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**EDITORIAL**

The October – December 2021 issue of the journal has been devoted to publishing prize winning essays of our various competitions (S.K. Desai Memorial Essay Writing Competition, D. Subrahmaniam Award Essay Writing Competition, Technical Paper Essay Competition and G V Rao Memorial Essay Competition). They deal with a number of themes. The essay 'Risk based Capital Regime for healthy growth of the Insurance Industry' by Naranan Venkata Subramanyan describes the relative advantages and superiority of this approach vs erstwhile formulae based indices of solvency and capital adequacy. Another interesting article titled 'Term or Whole Life- Which of these could be more relevant for the needs of the millennials?' by Nirjhar Majumdar makes a convincing case for promoting whole life product over term insurance in the Indian context.

Other papers 'Impact of Covid 19 on insurance customers' digital journey' by Shama Lonare, 'Psychology of insurance frauds' by Pritam Banerjee, 'Wearables and Health Apps for better medical insurance delivery' by Dr. Pallavi Seth and 'Can NPS be shaped up as 'One Nation - One Pension' Scheme' by E. Sankaranand add richness to the variety. CA Siddhartha Khurana and Yatender Kumar Sharma written an article on the topic 'Practical Utility of Artificial Intelligence and Big Data in The Insurance Industry'.

All told, this issue makes pretty interesting reading and would offer you a host of refreshing perspective on the emerging contours in insurance.

We invite articles for January-March 2022 on the theme 'Challenges of reducing protection gap in the hinterland'.

**Editorial Team**

**Merit Winner**

## S.K. Desai Memorial Essay Writing Competition

# Risk Based Capital Regime for Healthy Growth of the Insurance Industry



## Introduction

The Indian financial and insurance markets are of gigantic proportions and are growing consistently. As insurance deals with public money, strict legislation and regulations are important to enforce solvency and prevent mishaps.

Solvency reflects the ability of Insurers to honour claims. It denotes the excess of assets over liabilities maintained prudently. Till recently, maintaining solvency was being attempted through mandated solvency margins. It is alleged that in many markets across the globe, the requirement of maintaining impractical solvency margins have led to some insurers' becoming insolvent. Therefore, many jurisdictions introduced Risk Based Capital (RBC) framework. The RBC concept originated in the USA in the early 1960s in the banking industry. Responding to the 1990 Dingell report "Failed promises", which criticized insurance regulations in the USA, the National Association of Insurance Commissioners (NAIC) formally adopted the RBC framework in December 1993.

With the recent spate of business insolvencies, frauds and bankruptcies of institutions like IL&FS, DHFL; and the experiences of

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the National Company Law Tribunal (NCLT) in India with respect to several banks, it becomes imperative that the insurance industry is systematically regulated.

In 2017, IRDAI formed a committee to look into the implementation of the RBC framework and market-consistent valuation of liabilities. IRDAI is looking to enforce IND AS 117. It is expected to be consistent with IFRS 17 implemented by insurers globally. RBC and IND AS 117 are expected to be rolled out simultaneously to enable:

- Evaluation of solvency while considering inherent risks of insurers

- Increased focus on transparency

- Greater focus on evaluation of risks, leading to policyholder protection

**Table: Solvency -1**

- More risk-sensitive design revealing a company's true financial position

- Consistency with international insurance capital standards, enabling comparison with insurers globally.

Once regulations change, type of business risks will decide the amount of capital to be held. Historically solvency capital was factor based, based on mathematical reserves of the company and sum of risk for the particular lines of business. Liabilities are called mathematical reserves using a gross premium valuation approach. Actuarial assumptions are based on expected experience including margins for adverse deviations. Valuation interest rates are based on prudent yield assessment

from existing assets and future investments. This has some disadvantages:

(1) Capital levels are not aligned with actual risk.

(2) It does not consider all risks. For example, counterparty default risk is excluded.

(3) Lack of incentives to promote better risk management, as limited credits are available for risk mitigation.

(4) The result can be counterintuitive because companies with higher reserves would be required to hold more capital.

Both RBC and Solvency 1 have their own pros and cons.

Picture in Page 3

| | Technical Provisions | | | Intervention Ladder TBD | |
|---|---|---|---|---|---|
| Best Estimate of Liability("BEL") | | Risk Margin | Solvency Capital Requirement | | Available Excess Cap. |

**Pros**
- Simple calculation, Administration, Validation & Reporting
- Time Tested
- Less Sophisticated
- Less Expensive

**Cons**
- Unaligned with Actual Risks
- Doesn't consider all risks eg. Counterparty Risks
- No incentive for better risk management
- Counterintuitive as companies with higher reserves need to hold more capital
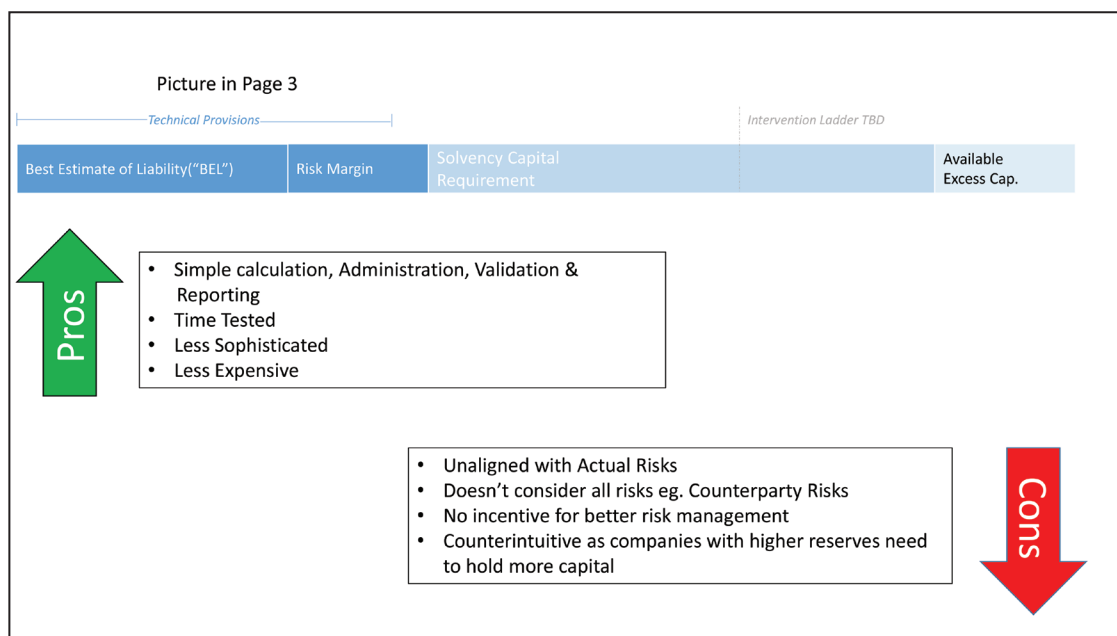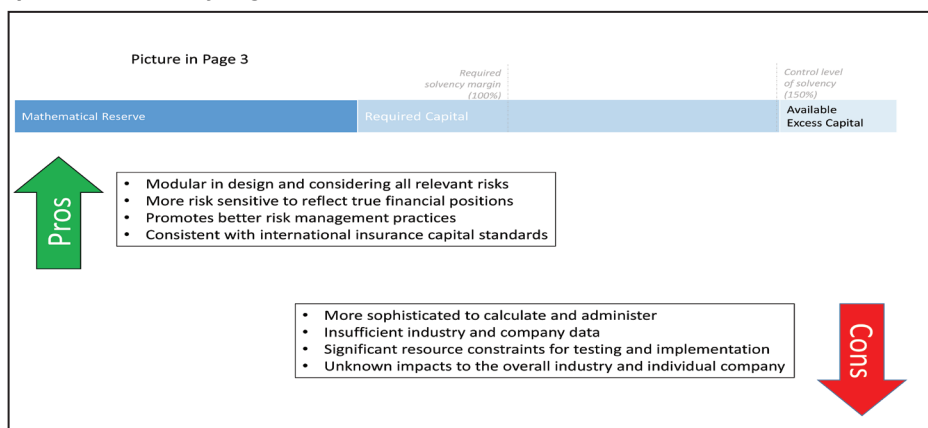
**Table: Proposed RBC Solvency Regime in India**



Source: Report of IRDAI Committee on Risk-based Capital (RBC) Approach and Market Consistent Valuation of Liability (MCVL) of Indian Insurance Industry, Part II, July 2017s

This paper attempts to describe the relevance of RBC in India and how it can lead to the healthy growth of insurance industry. The conversion rate used in the paper is Rs. 71.43 = US$ 1.00.

## What is 'Risk Based Capital'?

RBC framework links an insurer's capital with the risks inherent in its business to support overall business operations. RBC helps organisations to spot threats and weaknesses; identify opportunities that may be missed by competitors and target investment to maximise returns. Presently four major risk categories need measurement:

**Asset Risk** or Investment Risk, denotes an asset's default potential on principal, interest or market value fluctuations and relates to market changes or poor investment performance of shares, options, futures or currency.

**Credit Risk** is default risk on receipts from Policyholders, Reinsurers' or Creditors. It is the risk of non-payment of loan interest, principal or both.

