.
6. Settlement and Payment by Insurance Companies

We can see that there are at least five different parties involved in the settlement of the claim. Each of them has to communicate effectively and, most importantly, in timely manner to process the claim. Few of the processes may also have sub-processes. For example, in *Settlement and Payment by Insurance Companies*, the deputation of the surveyor would be done by the Claims department head, the claim will be processed by the claims manager, the payment confirmation of 64VB will be done by the accounts department. The claim, if not in the financial limits of the operating office, would be forwarded to the higher financial authority. Once the claim settlement is approved by the competent authority, the payment will be done by the accounts department.

Understandably, delay in claim settlement is not conscious choice by the insurance companies, but is result of legacy models, manual processes and disjoint data sets of the respective parties.

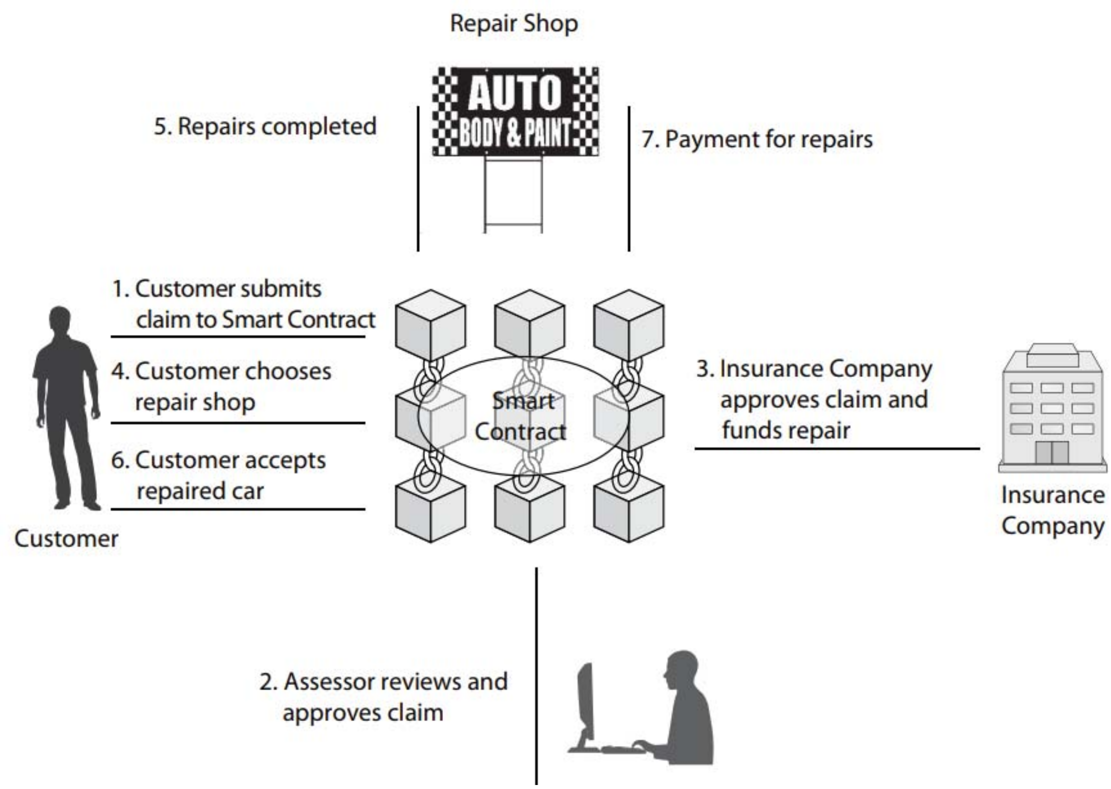


Figure 4: Insurance Claim Processing using Smart Contracts

Block-chain addresses this solution as well. In the Figure 4 [xiv] where the insurance policy is converted into a smart contract with data shared with each of the parties related to claim process. Each of the participants in this smart contract can track the claim in real time and exchange information directly with each other. So, as soon as the *Spot Survey* is done and the extent of damage is reported to the insurer, the workshop can prepare for the repairs or order the parts which are out of stock, without any intimation from the side of the insurer.

Block-chain can thus make the model from *reactionary* to *predictive*. In the traditional model, each step is executed after the previous step is concluded. Whereas in a predictive model, two or more steps can occur together if the required information for those steps is the same.

Fraud reduction

By its nature, the insurance industry is prone to fraud. The frauds can originate from within the company or can be done by the customer or the intermediary or through collusion of any of these parties. Insurance fraud costs more than $40 billion to $500 billion US Property and Casualty insurance industry [xv] . The total non-life premium written in India was US$ 23.38 billion and up to 25% of it could be at risk of fraud. The following chart gives the overview of possible frauds against an insurance firm [xvi]:

	Internal Fraud	**Intermediary Fraud**	**Customer Fraud**
Definition	Fraud against the insurer by its own employee	Fraud against the insurer or policy holders by an agent or any other third party administrator	Fraud against the insurer in the purchase or execution of an insurance product
Examples	• Misappropriating funds • Fraudulent financial reporting • Forging signatures and stealing money from customers' account	• Non-disclosure or misrepresentation of risk to reduce premiums • Commission fraud – Insuring non-existent policy holders while paying premium to the insurer	Soft Fraud: • Exaggerating damages/loss • Deliberate or subtle lagging of claims resolution Hard Fraud: • Staging the occurrence of incidents • Medical claims fraud
Control Framework	Internal audit teams independently examine the processes and report weaknesses in control mechanisms	Having documented policy for appointment of new intermediaries, appropriate sanction policy in case of non-compliance by the intermediary	Adequate client acceptance policy, client should be identified and identity verified. Professional judgment based on experience should be used.

With this, we have discussed the application of block-chain in micro-insurance. The business world has already understood and accepted implication of this technology, and are planning to go further. Introduction of a new technology is terra-incognita and institutions are far too important to causally experiment new technology on them, no matter how promising the technology is.

Block-chain, by maintaining an open ledger for its stakeholders can help reduce the fraud. Various parties can verify the information and see the possible cases of frauds.

Know Your Customer

There is a limit to the data insured are willing to share about themselves or the insurance companies are allowed to collect legally (Ex Biometric data). Hence, the companies have to depend on government databases to verify customer information. Many times the documents are passed back and forth between customer and financial institution, only adding to delays and creating frustration for the customer. The Solution to this is adding encrypted customer data into the Block-chain. If a customer wants to take a policy, the company can validate the data against the encrypted data available on the Block-chain. Customer privacy is strictly maintained since the data is validated on a need to know basis, and no information other than the information required gets validated.

Shared Ledgers

We have already discussed in the earlier part that how the insured base of the micro insurance products is big. Let us suppose that 1 million people in a sample population take 3 different micro insurance products from three different insurance companies, and that these companies are using the traditional form of database management systems. Now each company will be recording its own individual data of each customer to underwrite the risk. Effectively the will be three million records for 1 million people, and a lot parameters of this data would be in duplicate/triplicate. This duplication of data can be avoided through the shared ledger feature of block chain. Different companies using the same data can maintain a shared database, without anyone having the ownership. This data can be extracted as per companies requirement, added with additional data as per need and used for its purpose.