**Underwriting Risk** arising from under-estimating liabilities from business already written or inadequately pricing current/ prospective business. To appreciate the impact of underwriting, some statistical data of the Indian General Insurance industry is given below:

| PARTICULARS | Public | | Private | |
|---|---|---|---|---|
| | 2015-16 | 2016-17 | 2015-16 | 2016-17 |
| NET PREMIUM WRITTEN | 48,474.91 | 54,332.97 | 32,930.47 | 39,844.61 |
| CLAIMS INCURRED (NET) | 40,960.84 | 52,499.09 | 23,541.55 | 28,163.08 |
| COMMISSION, EXPENSES OF MANAGEMENT | 15,612.66 | 15,278.32 | 10,580.75 | 11,699.29 |
| INCURRED CLAIMS RATIO | 1.90 | 2.20 | 1.38 | 1.36 |
| INCREASE IN RESERVE FOR UNEXPIRED RISK | 2,835.76 | 2,424.42 | 2,736.69 | 3,028.24 |
| PREMIUM DEFICIENCY | 88.53 | -63.81 | 6.61 | -9.03 |
| UNDERWRITING PROFIT/LOSS | -11,022.88 | -15,805.07 | -3,935.14 | -3,036.97 |
| INVESTMENT INCOME | 13,151.98 | 14,334.05 | 5,925.84 | 7,397.52 |
| OTHER INCOME LESS OTHER EXPENSES | 223.74 | -321.43 | -110.03 | -551.10 |
| PROFIT BEFORE TAX | 2,352.84 | -1,792.44 | 1,880.67 | 3,809.45 |
| PROVISION FOR TAX | 270.67 | 152.51 | 724.34 | 1,019.12 |
| **NET PROFIT AFTER TAX** | **2,082.17** | **-1,944.95** | **1,156.33** | **2,790.33** |

Source: IRDA Underwriting experience:

https://www.irdai.gov.in/ADMINCMS/cms/frmGeneral_Layout.aspx?page=PageNo3472&flag=1

We also saw the increase of premiums in April 2021. The awareness about insurance, both life and health, has increased considerably in India amidst the COVID-19 pandemic, but so have claims. As a result, the premiums charged by domestic life insurance companies on term life products are expected to jump 10%-15% from April 1, 2021. With this hike, buying a Term Plan would become 40% costlier than what it did two years ago. Insurers, in April 2020, increased Term premiums by 4%-30%.

## Death Claims (in lakhs)

| Year | Value |
|------|-------|
| FY14 | 8.85% |
| FY15 | 8.78% |
| FY16 | 8.77% |
| FY17 | 8.79% |
| FY18 | 8.48% |
| FY19 | 8.63% |
| FY20 | 8.75% |

Source: https://www.personalfn.com/dwl/heres-why-your-life-insurance-premium-would-increase-from-april-1
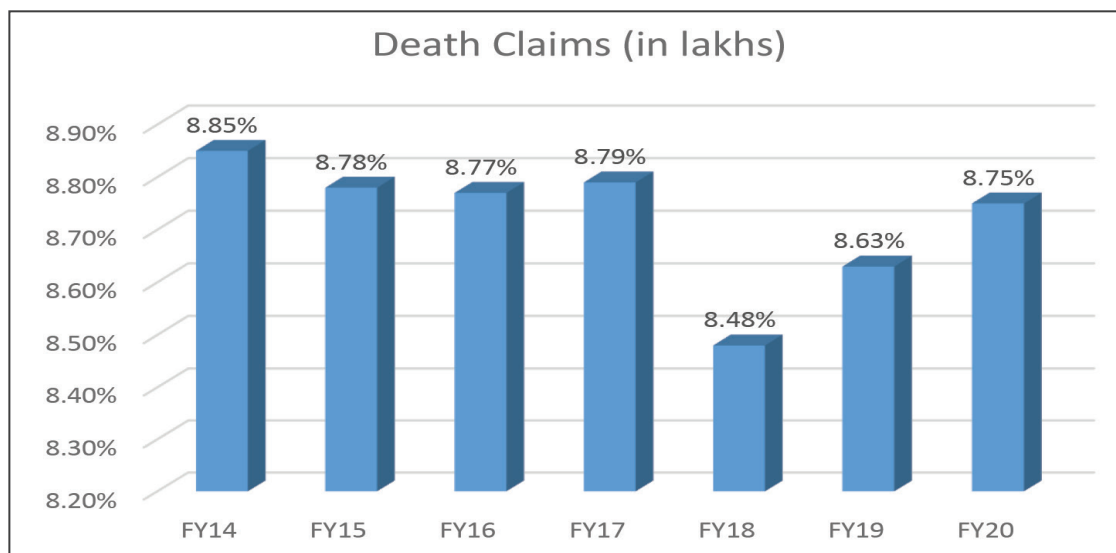
**Off-Balance Sheet Risk** is risk of excessive growth rates, contingent liabilities or other items not reflected in balance sheet. It relates to excessive growth of premiums and contingencies like affiliate company requirements.

**The Traditional model:**
Traditionally insurers' capital evolved in three stages:

(i) **Stage One -** Minimum level of statutory capital below which no insurer can hold irrespective of business volumes.

(ii) **Stage Two -** Decide on company specific minimum capital & fixed factors applied to balance sheet items. It considers reserves, liabilities, cash flow expected and other factors affecting profitability.

(iii) **Stage Three -** Better use of company's internal models to assess unique requirements vis-à-vis liabilities using advanced actuarial risk evaluation models to ensure capital held is commensurate with business model and risks.

Some other popular measures involved in testing capital adequacy are:

1. **Dynamic Solvency Testing (DST):** This makes deterministic projections of company's balance sheet & solvency into the future under varying assumptions to assess financial strength and identify major risks.

2. **Financial Condition Reporting (FCR):** This is similar to DST but covers several financial areas of business providing a framework for evaluating financial position vis-à-vis risks from solvency and shareholder perspective.

3. **Resilience testing:** This is used to determine the impact of sudden changes in asset values and ensures inclusion of margins for adverse deviations which must be sufficiently prudent to ensure there is no significant foreseeable risk that policyholders' liabilities will not be honoured.
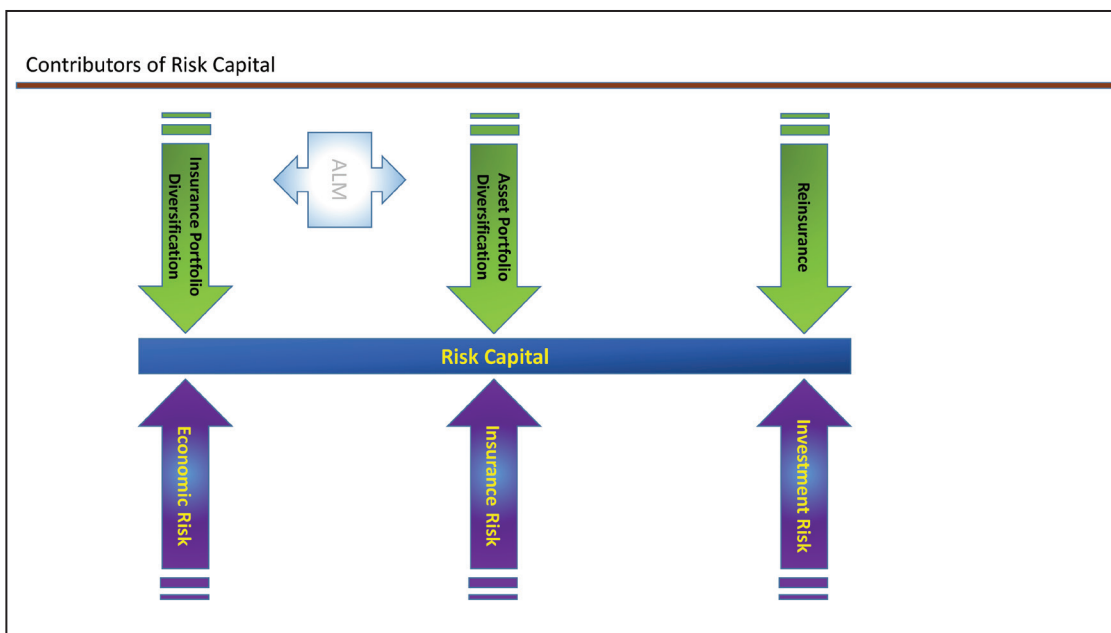
## Regulatory Concerns Affecting RBC Model

The chief issue Regulators face is clash of priorities. Regulators primary concern is to secure policyholders' and ensure insurers' prudent functioning. They strive to ensure satisfactory:

- Claims paying ability
- Potential to invest in organic or acquisitive growth
- Support other risks when needed
- Ensure that business is carried soundly

Simultaneously other strategic objectives are:

- **Earnings growth:** Ensuring earnings growth as expected to ensure dividend pay-out and fuel expansion.

- **Earnings stability:** Ensuring stability and reducing earnings volatility.

- **Income growth:** ensuring Income growth on par with market.

Different measures are required to address these and a symbiosis is needed to create synergy.

## Developments in Other Markets

### The UK Market

RBC is successfully introduced in UK and introduction of Solvency II (S2) & came into effect on 1 January 2016. Even prior to RBC, UK situation was well regulated with an EU solvency requirement of 4% reserves + 0.3% sum at risk, a FCR and a resilience test. Later a proactive risk based regulation was introduced in 2004 combining banking and insurance bringing in market consistent options valuation.

On July 10th, 2008 the European Commission (EC) finally presented S2 for insurers' within EU. The ramifications could be more extensive than anticipated as S2 offers a visionary approach that could transform insurance landscape throughout the world. When S2 comes into force, after 2013, Europe will have the most modern and progressive regulatory standards.

The foundation of S2 shares much with Basel II viz. adoption

of a three pillared approach (Pillar 1 – Minimum Standards, Pillar 2 – Supervisory Review and Pillar 3 –Disclosure) for establishing regulatory capital requirement with a view to enhancing financial soundness.

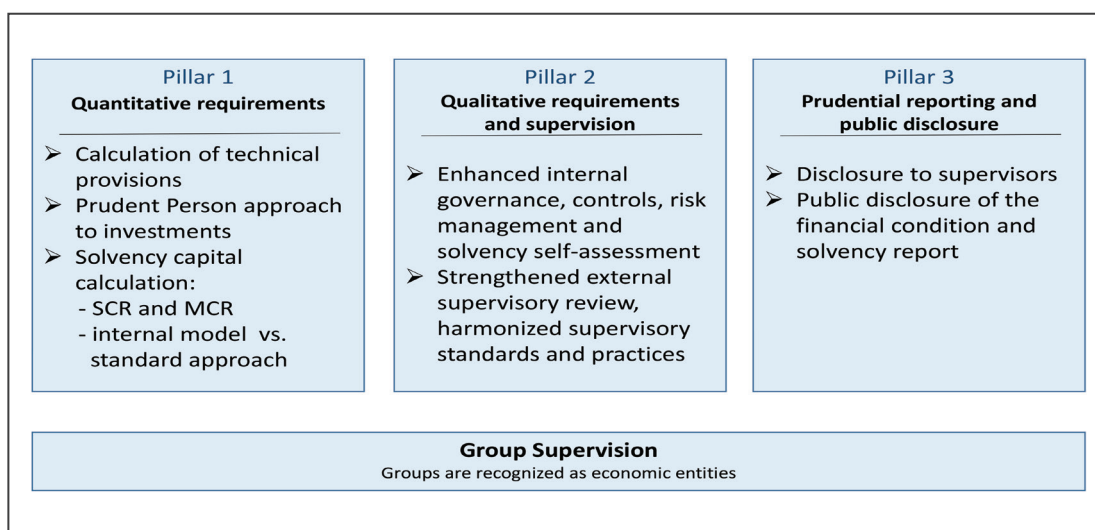Pillar 1 is the requirement for insurers' to understand their risk exposure and hold regulatory capital to a confidence interval of 99.5%. S2 identifies two levels of capital requirement: minimum capital requirement (MCR) and the solvency capital requirement (SCR).

Pillar 2 deals with qualitative elements and focuses on internal control and risk management processes of companies and regulators.

Pillar 3 deals with market transparency and discipline improvements to provide better insights into actual risk-return profile.

**Shown below is the RBC structure in S2.**

| Pillar 1<br>**Quantitative requirements** | Pillar 2<br>**Qualitative requirements and supervision** | Pillar 3<br>**Prudential reporting and public disclosure** |
|---|---|---|
| ➢ Calculation of technical provisions<br>➢ Prudent Person approach to investments<br>➢ Solvency capital calculation:<br>  - SCR and MCR<br>  - internal model vs. standard approach | ➢ Enhanced internal governance, controls, risk management and solvency self-assessment<br>➢ Strengthened external supervisory review, harmonized supervisory standards and practices | ➢ Disclosure to supervisors<br>➢ Public disclosure of the financial condition and solvency report |

**Group Supervision**
Groups are recognized as economic entities

**The Singapore Market**

Singaporean market is similar to Indian market. Since Singapore is the first Asian country to introduce RBC, studying this system would be useful to India and is briefly considered. Monetary Authority of Singapore (MAS) is the insurance regulator in Singapore.

Some companies had solvency problems as markets rocked in 1997 and reflected the volatile nature of the economy in 2000, due to an over-exposure to equity investment and lack of resilience test. MAS has now released the revised RBC framework (also referred to as "RBC 2 framework"). Changes under the RBC 2 framework that may affect the taxation of insurers and in particular concerning the tax treatment of:

• The amount of policy liabilities as computed under the RBC 2 framework

• One-off revaluation of policy liabilities of insurance business arising from the transition from the RBC 1 framework to the RBC 2 framework

• The de-recognition of reinsurance arrangements with foreign head offices

Insurance companies may need to consider the possible tax implications that could arise from the adoption of the new framework.

## Key components under RBC 2 in Singapore



Source: https://www2.deloitte.com/content/dam/Deloitte/sg/Documents/financial-services/sg-fsi-new-risk-based-capital-framework.pdf
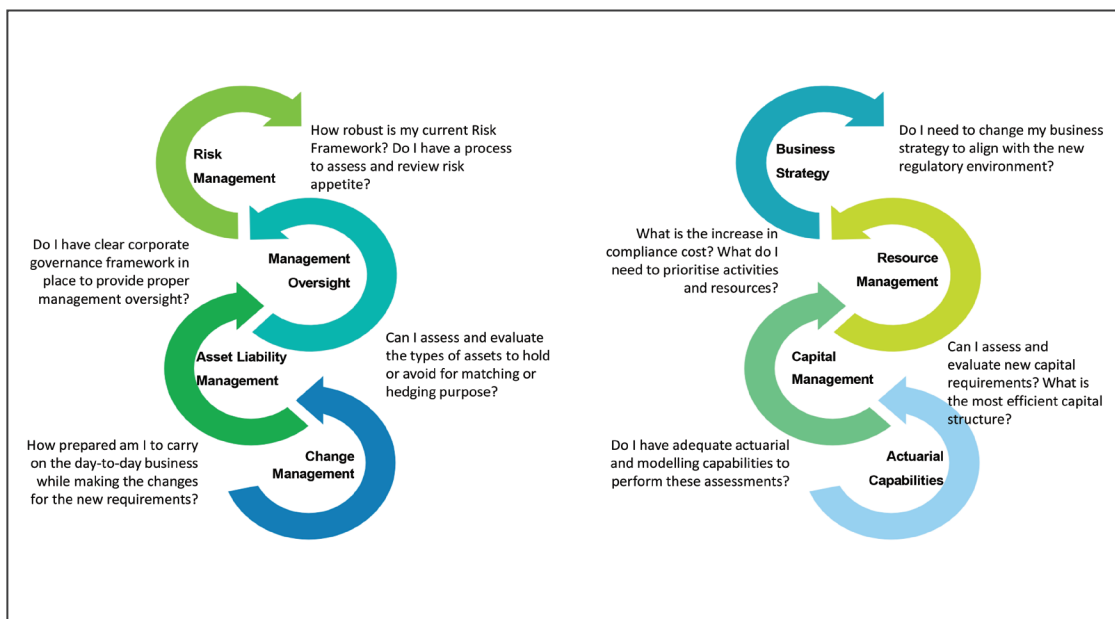
**Comparison of Discounting Approaches**



Source: https://www.mas.gov.sg/-/media/MAS/resource/publications/consult_papers/2016/RBC-2-Review--Third-Consultation.pdf

## Desirable Features of a RBC Framework

The desirable features of a RBC framework are:

i. **Comprehensive:** the framework should be comprehensive for meaningful results.

ii. **Coherent conceptual framework:** Conceptual framework must be objective and impersonal based on robust statistical models.

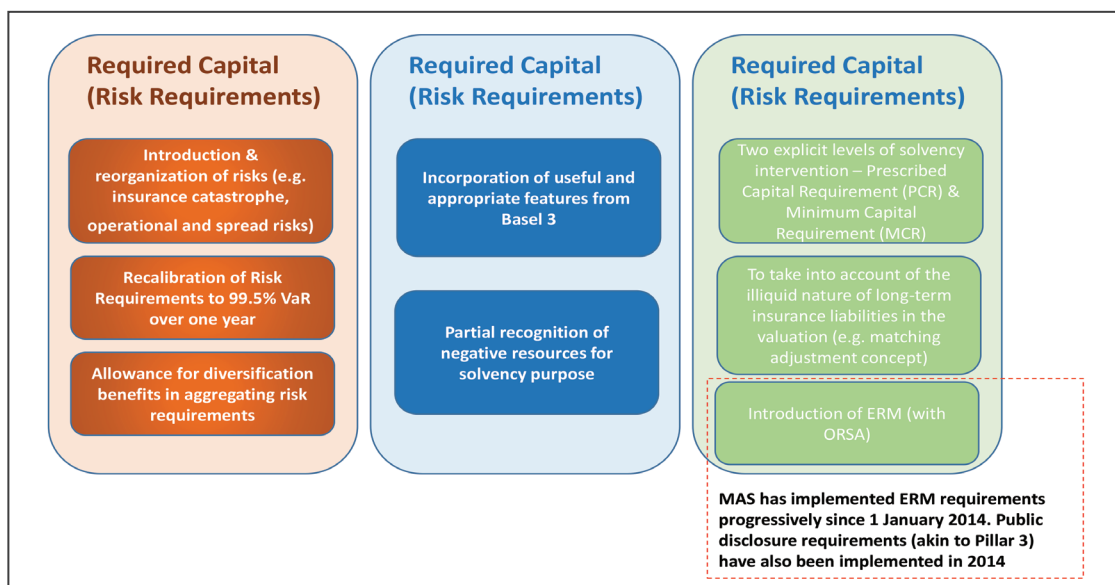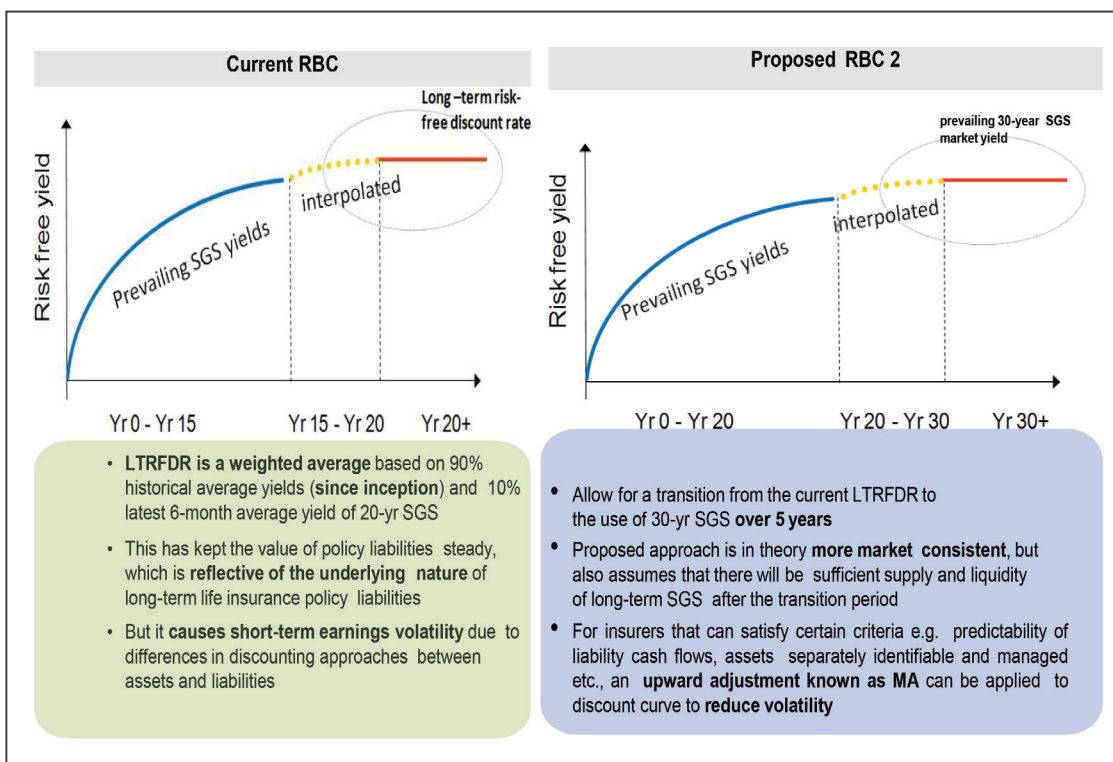iii. **Understandable and easy to calculate:** Framework, underlying formulae and responsibilities of companies and Regulator should be clear.