Conclusion

With this, we have discussed the application of block-chain in micro-insurance. The business world has already understood and accepted implication of this technology, and are planning to go further. Introduction of a new technology is terra-incognita and institutions are far too important to causally experiment new technology on them, no matter how promising the technology is. As the engineering saying goes – "If it isn't broke, don't fix." The risk of losses is greater than the possibility of gain. Therefore, adaptation of Block-chain can be a step-by-step process rather than a "big bang" approach. Interestingly, this technology does not require out of the way infrastructure and the implementation can be adopted within or alongside today's architecture. And block-chain, like the standalone centralized databases, cannot exist in isolation. The implementation requires an understanding the terms of block-chain by each of the participants in the *chain*. Awareness thus holds the key. The next step is to work on the proof-of-concept and use cases within the organizations. With such organic incremental steps, we would soon find Block-chain not just a concept to write papers upon, but as a practical application built around our everyday life. IJ

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Merit Winner

Technical Paper Essay Competition (Pension)

Pensions: Serving Millennial Customers

Abstract

The millennial population (also called as Gen Y) is completely different from any other generation – be it their sociological and demographic profile or their involvement in the financial ecosystem. India boasts of 440 million millennials who comprise 34% of population and 46% of the work force. Innovatively designed pension schemes that are specifically targeted at millennials are needed to encourage the latter to invest in pension schemes. While devising pension schemes, analyzing the behavioral patterns of millennial consumers will certainly help.

The various pension schemes that are available in the market have been studied along with the efforts by the Indian Government to popularize pension schemes. The output of research studies conducted on millennials has been reviewed. Through an optimal mix of primary and secondary data, the study explores the attitudes that millennials have towards retirement in general and retirement products in particular. The results of the empirical study conducted as part of this research reveal certain important findings that will prove to be useful to pension service providers. The research makes recommendations that will enable pension providers to introduce pension products that are aligned with the needs and expectations of millennials. There is a need for greater transparency and

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better governance of pension schemes to improve the credibility of these schemes. Awareness about pension products through digital media will prove to be effective. Organisations should use a "market pull" approach to motivate millennials to invest in pension schemes.

Keywords

Gen Y, Millennials, Retirement products, Pension Plan, social media, digital marketing, savings, investments.

Introduction

Millennials are individuals born between 1980 and 2000. The millennial generation (also called as Generation Y) has grown up in a connected world. Millennials are often negligent about future and retirement. They believe in the present and do not take retirement savings seriously. Millennials are social media savvy and are exceptional in multi tasking. But they are often considered to be impatient, demanding and seeking instant gratification. Their social interactions are influenced by digital media and access to Internet 24 x 7.

India has more than 400 million millennials accounting for 46% of the work force. A survey by an Indian insurance company revealed the following data

- Millennials spend 69% of monthly income out of which 50% is spent on family and household items.
- 25-30% of the balance income is saved or invested.
- There is a greater inclination towards investing as compared to savings.
- 86% millennials consider social media as a primary source of providing financial information.
- 56% millennials invest in mutual funds
- 36% millennials have a fitness app on their phones
- 40% millennials prefer purchasing online
- 80% millennials view building of wealth as an important goal in life

Pension plans

Pension plans (also called annuity plans) assure fixed monthly income post retirement. There are two phases in a pension plan. The accumulation phase begins when an individual is entitled for superannuation benefits and this phase lasts till the individual moves to a retirement income stream. The distribution phase begins when an individual takes money from the retirement corpus for monthly expenses. For example – let us suppose an individual starts investing for retirement at the age of 30 years. If he retires at 60 years and lives up to 80 years of age, then 30 years is treated as the accumulation phase while 20 years is considered as the distribution phase.

Need for Pension Schemes

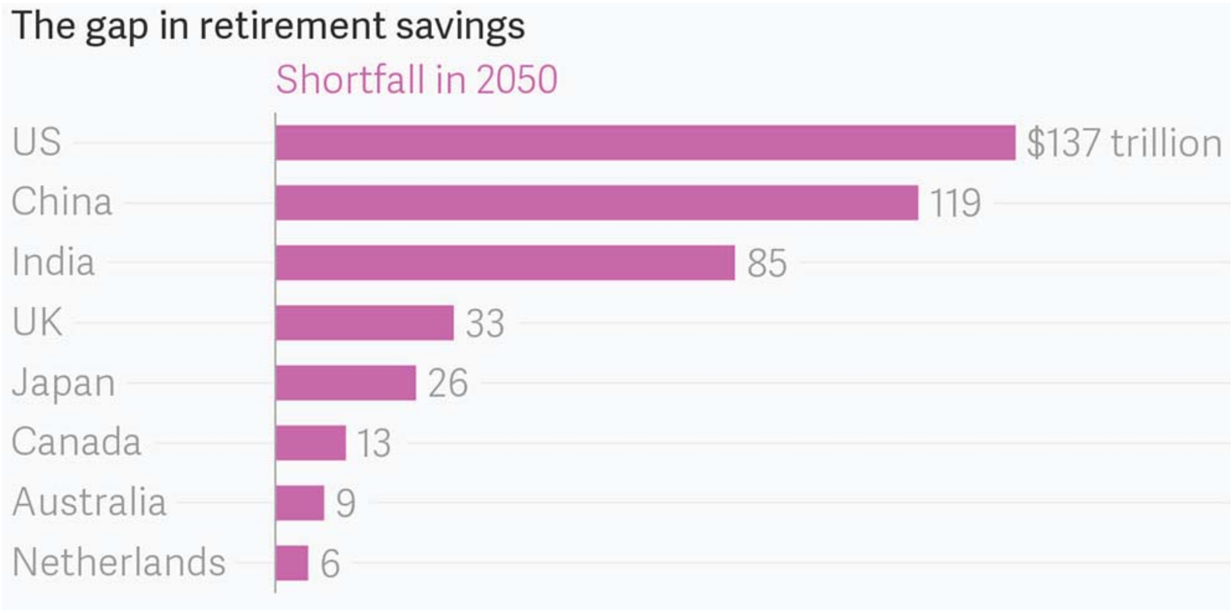
Recessions, real estate booms and busts have made it necessary for individuals to save money. Social security schemes and company pension plans are no longer reliable retirement income options as inflation keeps rising year on year.

2050 will be the year by which India will house one of the largest populations of retirees in the world. 19% of India's citizens will be above 60 years but of this, only 25% have some sort of pension cover. However, retirement savings of the population will just not be enough.

Employees working in the private sector choose defined contribution plans over defined benefit plans. Defined benefit plans guarantee a percentage of salary for life. In contribution plans, the employees decide on the amount that needs to be vested. While Generation X chose defined benefit plans, Generation Y has indicated its preference for defined contribution plans.

> The millennial population (also called as Gen Y) is completely different from any other generation – be it their sociological and demographic profile or their involvement in the financial ecosystem. India boasts of 440 million millennials who comprise 34% of population and 46% of the work force. Innovatively designed pension schemes that are specifically targeted at millennials are needed to encourage the latter to invest in pension schemes. While devising pension schemes, analyzing the behavioral patterns of millennial consumers will certainly help.

According to the World Economic Forum, 10-15% people save to have pensions worth about 70% of their pre-retirement incomes. Globally the retirement savings shortfall could go up to $400 trillion by 2050. The challenge is how to bring the self-employed into the pension net. Even those who have pensions are not clear about their pension schemes. The WEF estimations for each of the eight countries surveyed are:



Source: World Economic Forum

Another report by World Economic Forum states that majority of Indian workforce operating in the informal sector have little or no access to retirement saving plans. With increase in longevity, improvement in incomes and standards of living, the requirements of retirees will also increase.

The present structure of retirement plans makes it difficult for Generation Y to set aside money for voluntary contributions. In this research effort, we shall be discussing how the pension schemes have to be designed keeping in mind the needs of millennial population. The words Gen Y and millennials have been used interchangeably in this research and they mean the same.

Strangely, there is no commonly agreed definition of millennials. Millennials are those who are born after 1980 but the duration is being extended by different websites – 1994 to 1999. In this research effort, we have considered the definition of millennials as those who are born between the years 1980 and 2000.

What do millennials feel about retirement?

Definition of retirement has to change for millennials. Millennials feel that they cannot predict about their immediate future so how can they plan or think about something that will happen after 40 years? Millennials redefine the retirement definition to one that means pursuing financial independence and living your best life. They believe that the retirement experience should be lived throughout their lives. Their attitude is best summed up in the statement - retirement is about enjoying life, so why not start it now?

For many millennials who love travelling and exploring new places, saving is not a goal worth working extra hours for. The notion of millennials is that they have to work right till their last day. Millennials expect greater work life balance. They are keen to pursue their ambitions now instead of waiting for the next few years. According to them, retirement is for people who are unhappy with their careers. They seek more purpose driven jobs with flexibility in where and how they work.

Lack of awareness among millennials about pension schemes and their significance is a major stumbling block that needs to be addressed on a war footing. In UK, a new law was enacted in 2012 that required all UK employers to automatically enroll their staff in pension saving plans. The outcome was positive. Between 2012 & 2015, the number of private sector employees in UK with a work place pension surged from 5.4 million to 10 million.

9 to 5 job is boring for a millennial as it leaves little “me time”. Millennials want to grow rich and retire early and lead a life where they can travel and party with friends to their heart’s content. “Retiring at 40” is a trending subject for millennial netizens. There are many cases of Indians who have quit their regular, mundane jobs at 40 to follow their passion. The commendable aspect is that millennials are clear about what they want from retirement. Retirement is not about doing nothing – it is about

fulfilling your dreams and the urge to do something different. Millennials don't visualize a retired job sitting at home and reading newspapers and watching television serials.

Understanding behavior of millennial consumers

Millennials are a hyper connected generation with all kinds of devices like smart phones, tablets, laptops – millenials are switching among these devices every day. Millennials' belief system hinges on their experiences with technology and the on-the-go connectivity. Millennials thrive on text messaging over phone calls. Millennials are better influenced by millennials so it makes sense to hire millenials to influence millennials.

Millennials can convert challenges into opportunities, are tech savvy and possess an amazing entrepreneurial drive compared to previous generations. They are powerful trendsetters and wish to demonstrate their spending power. They believe in co creating value and collaborating with businesses and brands. They are cohesive groups and sociable. They share brand preferences in the social groups. For review, they use Instagram, Twitter and Face book. Posting You Tube videos can be a good strategy.

Innovation expert Christopher Hunsberger says that millennial customers are unique in terms of their impact on the rest of the customer base. Their behaviors and expectations have a profound impact on others.

Millennials can be classified as a D-I-Y generation hunting for information themselves. They access FAQ pages and community forums to solve a problem. They do not want confusing information from multiple sources. Effective information integration is what attracts them. Millennials don't easily trust financial advisors.

As a generation driven by values, millennials are more inclined to buy products and services from organizations that are socially responsible. They are superb multitaskers who put a premium value on convenience. Access to real time product availability information will influence their shopping choices in terms of which stores they would frequent. A consumer study in US has shown that advertising has little impact on a millennial's decision to buy. Millennials rely on authentic content and trust plays a vital role in their buyer behavior.

Millennial customers (Gen Y customers) are defined by the digital world. If an app or an algorithm can deliver what they need, they feel it is better. Most millennials consult their smart phones first even if human assistance is available. They seek proactive and automated receipt of information.

Millennials value emotional experiences during shopping transactions. This in turn makes them loyal to the brand and they eventually became brand advocates. For example – a customer who has received his claim at the right time from an insurer will always cherish that experience.

Millennials expect around-the-clock on-the-go personalized customer service. If we take a bank, then digital functionality and service are more important to attract millennials to the services of a bank. Millennials want to be serviced where they want, when they want and how they want. It is essential that service processes are synchronized and the gap between front office interactions and back office processes bridged.

If millennials are treated well, they can be exceptionally loyal customers. 3 out of 4 millennials will switch financial accounts if they find a better alternative. When a brand fails their expectations, millennials tweet it out in the hope that the brand would care about their opinions. They create social groups or community/ discussion forums and give advice to one another.

Gen Y individuals are called as Digital Natives. They are a generation of sharers. They have high expectations and a clear idea of how they want to consume goods. A pull approach is better than a push approach when it is the question of attracting millennial customers.

A 2019 report by Accenture, the consultancy firm makes the following observations about behavior of millennial customers. These behaviors are facilitated by smart phones.

1. There is remarkable similarity between Baby Boomers (1946 to 1964) and Generation X (1965 to 1979).
2. Millennials scout for cheapest options.
3. Millennials are adept in "showrooming" – examining merchandise at a nearby retail store and then shopping for it online to find the lowest price.
4. Millennials leverage social networking platforms, websites and mobile apps to do everything from following stock picking tips to finding financial planners.

The tech-savvy digital generation loves self service and an updated user friendly FAQ section on company websites. Millennials have a high level of engagement with brands and this prompts them to ask questions before arriving at a purchase decision. With active presence on twitter, Pinterest, Facebook and Instagram, millennials make purchasing decisions in a collaborative fashion. Millennials are loyal to brands that are up to date with regards to technology.

Gen Y gel more with their parents than their parents did with their parents. Millennials have a greater influence on their parents. Millennials have grown up with digital devices that bundle communication, entertainment, shopping, GPS mapping, and education – all in one. Gen Y deploys rampant use of apps. The user interface has to be simple. Apple, Google and Amazon all have user interfaces that are simple.

What should companies do to attract millennial customers?

1. Companies need to have multiple social media presence so that they can interact with Gen Y through multiple channels. Customer facing technology must engage with customers. Messages, products and services must be personalized. Companies should access real time customer data and use analytics to get deep insights about customer behavior.
2. Rather than claim to resolve problems quickly, companies must preempt problems by focusing on delivering quality service.
3. Customer interactions must be automated through artificial intelligence and chat bots.
4. As youngsters are attractive on Instagram, videos are a crucial tool to engage with Gen Y. Tools like Vidyard are available where with minimal technical knowledge one can create explanatory videos, recommendations and thank you messages.
5. Companies must deliver a great service experience as millennials expect speed, convenience and customization.

Digital and socially connected technologies have led to the empowerment of customers today. Gen Y has had life time involvement in e-commerce, search engines and on-the-go connectivity. The consumer behavior of millennials is having a ripple effect on other consumers too; so their ability to influence the larger customer base is immense.

Financial advice for Millennials

Gen Y don't like voice calls. They are more comfortable with chat/ messaging SMS, Whatsapp, Facebook Messenger. Millennials expect to review prospectus, get advice and commit funds through a few clicks on an app. They seek personal intervention on their own. These digital natives expect all transactions to be seamless and efficient at every touch point.

Millennials prefer online tools to review their investments and portfolios instead of quarterly reports. Social investing platform Tip'd off in US helps peers to help one another invest in stock market. Influencers are those individuals who have a high fan following on social media. Services of influencers can be used to create awareness about retirement schemes and popularize them.

Social platforms enable new and experienced investors to share information and tips about investing. A few websites that give automated investment advice are wealth front, Future advisor, Learnvest, SigFig etc. Mint compiles all of a user's financial accounts into a single web-based platform where they can be analyzed and monitored.