iv. **Robust:** It should be robust to ensure that minor data changes do not cause significant changes in capital.

v. **Based on regulatory returns:** It should be based on regulatory returns, existing or proposed, to avoid additional work resulting in additional costs.

vi. **Commanding general support:** Buy-in of all players must be ensured for minimal resistance.

vii. **Unlikely to cause undesirable behavioural changes:** Ideally it should not cause resistance. Similarly necessary training mechanism is needed for transition not leading to avoid adverse behavioural changes.

viii. **Reflect public priorities:** Personal lines of business deserve greater attention to ensure protection of public interest.

ix. **Desirable components:** There are some desirable components needing incorporation in RBC. Risks may be bifurcated into

- Asset risk, premium risk, reserve risk, credit risk, growth risk, CAT risk, expense risk and mismatch risk.

x.  **Testing:** proposed formula and system must be tested for results and acceptability by various factors including company size, growth rate, long & short tail classes, product range, geographical region, reliance on reinsurance, asset portfolio, line of business etc.

## Components of a Risk Framework

Risk management relies on managing risks logically and consistently. Risk management consists of:

(i)   Identifying Risks

(ii)  Controlling Risk

(iii) Quantifying financial impact & providing finance and finally

(iv) Administering the risk control programs

Risk management aims not risk elimination but understanding and reducing to acceptable levels. Risk management belongs to one of four major categories: risk retention; risk mitigation; risk elimination; or risk transfer.

A Risk framework consists of the following components at a broad level.

i.  **Identifying Risk:** The company needs to identify various risks it faces & is likely to face. It



Risk Management Cycle

Identify → Control → Finance → Administer →
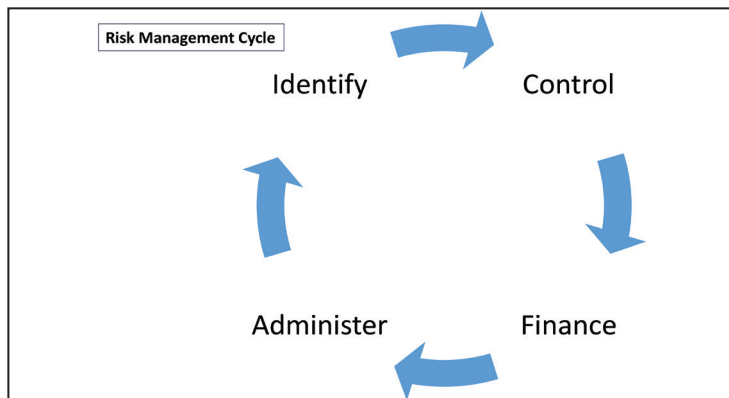
is a crucial stage and must be carefully attended.

ii.  **Classifying Risk:** Classifying risks and developing a framework is a beginning. Three main areas of risk exposure are (a) financial risks including capital management and asset liability management (b) operational risks including human resources risks, business partner risks, data integrity risks and technology risks (c) market place risk

including reputational risks, regulatory risk, tax risks and product strategy risks.

iii. **Risk Reduction Exercise:** Certain steps are possible beforehand to reduce risk eg. insurers may reduce exposure through reinsurance, insuring assets, hedging mechanism to counter market risks and exchange risks etc.

iv. **Collecting data:** consists of collecting relevant data about



Insurance Company Risks

Risks → Financial, Non-Financial

Financial → Retrospective Balance Sheet Risks, Prospective Business Risks

Retrospective Balance Sheet Risks / Prospective Business Risks → Asset Risks, Liability Risks

Non-Financial → External, Operational
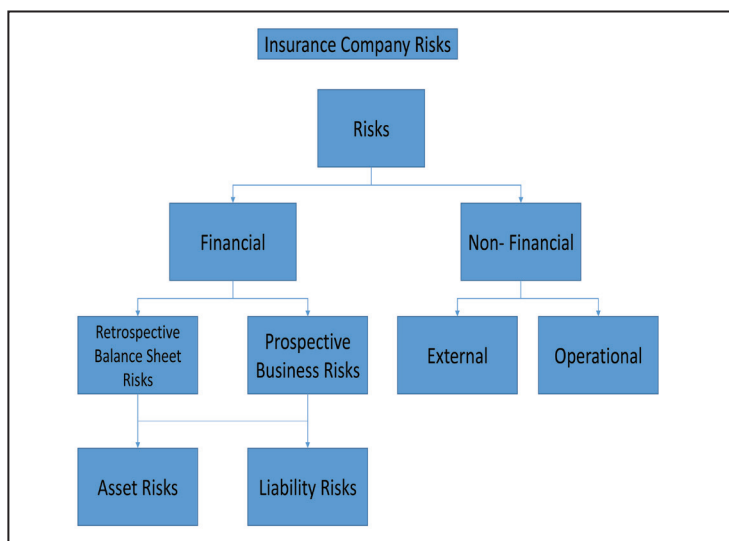
risks and analyse to arrive at solutions. Data sources are past experience, industry level experience, competitor statistics etc.

v. **Quantifying Risk:** synthesising data to determine financial risks' impact in monetary terms

vi. **Calculating Capital Requirements:** Once risks are expressed in monetary terms, these can be addressed through needful capital requirements for business continuance and solvency through guidelines specifying calculation methodology.

vii. **Setting Capital Requirements:** Once needed capital is calculated, requirements are set to see this is held.

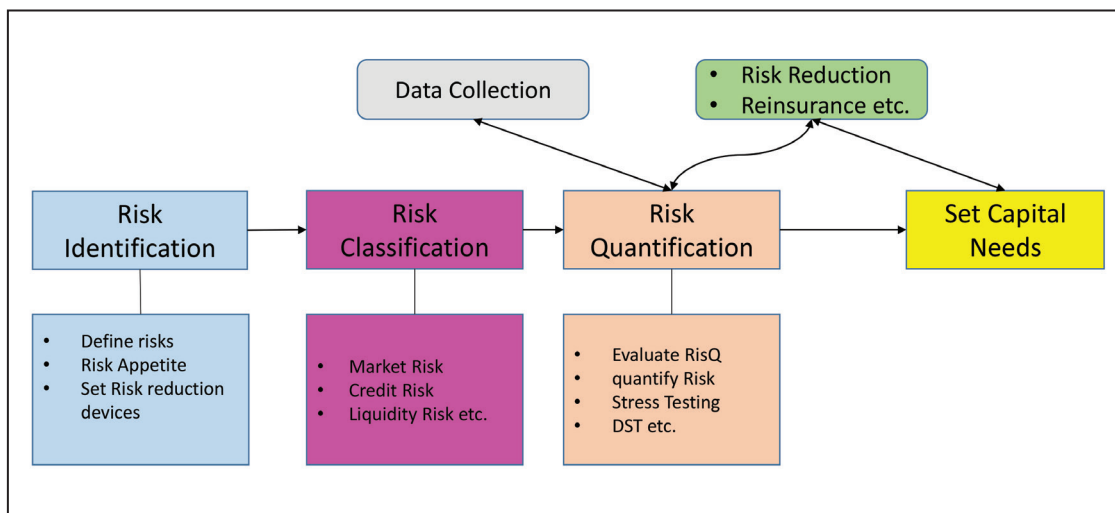The following diagram gives a broad overview of Risk framework.



In practice, the above may be delineated in the following concrete steps:

1. **Clear statement of company's objectives:** Beginning of designing a framework will be clear identification and freezing of company's vision, mission and objectives to chart the path for realisation & course-correction.

2. **Identification process:** Clear identification of risks hampering objectives must be in place as it amounts to 50% of the solution.

3. **Risk policies:** the company must have a proper risk management policy so that identified risks are controlled. Following are the main steps of risk management philosophy:

   a. *Definition of risk:* Have clear risk definition to help precise documentation and to help enforcement officials ensure compliance and implementation.

   b. *Responsibility:* Persons responsible for risks identification, audit and risk mitigation must be identified and adequately empowered to carry on their work effectively.

   c. *Risk appetite:* There must be a clear idea about risk appetite to identify risks that can be retained. This ensures that activities are congruent with risk appetite.

   d. *Review period:* A review period for risk policies should be agreed to ensure that it is up-to-date.

4. **Reporting lines:** Reporting lines must be clearly demarcated to ensure effective and smooth functioning.

5. **Data collection process:** Proper process is needed to ensure that data collection for control is prompt, timely and accurate and is available without difficulty or expense.

6. **Risk evaluation methods:** Proper risk evaluation methods must be available so that data can be used for quantification. The following are useful in insurance:

    a. *Stress testing* refers to reviewing how finances respond to extreme scenarios. It is familiar to most corporations as they go about prudent management of business and ask "what if" questions. Insurers have examined how they would fare financially in extreme events like 9/11 or the 1923 Great Kanto earthquake of Japan.

    b. *Scenario Testing* is a complicated test containing simultaneous moves in a number of risk factors and is often linked to explicit changes in the factors in the real world scenario.

    c. *Stochastic modelling* is a tool for estimating probability distributions of potential outcomes by allowing random variation in some inputs over time. Variation is usually based on fluctuations in historical data for a selected period using standard time-series techniques

    d. *Traffic light* is a regulatory work intended to make well-informed risk assessments of firms and the quality & credibility of risk programmes including management direction & board oversight.

7. **Integration into company culture & decision making:** Following steps are needed to ensure that risk framework deployed is embedded in company culture and decision making:

    a. *Capital allocation:* Adequate capital is allotted as calculated to ensure sound working.

    b. *Strategy:* Clear strategy to determine how the additional capital will be raised is essential. Company should also ensure that risk methodology is ingrained in daily working.

    c. *Pricing:* Pricing philosophy should be suitably modified for needed additional capital. Prices of insurance products could increase and industry should be prepared for this eventuality and to retain competitive advantage.

## The Indian Situation

### Historical position

LIC & GIC enjoyed 'Sovereign Guarantee' and their policies were fully guaranteed by Government. The only requirement was a valuation bi-yearly while being done annually. Surplus, after payment of tax (at 5%+surcharge), was distributed as bonus at the rate of 10% to the Government and 90% to policyholders. LIC had to only satisfy that, after surplus distribution the value of assets was more than liabilities.

### Present situation

However solvency margin regulations were framed by IRDA and LIC had to comply though it still enjoyed Sovereign guarantee. IRDA laid down new stipulations that excess of assets over liabilities be at least Rs. 50 crores or capital as determined through solvency margins on a simple factor-based approach as under:

### Life Insurance

- Linked business – 2% of Reserve + 0.2% of Sum at Risk

- Non Linked business – 4% of Reserve + 0.3% of Sum at Risk

- Health Insurance – 2% of Reserve

### General Insurance

- 20% of Net Premiums OR 30% of Net Incurred Claims, whichever is higher

For reinsurance it is Rs. 100 crores or as per formula. Indian insurers' must maintain Solvency Margin of 150% of the value calculated above.

**Resilience tests:** Resilience tests are not mandatory presently. However it is expected to be made mandatory once RBC is in place.

**DST & FCR -** Presently DST & FCR are not mandatory. But their

introduction has been discussed and these could be introduced shortly.

### Necessary Key Design and Implementation Considerations

Based on the proposed approach and timeline of the Indian RBC development, some key design and implementation issues could arise viz. balance between conservatism and growth. Recently, the regulator sent a memo to all insurers about its intention to move to a risk-based supervision approach. A pilot program will be conducted on a few select insurers. Timing and resources. From a practical implementation perspective, the transition to an RBC regime is a multiyear journey and requires investment from all stakeholders. India is also implementing IFRS 17Adding the RBC implementation could overwhelm insurers. Therefore, how to best leverage the two work-streams and create synergies is an important consideration.

### What Benefits Will RBC bring to India?

RBC's impact in India can be delineated as under:

**Policyholder benefits:** RBC will ensure uniform and enhanced policyholder protection due to strengthened solvency, effective risk management and robust supervision.

**Industry benefits:** RBC will promote more integrated risk and capital management and align supervisory requirements with market practices.

**Economic benefits:** Efficient capital allocation to meet insurance risks will lead to lower capital costs & strengthen insurers' role as institutional investors.

**Supervisory benefits:** Supervisors, within companies or IRDA, will gain risk-based tools enabling effective supervision.

**Quantitative assessment of Indian benefits:** There would be administrative costs but these will be offset by direct benefits from lower cost-of-capital as transparency and confidence increases.

Removal of additional 50% margin obliged imposed by IRDA will be substantial.

Firms will also face additional administrative costs as under:

• **The costs of calculating technical provisions and regulatory capital requirements:** Costs of professionals and valuation systems using new specifications will be high.

• **Insurers' assessment of risk, internal controls, governance and risk management:** these costs will have been assumed with solvency margin. Firms already using integrated risk models which approved under RBC will have further sunk costs.

• **Regulatory disclosures to the IRDA and public disclosures:** new systems and procedures must be implemented to deal with new reporting requirements & public disclosure.

**Qualitative benefits:** Policyholders benefited since 2001 from protection required under solvency margins and benefits of enhanced policyholder protection will be already assumed. The following additional benefits is expected:

• Stronger competition from more efficient market leading to better products.

• Potentially more efficient use of capital. The IRDA had stopped sale of ULIPs following Shadow funding concept in the past. These may be now reintroduced along with more sophisticated products.

• A robust insurance sector with lower instability is expected.

With enhanced competition, new capital requirements leading to enhanced protection will be important.

**Possible additional effects on the Indian industry:** there may be additional impact beyond direct costs and benefits representing possible unintended short term consequences.

• **Impact on insurability:** RBC aligns regulatory treatment of risks with true economic cost & riskier products will receive higher capital leading to reduction in coverage.

• **Impact on asset allocation:** RBC will attach higher capital charges to riskier assets, like equities, compared to less risky investments like fixed income securities leading to insurers'

purchasing more bonds affecting equity markets.

- **Impact on pricing:** higher capital costs may be passed on to policyholders through higher premiums in the short-term & normalise in long run based on relative competitiveness.

- **Increased consolidation:** Recognition of diversification benefits means that larger, well diversified firms in terms of products and reach will reduce capital requirements.

- **Capital Requirements:** Advantages of reduced solvency margin from 150% may be realised earlier so that, India need not wait till introduction of RBC. IRDA may reduce solvency margins to 100% soon effectively meaning that promoters' will now have to infuse smaller quantum of funds to adhere to the 150% solvency.

- **Mergers and acquisitions:** with RBC there could be a possibility of mergers and acquisitions in the industry with some of the companies combining to gain traction, size and competitive edge.

In general, RBC is expected to provide substantial benefits. Aggregate costs of transition could be significant leading to incremental costs but with benefits too.

## A Case-Study on the Benefits of RBC

In Malaysia, the RBC framework was issued by Bank Negara Malaysia (BNM) in April 2007. It was fully implemented on 1 January 2009 and a study was done to examine the impact of the RBC implementation on insurance companies in Malaysia mainly with respect to three questions:

(1) what is the optimal target capital level for that particular insurance company

(2) what will happen to the company's Capital Adequacy Ratio (CAR) given a change in equity market performance and

(3) will the RBC implementation give greater flexibility in managing the company's capital?

And for this purpose the following measures were considered:

(1) CAR which measures the adequacy of the capital available in the insurance and shareholders' funds of the insurer to support the total capital required. The CAR for the first quarter of the financial year was 253%. The CAR for the second quarter recorded at 220%. For the third quarter, the CAR was posted at 240% while for the fourth quarter, the CAR stood at 217%. Even though the trend was declining, the overall CAR recorded for this particular insurance company was very good as all results were above the BNM's supervisory target level of 130%.

(2) Measuring Total Capital Available (TCA) which is the aggregate of Tier 1 and Tier 2 capital of the insurer. The main criteria used in the classification of a capital instrument into Tier 1 or Tier 2 categories is the degree of its permanence and whether the instrument is free and clear of any encumbrances. In general, market and credit risks count as 48% of the risk for total capital required by the company. This was quite significant as the combined risks were more than the insurance risk. A stress tests were conducted for a given changes in equity price and shifts in yield curve. The results showed that there was an asset-liability mismatch of interest rate risk in participating and non-participating funds. Furthermore, there was no exposure on the BBB-rated bond of the company's balance sheet. In conclusion, the CAR improved when equity price changed upward plus the upward shift of the yield curve.

(3) Measuring Total Capital Required which is the aggregate of the total capital charges for each insurance fund and the aggregate capital charges for all assets in the shareholders' fund.

(4) Conducting Stress Tests: The implementation of the RBC gives flexibility to the insurer to custom their solvency level based on their risk profiles and appetites without compromising on prudential standards. This framework is also designed to better align the valuation requirements for standard reporting format that promotes greater transparency and comparability among insurers in the insurance industry.

It is important to note that the RBC result for insurers studied are deemed to be solvent and sound. The CAR stood at 217%, far beyond the supervisory target level of 130%. The TCA was RM 1.8 billion of which 32% of its Tier-1 capital was derived from its retained earnings. Whilst the Total Capital Required (TCR) was RM 824 million which was dominantly attributed by the Total Capital Charges from the Life Insurance Funds.

## What Can Go Wrong?

Herein we discuss certain problems usually arising during RBC introduction in India. Problems prior to introduction could be:

i.　**Non-recognition of adequate risk factors:** There is a possibility that all risk factors will not be identified due to inadequacy of trained personnel, funds shortage, improper modelling, judgement errors and negligence.

ii.　**Principle of "16/64=1/4":** Any system is as good as its constituents. A story goes of a mathematics professor teaching his students to simplify fractions, taking the example of the fraction 16/64. Stating that the students could simply strike out "6" both in numerator and denominator leaving "1/4" he tried to generalize. While the answer is correct, the method is faulty leading to disastrous consequences.

iii.　**Non-Alignment of risks to capital adequacy:** Some risks may be identified but their financial impact not calculated. Then calculated capital requirements could be erroneous.

iv.　**Resistance & inadequate seriousness in the attitude of players:** Misgivings and resistance is likely from some players. It is possible that endeavour would not be taken up seriously and the exercise could be jeopardised.

v.　**Regulatory over-play:** The Regulator might overplay its authority with the players needing to toe the line.　Some problems after introduction of RBC could be:

i.　**Excess reliance of formula:** the formula set might be relied upon unquestioningly in future without any changes necessitated on changing market dynamics.

ii.　**Market volatility on account of changed scenario:** Cause and effect relation between the environment and industry should be identified.

### Some possible myths

There are certain myths regarding Basel II norms that apply equally to insurance also:

• 　*'Once the IT/data issues are fixed, the rest will just fall into place':* the experience, both from Basel for banks & RBC for insurers in other countries shows that it's not just about IT.

• 　*Over reliance on Data:* the data available would likely be inadequate or there could be over reliance on the same.

• 　*Legacy Issues:* most insurers carry legacy systems to support business which maynot be easily amenable for sophisticated RBC requirements.

• 　*'All efforts should be concentrated on getting the mathematical calculation correct':* while correct mathematical calculation is crucial, Pillars 2 and 3 are equally important. Critical to successful implementation is how the practices developed under Pillar 1 are communicated and justified through Pillar 2, with further market disclosures under Pillar 3.