Experts have opined that millennials need education about flexibility that results from saving in a pension plan. They also need to be educated about inflation and time value of money.

Financial institutions have to understand behaviors & expectations of this rising generation. Information dissemination has to happen across digital channels. Millennials have social media profiles that they use to interact with their company/ their friends / peers to give feedback.

Millennials are slow to start a pension. Pension product might not be relevant to the millennial – main problem is the long term projection. Millennials do not believe in saving for a rainy day. They believe in the power of now. Millennials won't stay in one job for long. Income levels will change a number of times throughout their working lives so the idea of putting a certain amount in a pension plan might not work for them.

Millennials do not have a linear thinking, so any pension product model needs to consider this aspect. Millennials expect liquidity every 3-5 years. There has to be progressive engagement with millennials across different age groups. The millennial isn't interested in money that will be there for them in 40 years, they want access to it now.

It is vital to personalize a pension model around their lifestyle choices or dreams. Standard pension products alone won't appeal to millennials.

Financial independence can lead to investments and income streams that can cover cost of living and also provide for additional benefits. Millennials should explore the path for a secure millennial retirement.

Pension providers should ask the right questions.

- Where are you now?
- How do you want to work in the future?
- What kind of job do you dream of doing?

Millennials have become averse to retirement schemes after they witnessed economic depression and stock market crashes. The vagaries of financial markets have made millennials lose trust in all schemes.

The You Only Live Once (YOLO) motto of millennials has made their retirement planning different and challenging as compared to previous generation. Experts say that helicopter parenting has created children who are more financially and emotionally dependent on their parents.

Millennials are often negligent about future and retirement. They believe in the present and do not take retirement savings seriously. Millennials are expected to live longer and they need financial education about retirement saving options. Employer-provided pensions and defined benefit plans are whittling down in importance.

It has to be noted that millennials (Gen Y) have experienced the stock market crash in 2000, the dot com bubble that burst at the beginning of the millennium and the 2008 Lehman Brothers' crisis that led to a massive downturn in the economy and job losses across the globe. This may be one of the reasons why Gen Y does not take retirement seriously. They are not ready to make massive investments in retirement plans and get stuck with a job that they may not enjoy. Millennials prefer to change their jobs if they are not excited about their current jobs. All these factors make financial education for millennials a must.

Case let: Western Union's attempts in digital customer care

Western Union is a legacy financial institution that has reinvented itself for digital care of customers. In 2013, Western Union began to shift focus. They implemented a digital care solution that benefited 10 million followers across digital channels (Facebook, Twitter, Messenger, Viber, We Chat etc) in five different languages. Their response times have dropped from 1 hour and 30 minutes to 5 seconds. There is a reduction in servicing costs. The effort per customer interaction has also come down.

In the section below let us review the outputs of research carried out on millennials, their behavior as customers and their approach to pension products.

Output of research across the globe

In 2018, Cigna TTK health insurance published survey results that claimed that 95% millennials in Indian business hubs like Bangalore, Mumbai and New Delhi admitted to being stressed. The global average for millennials is 86%. Inadequate work life balance is one of the reasons for stress. 65% millennials felt that they won't have enough money when they retire. A generation that is active on social media (Snapchat, Facebook & Instagram) experiences stress when they are unable to live up to the perceived lifestyle standards.

In a survey conducted by HSBC, only 21% millennials felt comfortable about their position on retirement. Millennials believed that they will live longer and so there was a need to support them. Millennials feel that they have experienced weaker economic growth than earlier generations. They also expressed lack of confidence about pension schemes (what if a pension provider goes bust?). In a survey conducted by Assocham, only 39% respondents opted for pension funds as preferred mode of investment. Mutual funds and life insurance were preferred choices.

Pew Research Center conducted a survey and delineated the financial concerns of Millennials.

- Not having enough money for day to day living expenses
- A job market that is sluggish
- Absence of job security
- Inability to visualize financial independence

Prudential conducted a survey between 20 & 21 June 2018 in which 1178 UK adults participated. Though millennials are often mocked as Generation Snowflake obsessed with spending on luxuries, results of survey showed that millennials were focused on saving for retirement but wanted more support. 50% of the respondents expected their employers to explain to them about pensions and benefits. 25% respondents felt that the pension rules were confusing.

Millennials also expressed lack of confidence about dealing with money and financial matters. 73% millennials would save more if they were rewarded in some way. 51% millennials were more inclined to save for the future if their retirement money wasn't completely locked away. 59% millennials believed that they had not seen products targeted at people like them.

Aegon Retirement Readiness Index (ARRI) conducted a global survey in 15 countries where medium and high income earners were the respondents. India's score was the highest.

Country	ARRI score
India	7.6
US	6.9
Brazil	6.4
China	6.3
UK	6.2
Spain	4.7
Japan	4.1

Millennials prefer renting a house than buying a house. Yet, buying a house is considered a crucial milestone in one's life. Though Indian millennials may not listen to their parents, they will buy traditional insurance plan based on parental advice. While Generation X believed in saving rather than spending and buying rather than borrowing, Gen Y members are adept in buying term plans, investing in equity and according greater priority to work life balance. Though they are considered sensible, financial advisors caution millennials against getting enmeshed in a financial trap.

If millennials aren't thinking long term, this is a reflection of their age and life stage. For instance, if we look at millennials in the age bracket of 20-35 years, then they have few responsibilities because they get married late and this makes them utilize their spending power to pursue their hobbies and passion. In contrast, Gen X got married early and started saving for long term goals like housing, children's education and weddings and their retirement. Gen Y has a tendency to postpone these decisions. Instead they focus on cars, vacations, smart phones and electronic gadgets.

Bank Bazaar did a survey of 155 people in the 25-35 years age bracket. The results revealed that even though most millennials wanted to buy a house, they were content in renting out accommodation because they didn't want to be tied down to one location and suppress their career ambitions. For example – many software professionals get posted in a foreign country and they may even decide to settle down in that country.

Millennials start planning for retirement only after they turn 30 while some of them go to the extreme of thinking about retirement only after they attain 45 years of age. Even if they start investing 10% of their income in a pension plan, they can progressively build the corpus over the next few years.

The remarkable feature of a millennial's personality is their tendency to ask the right questions when it is a question of investing their hard earned money. Information is now easily available and so it is easy for millennials to exercise sufficient due diligence before they make a decision to invest in a pension scheme. But their propensity to invest in stocks and mutual funds as a primary mode of investment explains their risk taking ability.

Millennials can be sub-classified into three segments – one that listens to their parents, one that follows the advice of parents but also looks out for new things and the third category comprises rebels for whom any parental advice is anathema. However, most millennials are open to learning and trying out new avenues of investing. If millennials can be trained to synchronize their investment decisions with their financial goals, then this can be a step in the right direction.

Besides a good pay and a positive work environment, millennials are also looking at diversity and flexibility. This is what makes them change jobs faster.

Research conducted by BNY Mellon & Said Business School at Oxford University where geographies covered were Australia, Brazil, China, Japan, the Netherlands, UK & US.