• 　*'The new regulation will always lead to a release in capital':* Capital reduction may happen in some cases but cannot be a certainty. The regulations will lead to a more risk sensitive approach to calculating regulatory capital that may be higher or lower depending on the risk profile.

• 　*It is a 'One Time Exercise':* Far from that, the results have to be constantly monitored. So, it is important that the model is dynamic and keeps pace with changes to remain relevant.

## How Indian Insurance Can Grow With RBC?

Watching the troubles that economies which have already introduced RBC faced, brings us to the question: does India need RBC? The health of Indian Insurance Industry would benefit from RBC for the following reasons:

- Indian Insurance should move in tandem with other financial sectors

- The world is moving towards S2 and therefore IRDA has to move towards Risk-based supervision and that cannot be done without RBC model in place

- RBC model is a more scientific way of calculating liabilities

- To improve policyholder protection

- To retain industry competitiveness as insurance competes for public savings with banking, mutual funds etc.

So it would be prudent not to throw away the baby with the bath water by not doubting RBC.

## Conclusions

The fundamental issue for India is becoming familiar with inherent risks. Obviously risk management is present in some form from a long time:

- Quantification of some risks will certainly help avoid surprises.

- RBC may push some smaller players toward consolidation.

- Identification of other risks, existing & anticipated, should lead to better risk management and value addition.

- Practical and efficient Asset-Liability Modelling is crucial. Most insurers experience that problems result from assets performance while liabilities are less problematic.

- Despite the planning undertaken, there could be some surprises. Unexpected developments in any variable viz. Mortality & Morbidity rates, Investments, new Government regulations, Foreign Exchange rate movements etc. may vary.

- How would the existing Defined Benefit Scheme pensions (DBS) develop in future? Bulk of pensions and annuity business in India, both by LIC & other statutory bodies are defined benefit.

- Government of India approved channelling of mutual fund investments into foreign markets. It is likely that the investment of insurance funds could be liberated due to the number of foreign insurers entering the market.

RBC is the way forward in India & other growing insurance markets. Its success of the exercise depends on proper policy formulation and implementation. There would be expected and unexpected challenges. Statutory changes will be needed with investments into framework and personnel. With proper planning this can be successful. While RBC is likely to throw some interesting challenges, the industry is robust enough to handle these successfully. While RBC may not be a panacea, it is important that it implements the same soon and corrects the general framework based on future

experience and make the system robust and relevant. **TJ**

### References

1. Website and Journals of the Insurance Regulatory and Development Authority, India

2. Website of the Life Insurance Council of India

3. The Economic Times

4. Website and journals of the Institute of Actuaries of India

5. Website and journals of the Institute of Actuaries, London

6. The Financial Express

7. Website of the Reserve Bank of India

8. Website of the Financial Services Authority, UK

9. Website of Reserve Bank of India

10. Website of the Ministry of Finance, Government of India

11. https://economictimes.indiatimes.com/markets/stocks/news/lics-rs-11000-crore-exposure-to-dhfl-reliance-cap-sintex-defaults-in-h1-fy20/articleshow/73569964.cms

12. https://ieeexplore-ieee-org.libproxy1.nus.edu.sg/document/6396516

13. https://www.ibef.org/industry/insurance-sector-india.aspx

14. "Financial Meltdown & Insurance – Does India need a Risk Based Capital Model?" of N.V.Subramanyan

**Appendices**

Solvency Margin International Practice

| SI | Country | Existing Solvency Requirement |
|----|---------|-------------------------------|
| 1 | Australia | The ideas are similar to those behind Solvency II. Liability valuation, Risk categories, a factor-based prescribed method, and internal models |
| 2 | Canada | A factor-based system. Risk categories, the minimum capital test, dynamic capital adequacy testing, and minimum continuing, capital and surplus requirements on ratings. |
| 3 | Denmark | Fair valuation and a traffic light test system. |
| 4 | Finland | A risk theoretical transition model and equalization reserve. |
| 5 | Netherlands | Fair valuation and minimum solvency and continuity analysis. |
| 6 | Singapore | Valuation of assets and liabilities, risk categories, and two requirements in a risk-based system. |
| 7 | Sweden | Valuation of assets and liabilities, risk categories, and a simple model. |
| 8 | Switzerland | Valuation of assets and liabilities, risk categories, standard model, scenario tests determining the target capital, and internal model. |
| 9 | UK | A twin peaks' approach under pillar I, individual capital adequacy standards under pillar II. Under the new Solvency II guideleines expected to be introduced in 2011, a three pillar system is being designed. |
| 10 | US of America | Risked-based capital model, correlation structure, and different intervention levels. |

| Risk Based Capital Framework | | | |
|---|---|---|---|
| | Pillar I | Pillar II | Pillar III |
| Insurance Risk | Quantitative Requirements | Supervisor Review | Market Discipline |
| Market Risk | Reserving | Qualititative Requirements | Transperency |
| Credit Risk | Minimum Capital Regulations | Regulations on Insurers supervision | Disclosure Requirements |
| Liquidity Risk | Investment | Capabilities and powers of regulators | Regulations regarding Competition |
| Operational Risk | | | |
| | Implementation | Control | Disclosure |

**Merit Winner**

### D. Subrahmaniam Award Essay Writing Competition

# Impact of Covid-19 on Insurance Customers' Digital Journey

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## Abstract

Insurance industry has got huge potential in the years to come and industry should amend its processes and activities from time to time as per the developments in the industry to be at par locally and globally. The developments could be in products offered, services rendered, handling of grievances, etc. An opportunity for a need of a change in the way the business was done was provided in the year 2020, the year when the pandemic has occurred, well known as COVID 19 pandemic

COVID 19 bought huge challenges in the various sectors of the Indian economy; one of sector affected was an Insurance sector. It faced various challenges as underwriting of policies, receipt of premium, Claims processing, Customer service, and Information technology infrastructure. As it bought various challenges, it also showed us several opportunities to overcome the same. Due to restrictions imposed by government and to maintain the momentum of the work during the crucial period i.e the beginning of the financial year, all the employees were provided work from home

facility as it was impossible to move out of the residence. To provide the necessary services to the customer, Information technology infrastructure was expanded for smooth issuance of the daily activities of the business. An old traditional method of physically visiting the office was replaced by the digital presence. The core activities of the insurance sector were steadily shifted towards being digital. Customers who were made to opt for digital were satisfied as it resolved their queries in a smooth manner. So overall, by being digital, it provided customer satisfaction, improved the productivity of the employees as well as of the organization.

Though Covid 19 has bought our daily life to a standstill, it acted as a self-motivated component for introducing various new methods and alternatives in conducting the business activities. It showed us that by maintaining social distancing, all the essential activities could be efficiently and effectively carried out. Being digital is the requirement of the near future together with adequate collaborations with various participants of the digital payments ecosystem.

Insurance is a means of protection from financial loss. There are two branches of Insurance, one is Life Insurance and the other is Non-Life Insurance. Life Insurance

industry took birth in India in the year 1818 with the incorporation of the Oriental Life Insurance Company in Kolkata then known as Calcutta. However this company failed to survive itself and was ultimately shut down. We had some Foreign Life Insurance companies namely Albert Life Assurance, Royal Insurance, Liverpool and London Globe Insurance which performed considerably well and were giving a tough time for the Indian life insurance companies. The Indian Life Assurance Companies Act, 1912 was the first statutory measure to regulate life business. An Ordinance was issued on 19th January, 1956 for nationalisation of the Life Insurance sector and thus in the year 1956 the Life Insurance Corporation was incorporated. The LIC had monopoly till the late 90s when the Insurance sector was reopened to the private sector. Life insurance protects the livelihoods of people and future earnings.

Talking about the Non-Life Insurance Industry also known as the General Insurance sector, began its journey from the year 1850 with the establishment of Triton Insurance Company Ltd.in Calcutta which was formed by the British. In 1907, the Indian Mercantile Insurance Limited was setup, the first company to transact all classes of general insurance business.  In 1972 General Insurance Business (Nationalisation) Act was passed

and general insurance business was nationalized from 1st January, 1973. General insurance protects assets and businesses.

In 1993, the Government set up a committee under the chairmanship of RN Malhotra to propose recommendations for modifications in the insurance sector. The committee submitted its report in 1994 wherein it recommended that the private sector should be allowed to enter the Indian insurance industry; foreign companies should be permitted to operate in the Indian insurance market via a joint venture with Indian companies. Subsequent to the recommendations of the Malhotra Committee report, the Insurance Regulatory and Development Authority (IRDA) was constituted in the year 1999 as an autonomous body to regulate and develop the insurance industry. The IRDA was incorporated as a statutory body in April, 2000. Insurance Regulatory and Development Authority (IRDA) was renamed as Insurance Regulatory and Development Authority of India (IRDAI) on 30 December 2014. The key objectives of the IRDAI is to include promotion of competition which will enhance customer satisfaction through increased consumer choice and lower premiums, while safeguarding the financial security of the insurance market. Insurance sector has a huge potential. A well-developed

and advanced insurance sector is a boon for economic development as it provides long- term funds for infrastructure development and at the same time strengthening the risk taking ability of the country.

The fundamental principal of the insurance industry is to insure the customer for any loss or losses. To insure means to give them a cover, protect them, to indemnify the losses suffered by them. It provides a financial protection or it's a reimbursement for the losses underwent by the customers. The loss is indemnified or a protection is provided in return of premium from the customers. The loss could be loss of a life or the loss of a general thing i.e basically the loss could be a Life Insurance Loss or a Non-life insurance loss. In insurance parlance, customer here is termed as an insured whereas the company insuring them as an Insurer. At the end of financial year 2020, there were 68 insurers operating in India. Out of these, 24 were life insurers, 27 were general insurers and six were standalone health insurers. Additionally, the country also had eleven re-insurers including foreign reinsurer branches (Source: Statista Research Department, Mar 2, 2021). Other stakeholders in the Indian Insurance market include agents (individual and corporate), brokers, surveyors and third-party administrators servicing health insurance claims.