- The approach to millennials retirement savings varies from country to country – demographic, political and economic factors are key influencers of attitudes.
- Fund managers and the quality of the decisions that they make plays an important role in a fund's appreciation over time. Bad decisions by fund managers have made millennials wary of such funds.
- The pension providers must provide unit linked defined contribution plans to reinforce trust by emphasizing that savers' money is ring fenced in their plans.
- If we look at the source of advice before millennials take a financial decision – the sources are ranked as parents, banks, financial advisers, friends, insurers and insurance agents. This trend is more in developed countries and less in emerging economies because in the latter case, parents themselves do not have access to retirement products.
- Millennials do not want financial service providers to aggressively push using social media channels. Subtle and generic messages can be conveyed through social media.
- One has to educate millennials about how pensions and other forms of long term savings work. One has to connect with them as consumers and rebuild trust. Interestingly, less than 1% millennials expressed a desire to connect with financial service providers through social media. One can market through

Most of the pension schemes in India claim to offer the policyholder protection from market fluctuation and volatility. The individual has the option to choose the policy premium amount. The minimum entry age has also been fixed at 18 years, 25 years etc. Flexibility in terms of either paying a one- time lump sum amount or periodic payments is allowed.

Country	Observation
Australia	Millennials are most informed. They are optimistic about accessing retirement incomes. Retirement system is such that individuals contribute to their own pension pots, choose who manages their investments and can look at their pension statement online.
Brazil, China, Netherlands & USA	Millennials are uncertain about how pensions work. Chinese / Dutch millennials have distrust about financial service providers. Banking scandals in China and collapse of banks in Holland have contributed to this distrust.
Japan	Millennials have a pessimistic outlook as retirement system is more collective. Japanese millennials contribute to a “pay-as-you-go” system and everyone draws their pension out of the same central plot. Pay-as-you-go pension plan is a retirement scheme where the plan beneficiaries decide how much they want to contribute either by having the specified amount regularly deducted from their paycheck or by contributing the desired amount in a lump sum. Millennials are not too confident that the benefits that they are paying for now will actually be available to them when they retire.

social media, but no one wants to discuss personal financial plans on a public platform. No one wants use of personal information used in a financial context through social media. Personal finance is a private matter.

- Policy makers need to move towards a tax-incentivized savings pot that allows for a certain number of life time draw downs (withdrawals/ top ups).
- Financial service providers should leverage the strong connection millennials have with their parents in relation to financial products.

Key Features of Pension Plans in India

Most of the pension schemes in India claim to offer the policyholder protection from market fluctuation and volatility. The individual has the option to choose the policy premium amount. The minimum entry age has also been fixed at 18 years, 25 years etc. Flexibility in terms of either paying a one- time lump sum amount or periodic payments is allowed. Pensions can be received either on a monthly, quarterly, half yearly or yearly basis. Tax benefits are an added attraction.

For example - The LIC Jeevan Akshay policy plan is an immediate annuity plan. A lump sum amount is paid as a single premium. The pension starts immediately after buying the plan. A minimum of Rs 1 lakh can be invested for offline distribution channels while for online distribution channels, the amount is Rs 1.5 lakhs. The minimum age for entering the scheme is 30 years.

Financial experts recommend that millennials should buy a systematic investment plan in a retirement fund with 100% equity option. As investments accumulate into a sizeable corpus at the time of retirement, this amount can be invested in a systematic withdrawal plan. As individuals approach retirement age, they can wisely invest in debt funds so that they get assured tax-efficient returns.

Year wise: provident and pension funds as % of Gross National Disposable Income

2011-12	1.1 %
2012-13	1.5 %
2013-14	1.5 %
2014-15	1.5 %
2015-16	2.1 %
2016-17	2 %
2017-18	2.1 %

Provident & Pension Funds: Source: IRDA website

Pension & General Annuity & Group Fund (Rs crores): Investments of Life insurers: Fund wise as on 31st March 2019

Sr No	Name of insurer	2017	2018	% increase
1	LIC	502645	600374	19%
2	Private insurers	63754	73265	15%
Total		566399	673639	19%

Source: IRDA website

Types of pension plans in India

Sr No	Type of plan	Description
1	Deferred Annuity	Corpus is built using single premium or regular premiums over a policy term. Pension commences after the policy term. No tax is levied on the money that an individual invests in the plan unless he withdraws it.
2	Immediate annuity	Pension starts immediately after a lump sum amount is invested. Premiums are exempt from tax. A range of annuity options are available to choose from.
3	With cover and without cover pension plans	With cover plans have life cover component in the plan. Lump sum is paid to nominees after the policy holder's death. Cover amount is not high as a large part of the premium is diverted towards building the corpus. Without cover pension plans do not have a life cover. Nominee will only get the corpus. Deferred pension plans are with cover. Immediate annuity plans are without cover.
4	Guaranteed Period Annuity	Annuity is issued to the individual for periods like 5, 10 or 20 years whether or not he survives that duration.
5	Annuity certain	Annuity is paid for a specific number of years. The annuitant can choose the period.
6	Life annuity	Pension will be paid to the annuitant until death. After the annuitant's death, spouse can receive the pension.
7	National Pension Scheme	Savings in the new pension scheme will be invested in equity and debt. 60% of the amount can be withdrawn at retirement and 40% must be used to purchase the annuity. The maturity amount is not tax-free. This scheme is promoted by the Government of India. The PFRDA has announced that to allow more flexibility and better stability, NPS schemes will invest more in debt with effect from April 1, 2019.

Measures by Indian Government

India has employer-managed pensions programs that are compulsory. The Government took steps to bring 400 million unorganized sector workers under the pension schemes by launching Atal Pension Yojana. However, there is a greater need for more pension schemes that are innovative and take into account the needs of Generation Y. Banks have been identified as distribution channels for the Atal pension yojana. They can spread awareness about pension schemes among millennials. As per announcement in the 2018 budget, payment banks and small finance banks can offer the Atal Pension Yojana.

The Indian government has introduced a slew of measures to popularize the National Pension Scheme. NPS is completely tax free and contribution has been increased to 14% from 10%. This is a great opportunity for Indian millennials to plan their retirement and build wealth.

Reasons why millennials need to invest in pension schemes

1. Life expectancy in India goes up by 5 years every decade. So, one can expect people to live till 90 years or more.
2. Companies are eager to hire a younger work force so one can expect a millennial to expect a downward career spiral by the time he reaches 45 years. There will be a need to explore alternative careers after retirement.
3. As millennials indulge in job hopping, the chances of receiving a pension from employers are remote. The option is to save in defined contribution schemes like NPS or mutual funds.

4. As lifestyle diseases increase, millennials should expect an exponential rise in medical expenses. So, investing in pension schemes becomes all the more relevant.

Role of Employers in popularizing pension schemes

In UK, employers have understood that pension guidance for employees can have a significant impact on employee motivation levels and can improve productivity. Employers must encourage their workforce to invest efforts in retirement planning. They must promote the benefits of retirement planning through a variety of mediums such as video, social media, email, and blog. They must distribute compelling content that describes retirement planning in simplified, informative, and motivational terms. They must invite a financial advisor to discuss and walk employees through the retirement planning process. They must also encourage employees with retirement plans to promote the benefits of those services to their colleagues and help their employees to create a retirement plan.

A financial plan for millennial (age 26 years) is proposed as below:

Assume annual salary ₹ 6 lakhs	
Set aside ₹ 2 lakhs for investments	Invest at least ₹ 50,000 in a pension plan scheme that will give returns after 5 years
₹ 1 lakh – Systematic Investment Plans	A portion of the returns can be set aside for purchasing pension plans after 5 years
₹ 1 lakh in PPF	Invest in schemes like LIC's Jeevan Shanthi to get immediate annuities

Thus, the individual can invest Rs 4 lakhs in proper savings instruments and investments. The plan can be fine tuned for individuals in upper age brackets. As the individual approaches retirement age, there must be greater focus on debt instruments that can yield stable returns.