Till the financial year 2019, the general scenario of the insurance industry, be it a life insurance sector or a non-life insurance sector, was like visiting the office of the company for any particular work. As we have intermediaries such as agents and brokers etc, our needs and requirements were communicated to them and they in turn would complete our work by visiting the office. These Intermediaries were the medium of communication & information for the customers. Like for e.g, if the customer wants to take a Life insurance Policy or any Non-life Insurance Policy either they would have had to visit the office or channelize the same through an intermediary. If they would have had to pay the premium, either the cheque was handed over to the intermediaries or the customer would visit personally to the office for handing over the cheque. Premium remittance was also done via other than cheque method, i.e by NEFT, RTGS, ECS by those who are well aware of the digital transaction as an alternate mode of transactions. If the Customer had to submit the claim papers, either they would come personally to the concerned office of the company or they would hand over the claims papers through the agents. The rudimentary method was to visit the office either by the customer or by the agents for any of the

requirements and necessities. These methods were considered as the standard and customary methods.

These methods had its own advantages i.e. the biggest advantage by visiting the organization was in having a personal interaction with the officials concerned, the genuineness and the authenticity of the customer would be made aware of, having a pleasant and approachable liaison between the customer and the organization which enables to establish a long lasting associations. The complaints were adhered to in a more satisfying way. There were disadvantage too, i.e to visit the office would necessitate physical efforts which may not be possible to all, visiting the office with all the papers be it the Policy papers or the Claims papers which at times are in huge quantity is more of a cumbersome and bulky process. The process of handing over the cheques by the customers/agents to the organization is more of a cautious in nature i.e till the stage of the cheque being handed over to the organization, the organization is not insuring or protecting the insured hence there lies more pressure on the part of the customer/agents. Also the manual payment process could often be influenced by human error such as entering incorrect details, be it, incorrect name on the cheque or the amount. This would in-turn leads to redoing the work and to wastage of human hours.

Then we entered the year 2020, a year which will be known for the pandemic, pandemic well-known as corona virus and more specifically known as COVID 19, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. It is named as COVID 19 as this was first discovered in China in the year 2019. This has led to an enormous impact not only on the Indian economy but also on the world economy. The repercussions of COVID confronted by everyone during the year 2020 were substantial ones. Life came to standstill because of COVID as it bought with it a lot of anxiety; it bought with it a fear about our survival, it made us realize that we need to slow down , we need to halt and need to look at things and not to rush with our everyday life.

In the year 2020, economies all over the world were facing huge challenges as the virus was spreading with an enormous speed and there were no medications and treatments available for curing it. People were losing their lives due to it; rather a question of survival was faced by each one of us. The main reason for the spread of the COVID is the human contact and it has the same symptoms as that of

a normal flu i.e cough, cold, fever. The dissemination of this virus was so fast that it led to deaths in huge numbers in India as well as in other countries. The main cause for this spread was congregation of people in huge numbers at any particular place, be it a market and be it on roads, be it in any mode of transportation, mass gatherings for any functions. The accumulation of people was the main reason which was required to be targeted at for controlling the spread of the virus or rather to save the lives getting lost. To arrive at a solution people were advised to not to move out of their homes and were instructed to stay indoors. This enabled avoidance of gatherings of people and thus decreases the spread of the virus. People were strictly ordered to stay at home. It was also implemented that the daily necessities of food, clothing and all other day to day requirements would be delivered at the doorstep. This further led to evading of gatherings in market. The year 2020, along with the pandemic, brought huge disruptions. Economy came to a standstill. Insurance sector depends on various other industries, and required that the industry and economy should bounce back or as an alternative, the insurance industry was required to find business in uncovered areas and some other alternative solution for carrying on its business.

As an immediate solution for maintaining and carrying on its regular activities, almost all insurers have successfully moved all their staff to a work-from-home configuration and managed to keep all services available to their customers. The stay at home rule came with its own boon and bane. By staying at home did reduce the gatherings but it led to rise of other issues, such as the employment of the beings, which raised a question of survival as staying at home meant not to travel even for the work. Work is the main source of income for all. It's only when we work for any corporate, or any factory or only when we attend office or the workplace, economy gets moving, revenue gets generated and a source of income is created. This income fulfils our daily needs. By stay at home approach; this income was hit to the hardest as not all the jobs could be done by stay at home module. As a result many lost their jobs and employment opportunities. The disposable income in the hands of the common man was reduced drastically. The absence of movement of people led to reduction in their spending activities, which led for a lesser amount of expenses, which in-turn reduced the demand for things, this led to reduction in sales or no sales at all and piling up of stocks, no sales means no income in the hands of the manufacturer, distributer,

wholesaler, retailer, no income for them meant no salary and wages for the employees working under them. This had cascading effects on many things i.e no income means a real struggle to survive; leading to an emotional and psychological disturbance amongst all.

It led to changes in many customs and practices. It brought with it some new methods in the ways of work. It made us realize the concept of work from home which was till then was only known to the Information Technology sector. It taught us ways to connect with our near and dear ones. It made us unlearn traditional methods of completion of our work and made us learn new and apt ways for the same. These new ways were less of hectic and were more at ease. Like, it taught us to use e-mail correspondence method rather than physically writing a letter and posting it, it taught us to use the virtual meetings rooms (Zoom Call, Google Meet, Microsoft Teams) rather than those face-to-face meeting in the board room or in the conference rooms, it made us to use the basic feature of Conference calls of our mobile handset which makes it possible for audio tele-talk with the required team members at one go. It made us realize that productivity can be enhanced when we are provided with the necessary infrastructure required for work from home method. The commuting

time can very well be utilised for other activities at home e.g. yoga which enables us to perform our work in a more pleasing and productive manner.

There were many other changes and transformations during the COVID 19 period but one of the major ones was the way monetary transactions were carried out. Monetary Transactions i.e the ways of payment and receipts or simple, money related activities. Prior to COVID 19, people were mostly accustomed for physical transaction of cash i.e hard cash were more preferred than the digital transactions. Though after demonetization, the hard cash method of payments were largely reduced but still in many parts of the country, as the digital awareness has still not reached remote places of the country, there are transactions wherein hard cash is still involved. Till 2019, whenever we have had to make payment for any expenses of ours, be it grocery, travelling, food, cash was more preferred i.e for petty level amount, cards were not swiped for. Say for e.g. if we travelled in bus or an auto, wherein the amount involved is a small one, we would not have had swiped cards or would not have used our net banking facility for the said expenses and instead preferred hard cash transaction. It's not that the digital awareness was not till then, it was, but the digital awareness was

not reached to all, rather not all were made to utilize the digital methods of settlements be it for a small amount or for a big one. During the pandemic times, as we tried to reduce human touch and were following norms and rules of social distancing, it made us realize new ways and methods of the monetary transactions which can be followed and made use of rather than the traditional hard cash ways. Like earlier for petty expenses, payment used to be done by hard cash way, is now, during the covid times, is being done through alternative ways like Paytm, GooglePay. COVID-19 has accelerated the need for digitalization not only in the insurance industry but overall in the economy. The year 2020 was a tough for the insurance industry but it also helped in reinventing itself like never before.

The digital journey of the customer of the Insurance industry, in real terms, began in the year 2020. Customers were willing to use the alternative modes of transaction instead of the traditional ones. The first and foremost would be using the online facility for making the premium payments. Initially premium was deposited by cheque mode as it was the most convenient one. Also by depositing it personally would give the customer an assurance that the cheque has been handed over to the organization and that he has also maintained

with him an acknowledged copy, this acknowledged copy acts as a proof for customers, a documentary evidence, for any unforeseen event in near future. This has changed to a huge extent during the covid times. Customers were willing to use the online facility of banking for making any such payments. They did opt for RTGS, NEFT and ECS facility without going to the bank branch. They opted for internet banking, mobile banking solutions, debit card and credit card payments instead of hard cash. To reduce face to face interactions and to maintain social distancing, doorstep banking services were also made available for senior citizens. It could also be noted that apart from the mentioned methods, various other options like G-pay (Google Pay), BHIM, IMPS and various UPI payments methods were also utilized.

UPI is a Unified Payments Interface; it is a real time payment system that allows sending or requesting money from one bank account to another. Any UPI client application may be used and multiple bank accounts may be linked to single application. Initially, people, especially senior citizens, were hesitant to use the digital methods of payments fearing the frauds and scams happening in the digital world. But with no other option left, everybody had to choose the new and innovative methods of payments. Insurance customer is now feeling at ease to

make the transaction online or via any UPI modes as it instant and it is done within a minimum time frame. It also gave an instant record in the bank account assuring that the payments has been successfully processed which acts as a evidence for any unexpected events. This saved the precious time and energy of the customers and made them stay safe by not venturing out. Customers were ready to learn the new technologies and were also willing in using them. Paying by check is dating out fast and the average citizen today is more comfortable in digitally transferring funds by using alternative channels of banking solutions. An increasing number of urban users now expect their insurers to offer simple, transparent and flexible online payment solutions.

As per the Mint Newspaper dated 17th December 2020, Phone-Pe, one of the leading digital payments platforms in India, processed over 11 million insurance policy premium payments in duration of one year. It witnessed strong and active participation from tier-2 and tier-3 cities with 80% of the premiums being paid by customers residing in these markets. Policyholders could also download the payment receipts of the premiums instantly from Phone-Pe app. This has been one of the reasons that Phone-Pe has seen high premium payment volumes since its launch. Phone-Pe also

saw a massive spike in premium payments during the lockdown as users chose not only to pay premiums for their own policies, but also for their families and friends.