Type of conversations desired by a millennial customer

A millennial customer approaches a bank or an insurance company for enquiring about a pension scheme by sending an email or enquiring online	
"Hello, I am Mr A. I am looking out for a retirement investment scheme" "Sure Sir, our agent will call you tomorrow. Kindly leave your contact details". But the agent calls after 3 days. The customer has already purchased a pension scheme from another company.	The response should be like this: "Sure Sir, please leave your contact details and include your Whatsapp number. We shall mail you the schemes that we have. You can refer to the FAQ section in case you have any queries. You can also download from our app and compare our schemes online. Should you need more details, our agent will be available to help you anytime. His name is Mr X and his mobile number is ………… You can also send him an email at this address ………. and mark a copy to our branch manager at this email address……"
	In this case, the sincerity of the pension provider shines all through the communication addressed to the customer and one can easily predict that there is a greater chance that the millennial customer will buy a pension scheme sold by this company.

Research Objectives

1. To understand the consumer behavior of millennial customers
2. To identify the levels of awareness about pension schemes among Indian millennials
3. To find out if perceptions about pension schemes are gender specific
4. To explore the opportunities for customizing pension plans for millennials

Based on review of literature, variables and hypothesis were identified for the research.

Null Hypothesis

There is no difference in the perceptions of millennials about pension plans and schemes among male and female members of the millennial population.

Alternate Hypothesis

Male and female millennials differ in their perceptions about pension plans and schemes.

Empirical study

An empirical study was conducted to address the research objectives. The sampling design was "judgement sampling" (as only millennials were targeted as respondents) and a causal/ experimental research design was deployed. The survey instrument was a questionnaire that was distributed to 250 respondents out of which only 193 responded (77% response rate). Of the 193 respondents, 71 were females and 122 were male respondents. A 9-item Likert scale question was included in the survey tool and after running a reliability test on SPSS, two items were removed to improve scale reliability. The Cronbach alpha value obtained was 0.685. Ideally this should have been 0.7 but as 0.685 is closer to 0.7, the scale is considered reliable though the scale can be improved in future research studies. The content validity of the questionnaire was obtained from academic experts with sufficient exposure to academic research.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.685	.685	7

The mean attitude score of millennial males about pension funds is 3.89 while the same is 4.1 for millennial females. Since $p < .001$ is less than our chosen significance level $\alpha = 0.05$, we can reject the null hypothesis, and conclude that the mean score for female millennials opinion about pension schemes is significantly different from that of millennial males.

Group Statistics

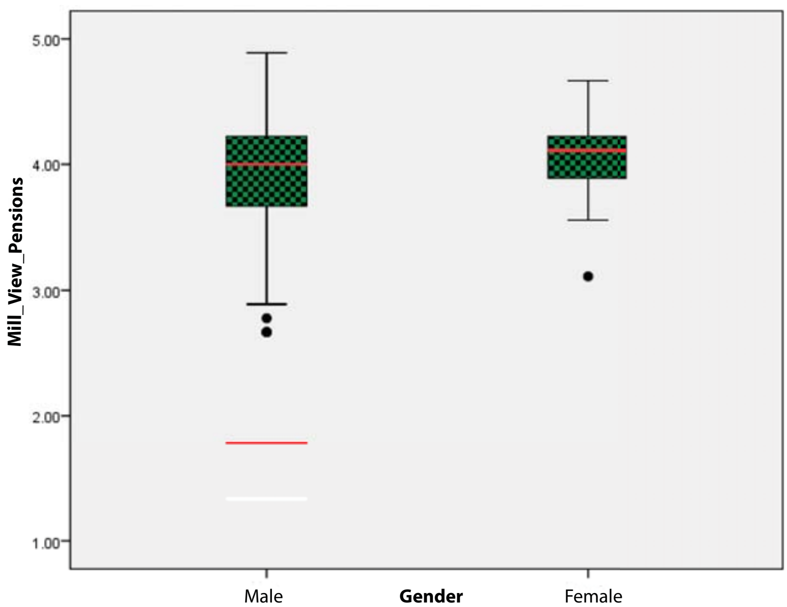
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Millenial_Pensions_View	Male	122	3.8898	.54909	.04971
	Female	71	4.0767	.28888	.03428

Millenial_Pensions_View	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	9.571	.002	-2.660	191	.008	-.18688	.07027	-.32548	-.04829
Equal variances not assumed			-3.095	189.408	.002	-.18688	.06039	-.30600	-.06776

If we look at the Levene's test for equality of variances, the p-value is small and so we reject the null of Levene's test and conclude that the variance in the opinion of female millennials about pension schemes is significantly different than that of male millennials.

Looking at the row "Equal variances not assumed", the sign of the mean difference corresponds to the sign of t-value. As t-value is negative, the mean score for males (group 1) is lower than that of females (group 2).

Box plots show overall patterns of response for a group. They provide a useful way to visualize the range and other responses for a large group. From the box plot below, one can surmise that views of females about pension schemes and their relevance is different from that of males.



Item	Weighted Score	Rank
Life has to be enjoyed at every step – no need to wait till retirement (YOLO motto)	56.2	2
I need a pension to live happily in my old age	48	6
Financial planning is important for every individual	58.27	1
Savings are important for achieving financial freedom	55.5	2
I am aware about the various pension plans in the market	40.6	7
Pension schemes need to be marketed through digital marketing tools	48.67	5
I need advice about financial planning	51.4	3
Pensions are an important part of long term financial planning	49.93	4
I will look at feedback of others before deciding to invest in a pension plan	49.8	4

The results of the empirical study are delineated below:

When do you think you will retire?

Age category	Female	Male
40-50 years	15 (21%)	21 (17%)
50-60 years	28 (39%)	52 (43%)
60-70 years	16 (23%)	34 (28%)
I will work forever	12 (17%)	15 (12%)
Total	**71**	**122**

How will you invest the prize money that you have won in a contest?

Decision	Female	Male
I take my own decisions	19 (27%)	58 (48%)
I always listen to my parents and elders for advice	41 (58%)	44 (36%)
I rely on advice from friends	5(7%)	6 (5%)
I seek help from Internet while taking decisions	6 (8%)	14 (11%)

Opinion about life in general and retirement in particular

Statement	Female	Male
Retirement is all about enjoying life in old age	21 (30%)	24 (20%)
Life has to be enjoyed now.	50 (70%)	98 (80%)

Your opinion about pension schemes

Statement	Female	Male
Pension schemes are important to lead a happy retired life	28 (39%)	56 (46%)
Pensions are not enough for me when I retire	4 (6%)	25 (21%)
I do not trust companies that provide pension schemes	4 (6%)	5 (4%)
Early investing in pension at a young age is essential.	35 (49%)	36 (29%)

If you have money to invest in pension plans, how can a company approach you?

Mode of approach	Female	Male
Brochures	1 (1%)	7 (6%)
Agent / Financial advisor	42 (59%)	53 (43%)
Digital marketing	22 (31%)	42 (34%)
Family/ Friends/ Relatives	6 (9%)	20 (17%)

To gauge the level of awareness, a question was asked wherein respondents were asked to put a tick against the investment schemes that they had heard about.

8% male respondents were aware about PPF; 28% were aware about bank fixed deposits; 20% were aware about mutual funds; 9% were aware about stock market while 7% were aware about pension schemes and 14% were aware about all the schemes. The balance 14% responses were about awareness about different schemes in various combinations.

6% female respondents had knowledge about PPF; 20% females were aware about bank fixed deposits; 17% were aware about mutual funds; 17% were aware about pension schemes; 24% female respondents were aware about all the schemes. The balance 16% responses were about awareness about different schemes in various combinations.

Findings from the empirical study

1. More female respondents were aware about pension schemes than male respondents.
2. Millennials are open to an agent/ financial advisor approaching them about pension plans. A sizeable number of respondents prefer digital marketing channels instead of the agency channel.
3. 49% females feel that investing in pensions at a young age is beneficial while only 29% males feel so.
4. Millennials have trust in pension scheme providers.
5. 21% male respondents feel that pensions are not enough for them when they retire.
6. 46% male respondents and 39% female respondents opine that investing in pension schemes is important for a happy retired life.
7. Millennials do not believe in postponing their enjoyment of life till retirement; they believe in enjoying their life now. This is a clear endorsement of the YOLO (you live only once) motto that characterizes Gen Y.
8. When it is a question of investments, millennials will either take their own decisions or depend on their parents for advice. Female respondents are more inclined to take parental advice than male respondents.
9. Only 17% female respondents and 12% male respondents think that they will work forever. This is an important finding because surveys of millennials in Western countries have resulted in an exactly opposite finding.
10. Based on results of individual sample t-test, female millennials have a more positive orientation towards pension schemes than males.
11. Among the statements used to gauge attitude about pension schemes, the top three statements are given below:
    a. Financial planning is important for every individual (Rank 1)
    b. Life has to be enjoyed at every step – no need to wait till retirement (YOLO motto) (Rank 2)
    c. Savings are important for achieving financial freedom (Rank 2)
    d. I need advice about financial planning (Rank 3)
12. Other investment schemes that a small number of respondents were aware are:
    a. Private Equity
    b. Insurance Policies
    c. NPS
    d. Senior Citizen Savings Schemes
    e. Current Deposits
    f. Employee Provident Fund

Observations

Despite the sneering comment that Generation Y individuals belong to Generation Snowflake (which means they are less resilient and more sensitive), experts feel that millennials are as responsible as previous generations when it comes to pensions. They claim that it is a myth to state that millennials run behind short term pleasures. However the fact remains that millennials seek more life fulfilling experiences.

Millennials should be identified as a distinct target market by insurers, asset managers and financial services companies. The value of commencing pensions early must be clarified to the millennial population.

If pension providers can understand the changes in consumer preferences and the reasons for the same, they can work towards providing tailor made solutions to address the needs of Gen Y. Millennials seek financial independence without having to follow traditional retirement path and this attitude has been blamed on the impact of social media. Added to this is the fact it is difficult to predict what will happen in the long term if we consider the volatility of financial markets. Growing NPAs in banks and recent instances of investors unable to redeem their funds because of wrong choices of fund managers have made the younger generation more cautious.

Financial experts often give reams

and reams of advice about investing in stocks and mutual funds and even suggest linking these to pension schemes. But the question remains – will any of these experts come to the rescue of the investor in case the returns do not materialize? If retirement funds of an investor are invested by a fund manager in the wrong schemes and if the fund fails to deliver what was committed to the investor, does the investor have any recourse? Today the problem is more about customers losing trust in the various schemes and absence of innovative pension schemes that can lure the millennials.

We need to understand the fundamental difference between saving and investment. Saving is setting aside money for future emergencies. Investing refers to purchase of assets like stocks, bonds, mutual funds or real estate with the intention of earning a higher return on investment. Lack of job security and inflation must be considered while choosing between savings and investing.

The amount millennials should save for retirement depends on their income, debt and long term financial goals. The earlier that they start saving, the better it is for them. But it is essential that millennials have a clear understanding of their financial position at any given point of time.

Many pension funds have a fund manager who invests the money invested in mutual funds and shares. But the fund manager's decisions must protect the pensioner's capital. This is an area that needs greater regulatory supervision and control.

As millennials need instant response, the service strategies of organisations have to be aligned with these needs. Millennials have great influence on their peers and believe in collaborative decision making. They have wider social networks than previous generations.

Research in the field of behavioral finance has demonstrated that human beings are hardwired to prioritize a benefit they will enjoy in the near future to one in the distant future – this phenomenon is called as hyperbolic discounting.

Pension policy and marketing need to find new ways to overcome this tendency.

1. Millennials don't like the word pensions. They do not want to look at that long term. Use of terms like financial planning will help, securing for the future, superannuation.
2. Insurance is sold and never bought. Pension schemes – persuaded. Gen Y can be persuaded to buy depending on how impactful the communication is.
3. Combine ULIP + pensions. Some portion can be encashed as units, remaining amount can be invested in mandatory pension schemes.
4. Phase wise pension

Suggestions & Recommendations

Pension providers must look at the customer journey and understand the pain points of Gen Y. Then the companies should propose solutions to dissolve the pain points of Gen Y. Pension providers should create a diversified portfolio to maximize the returns and reduce the risks. Millennials expect a pension plan that offers high liquidity, high returns, flexibility and low taxation on maturity.

Pension providers must specialize in digital care. The three cornerstones of success are:

1. Innovative products
2. Innovative delivery channels
3. Digital marketing efforts

Millennials need education so that they can start saving small amounts and progressively increase their contributions to pension schemes as they age. The pension schemes need to be flexible with facility of topping up and withdrawing a sizeable amount after 5 years to meet liquidity needs. A modest beginning of saving 5-10% of salary towards retirement savings is not a bad idea.

Pension schemes must be flexible and adaptive to the needs of millennials. While Gen X believed in saving, Gen Y (millennials) believes in consumption. Gen Y respondents did not believe in saving in pensions plans that had a tenure of more than 5 or 10 years. There is an urgent need to work out a plan to match the short term product demands of millennials with industry's predisposition towards offering a long term product. Pensions industry must provide relevant content targeted at millennials that is more in the nature of an evangelistic conversation. The key is to simplify pension schemes and make them more flexible with options for interim liquidity. Individuals must find it easy to track their pensions savings and must receive the right financial advice so that they are empowered to take decisions.

Today apps and online tools are available that can aid budgeting so that an individual can get a clear idea of earnings and expenditure. Retirement Planner tools can ask for retirement lifestyle goals and based on retirement age, the tool can generate a number so that you can plan your savings accordingly.

Better education and innovative pension

schemes specifically targeted at millennials will bring more of the latter in the pension net. Auto enrolment option in UK led to around ten million people saving for their retirement by contributing through a workplace savings scheme. However, these amounts are not enough. Therefore there is a need for holistic wealth and benefits planning.

Some pension funds are a combination of a mix of equities and bonds and as investors near retirement age the funds get skewed towards bonds so that losses due to fickle movements of stock markets are minimized. It is essential to review the pension funds every 5 years.

Pension providers can think of innovative short term pension plans where the maturity period is 5 years and the level of investment can be topped up by the investor as he advances in age. This means that if the pension term is 5 years, some portion of the maturity amount can be used by the investor and the balance portion can be reinvested in the pension scheme.

We need different intermediaries/ channels, skilled and qualified staff that can digitally support the customer. With millennials, it is all about transparency and facilitation. The view of millennials towards life insurance is that – this is a scheme where someone else is going to benefit. But they know that they can benefit from pension schemes. This interest has to be properly leveraged by pension providers. However, it is futile to adopt persuasive tactics to attract millennial investors. The latter also detest the fact that high commissions are charged on the pension schemes and they expect that commissions charged must be reasonable.

As millennials keep aging, they slowly start coming to terms with reality – be it rising health care expenses, onset of life style diseases, uncertain work environment, increasing inflation etc. In fact, skeptics have pointed out that millennials just do not want to visualize growing old some day.

Millennials value the recommendations of their friends. Companies can encourage millennials to share their positive experiences and become brand ambassadors. Millennials are bothered about having access to the right information, right products and right channels at the right hours. Customer service has to be fast and accessible otherwise millennials will defect to other service providers and also tell their friends about it. Millennials value personalization. So, companies have to focus on specific product features that meet their needs and appeal to them.

Millennials like visuals and so videos can be used to create awareness. It is essential to have a better connect with millennials online. The interactions have to be short and relevant. Agents must be techno savvy and possess special skills. It is preferable to have agents in the similar age group. Different service channels like text message, voice, social media, mobile, email and online chat can be used.

Earlier, banks and insurers were making rampant use of interactive voice response systems but today people do not have patience. Even email campaigns can become unsuccessful if they are not targeted at the right person. Online chats are also becoming a preferred mode of communication. Here companies can talk to customers in real time via its website. Online chats are popular, easy to use and cost effective too.

Like UK, India needs to have an auto enrolment scheme wherein the pension funds are transferable when employees move jobs just like PF. There can be a cap like employees have to stay in the job for a minimum of 24 months to avail of the pension scheme.

Financial education of millennials is utmost priority and Governments have to play a role in this. Educational institutions should conduct awareness workshops and invite experts to deliver guest lectures on the subject. PFRDA must be given more teeth as a regulator. Private pension providers will need greater regulatory intervention. LIC should launch innovative schemes (different age brackets). Millennial investors are more concerned more about the ease of investment. The NPS has to be made completely tax free. Systematic withdrawal option must be allowed as an alternative to annuitisation of the corpus.

As the shift towards short term rewards is endemic, emphasizing the long term benefits of saving and the power of compound returns must be explained to millennials. In the long term, policy makers need to move towards a tax incentivized savings pot that allows for a certain number of draw downs.

In India, the government has launched the “Mutual funds sahi hai” campaign. A.similar campaign for pension schemes is very much needed. The Government should work with PFRDA and IRDA to promote transparency and better governance of pension schemes and strive to make efforts to win the trust of the millennial population. If pension schemes can be easily disbursed to meet both financial and personal goals of millennial investors, then this will be a step in the right direction. Business schools should introduce courses in financial planning, behavioral finance, investments, retirement savings etc. Use of apps and games can be deployed to deliver hard hitting marketing messages. Just like antismoking advertisements use negative images to drive home the message, similar messages are needed to propel millennials towards retirement.

A number of surveys have been conducted across the globe to assess the investing patterns of millennials. But the problem is that these surveys suffer from a smaller sample size and so the external validity of these research efforts is often suspect. Qualitative methods of data collection like organizing focus group discussion will complement the findings of quantitative methods of data collection.

There is a need for geography-specific research on millennials. This is because cultures, upbringing, parental involvement and value system differ from geography to geography. Pension providers must work towards creating a generation of pension products that operate in conjunction with existing products so that millennials can connect the present to the future. Policy makers and financial service providers must explore ways to structure the pension products in such a way that at least a portion of the funds can be accessed by the investor when he needs it. Example – investor could access the funds in case he wants to have a deposit for a home or wishes to clear student debt. Pension schemes where the subscription progressively increases as an individual approaches advancing years will appeal to the millennial.

Advances in health care have resulted in longevity of the population. Pensions provide guaranteed and assured monthly returns. Today's millennials will be senior citizens after a way years. The time is now ripe for introducing innovative pension schemes that can attract millennial population in India. TJ

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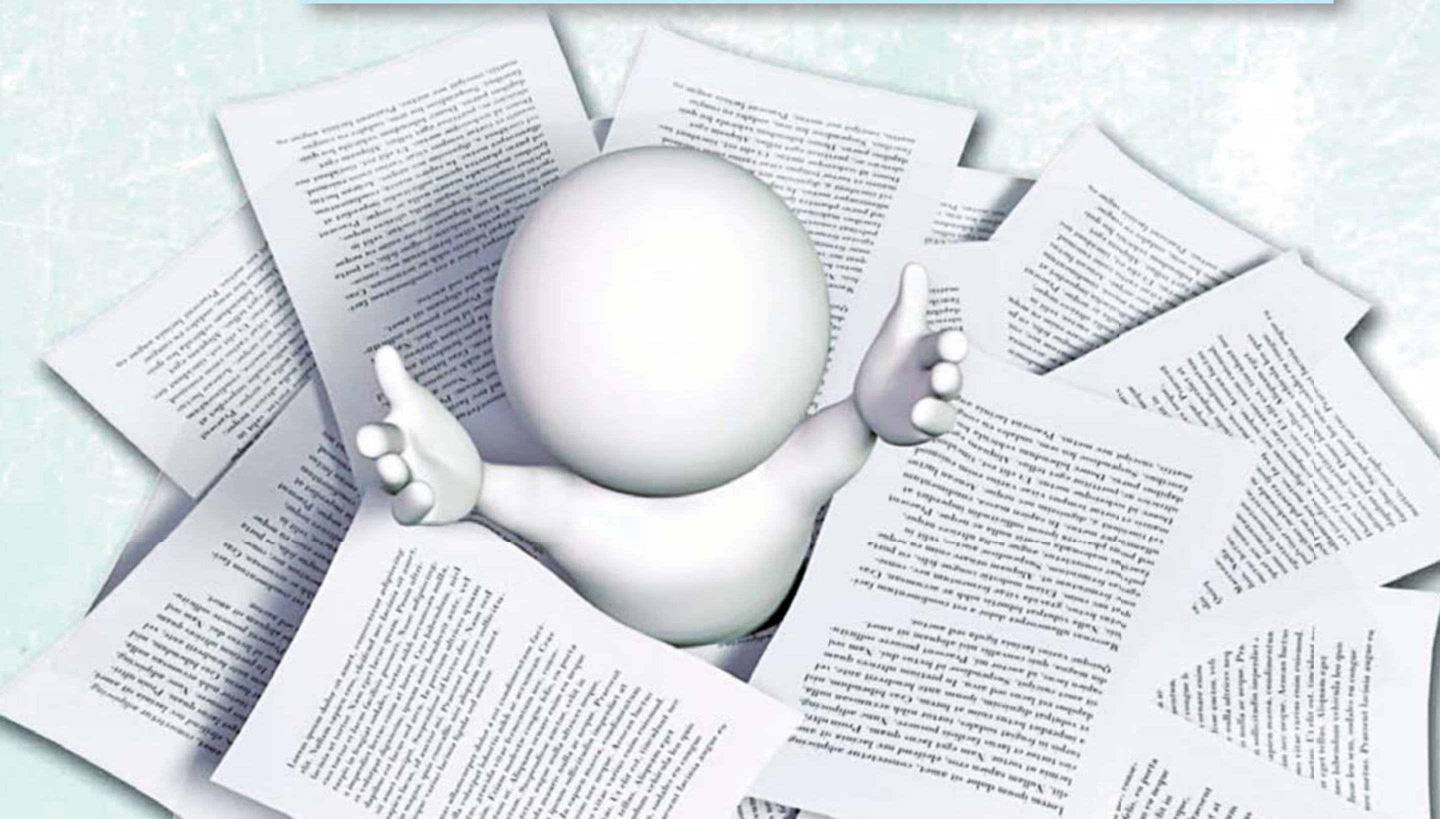

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