Another major alteration occurred during the Covid times was the way the communication was being done between the customer and the organization. The traditional methods were making a call to the office for the any correspondence. These calls used to have certain limitations of time i.e call would be answered only during the office hours, only on week-days, not on public holidays. The same rules applied when the customer would have had to visit the office. There were issues in these traditional methods. There were not many who were comfortable with alternate method of correspondence or rather digital way of correspondence. But during the covid times customer did choose the digital method of communication. They opted for Email correspondence, be it by using their own email address or of their kith and kin's email address. They also opted for the SMS mode of communication. They opted for the mobile applications created by the companies. To some extent, customer did opt for alternative channel of communication i.e social chat application i.e Whatsapp. Customer used these alternative channels which made them digital friendly. There were chat-bots

made available on the company's website for resolving the issues of the customer. These digital modes communication did not put them under any time limitations nor under any restrictions. They would drop their Email, Messages and Chats digitally to the companies or the representatives of the companies during any time of the day or rather night. The insurance companies did their best to resolve the issues occurred during covid times within a minimum possible time. The resolution speed of the issues made the customer realized the benefits of the digital modes of communication. This digital awareness made the customers realized that it is a time saving approach with efficient and effective results. It made them realize that they can approach any authority via Email and they need not have to track the concerned person which was being done during the office infrastructure times for resolving any of the issues.

The time spent on social media during the lockdown was more, as people connected with each other digitally. Many have approached customers proactively to connect via digital channels and avoid physical contact at branches or other offices. Buying of an insurance policy would require submission of the proposal form in hard copy and then the policy would be underwritten. During the covid times, the required formalities were

done on email correspondence. Earlier policy would be underwritten in office and would be delivered to the customer address, but during the covid times, policies were made available to the customer in digital format. Insurance companies started providing digital services to their customers, ranging from providing them with information on policies to allowing them to pay premiums via digital payment methods. Also customers were given an option to renew the policy by visiting the portal of the company. All the required details for renewing were provided to the customers on email of via SMS. The pandemic has led to increased adoption of digital platforms by individuals and many were purchasing policies online. The scenario was like making an online payment and intimating the company for the same, then on receipt of the premium, policy would be underwritten and would be delivered to the customer in minimum time frame. Customers were also provided with an option of renewing the policy through the company's portal. It could be noted that when the customer renews the policy on the portal of the concerned company, the policy is made available to them at the instant and without requiring the company to deliver the hard copy to them. These particular were also available prior to Covid 19 but were thoroughly utilized only during the

covid period. The COVID-19 crisis has significantly enabled consumers to adopt digital methods of transactions. Social distancing has resulted in more people adopting digital services, even if they were reluctant to do so earlier.

The other aspect of the customer digital journey was in claims processing. Earlier customer or agent had to visit the office for any claims work. Be it for submission of claims or for fulfilling any requirements of the claims process. It involved strenuous work on the part of the customer. In covid times there were many changes in the claims segment, like for eg, if it is a motor claim, in earlier times customer would have to take their vehicle to the nearest affiliated repair centre or they would have to contact the insurance company for initiating the said process, Claim surveying was impacted by the lockdown as surveyors were not be able to go out to survey vehicular damage. In these COVID times, what was required by them to do was, upload the video and the photographs of the damaged vehicle on the application created by the company and let company do the rest of the work on its part. It didn't require the customer to contact the company for any intimation. Though it was a lockdown and many were restricted on usage of the vehicles for other than essential service purpose, there was less number of claims in the

said segment. Dedicated support was provided via call centres to handle queries specific to COVID-19. Talking about the claims for health department, customers were advised to provide the soft copies of the claim's papers. Now to get the soft copy it meant either scanning it or requesting the papers in soft copy format from hospital itself. Though it was not possible to get the papers in soft copy format from the hospital, the only alternative left was to scan these papers. Well again to scan these papers required scanners or by visiting the scan shop. To arrive at a solution for this, various scanning application were created by various companies to make scanning an easy process. What was required was a smart phone, the particular scanning application along with internet facility. This new ways of digitizing the papers were simple and didn't require many efforts on the part of customer. It saved their time and money of handling over the papers to the organization. Procedures in health insurance were digitized, which otherwise were quite traditional. As the insurance sector continues settling claims despite the lockdown, servicing and constant customer communication posed various challenges. The old operating structure were rearranged and the sector pushed for a digital approach to stay in constant touch with customers and to serve them in difficult times and to make sure

that they can depend on insurers for financial protection.

Right from buying a policy to underwriting process and the claims settlement, everything is done digitally. Customers were also taking up self-help services through websites for changes to be done in the policy, and submission of claim intimations and documents, among others. Such was impact of being digital, which not only saved expenditure of the both the customer and the organization but also made us realize various innovative methods of doing the primary work of the company digitally. Most insurers tightened their expenditures and analysed at all options to reduce costs. An online website saves on the commission of the organization and balances that money into reducing the premium amount. This would in-turn benefits the customers. For insurers, digitization helps in expanding its footprint and leveraging low-cost digital distribution channels for sales and service, which eventually deepens the market penetration. As per the Economic Times Newspaper dated 27th April 2021, it could be noted that as per the data from Insurance Regulatory and Development Authority (IRDA), the performance of private life insurance companies outperformed the Life Insurance Company during the pandemic. The new business premium of private

companies grew by 16.29% as compared to the previous financial year and that of LIC grew by 3.48%. Digital push was one of the main reasons for the better performance by the private companies. To have an efficient and competent use of the digital payments methods, certain developments are implemented by the Life Insurance Corporation of India in the current financial years. As per the Economic Times Newspaper dated 19th April, 2021, LIC has appointed Paytm to facilitate its digital payments. The new contract requires a smoother payment process, wider variety of payment options and adding more players (banks, wallets, etc) in payment channels. LIC has seen a surge in digital payments after the pandemic. The corporation does Rs 60,000 crore of premium collections from the digital mode, which does not include the payment made through banks. It sees around 8 crore digital transactions which is also expected to rise in near future. LIC had sought an end-to-end solution not just for premium payments but for all type of collections including remittance of collections by insurance agents. The mandate also involves automation of some processes. LIC has modified its Information Technology Infrastructure by giving more space for digital transaction as it is a need of an hour.

Covid-19 has helped to fast-tracked

digitization in the industry as well as rapid acceptance and adoption by customers. Covid-19 pandemic was also a wake-up call for the insurance industry. It posed several challenges on multiple fronts for the insurance players. The key learning was that we must be quick to adopt more technologies to take insurance to the corners of the country. Companies started to recognize that the faster they move to automation the more they see a transformative effect on their business. Insurers who have adopted the digital method of instant payments have significantly reduced on labour and time of manual processing. Being able to just pay a claim out into a customer's account is much easier and cost-effective. A majority of insurers were focusing on cyber security controls due to the rise in digital operations and testing remote working. Those industries which are not immune to COVID-19 as it impacts the way they do business will certainly push them forward towards digitalization, rather sooner than later. One of the e.g. that there is need for a change in the way businesses were done was an increase in 3D printing because of delays across the supply chain due to the pandemic, this an innovation, born out of necessity that could have a long-lasting impact.

In years to come, we will look back at 2020 as the moment that changed everything. Nowhere else has unprecedented and unforeseen

growth has occurred as in the digital and e-commerce sectors, which have boomed amid the COVID-19 crisis.

Creativity to tap into the new mind-set as well as the need to expand the trade will bring about new modes of doing the business. The National Payments Corporation of India (NPCI) has been urging Indians to use more digital payment methods, so that people do not step out even to go to the ATM, reduce social contact and curb the spread of COVID-19. The currents of technology have touched every other industry or rather human lives on a whole. For those insurers ready to snatch the moment, digitalization offers an enormous opportunity. The companies that stand to benefit the most are those who are eager to explore the facets of digital payment to reorganize all their operations, from underwriting to customer service and claims management. The impact on both revenues and costs can be huge, enough to gain an edge by becoming more effective and efficient.

COVID-19 crisis has changed the way business operations are going to be conducted. The crisis has emphasised on the importance of businesses being future-ready so that they can continue to be functional without any interruption even during complete lockdowns, thus minimising the dependencies

on physical infrastructure. As insurance sector offer non-tangible products and services, it has an advantage of conducting their business of underwriting and claim settlement virtually with minimum or no physical infrastructure, except for service delivery at hospitals or garages. This will reduce the administrative costs towards building and maintaining physical infrastructure like offices. A complete switch to digital operations via robust IT platforms should be made accessible to all stakeholders. One of the important aspects of insurance claims processing is the handling of paper, paperwork in insurance business related to underwriting and claim processing should be replaced with complete digitisation, with all processing methods with authentication available through the internet. This will enable us in preventing delays in physical paper transmission from the customer to the intermediary and to the insurance company; it will help in resolving issues of storage and retrieval of data, improves the transparency of actions taken at the time of underwriting and claim settlement process. 24x7 servicing should be made available by designated employees through the comfort of their homes on internet and web application. This will allow for the seamless exchange of information between the client, intermediary, insurance companies

and various departments within insurance companies Remote assistance, chat-bots, digital usage of image and voice for underwriting and identification of sales and post-sales services are expected to prosper. With empowering guidance by the regulator and innovative mechanisms such as sandbox and customer campaigns, constant communication shall not be a hindrance anymore. Growth of digital payments needs to be supported by robust and scalable infrastructure, strong regulations and participation of diverse players. Developing and implementing tighter cyber and information security guidelines to make the payment ecosystem more secure will help in ensuring that users are able to trust digital payment modes.

According to PwC's 23rd Annual Global CEO Survey, 42 percent of

insurance CEOs are prioritizing intelligent automation (including data and analytics capabilities, as well as robotic process automation) over the next 12 months. The insurance community needs to consider the on-going crisis as an opportunity to get closer to and be relevant for its customers. Reservations about digitisation are likely to subside once insurers adopt digitisation on a larger scale. However, adoption of and engagement with digital tools will need active effort, or else they will become less effective and productivity will suffer in the short term and in the medium term. Use of behavioural economic tools and strategies will help insurers in the further adoption of digital methods. The main challenge will be to approach human processes through technology so that the trust

on both consultative processes and transparent information for buyers is maintained. The focus on trust building and smooth transactions will be of supreme importance. What started out as a forced evolution may actually become the driving force in the insurance revolution. While COVID-19 continues to affect the insurance distribution globally, the insurance providers are diving deep to prepare robust strategies to withstand the short and long-term implications of this pandemic, which shows no signs of fading yet. Thus, in the future, all participants in the digital payment ecosystem be it regulators, payment system operators, financial institutions, banks, Fin-Techs and service providers will be required to collaborate amongst themselves to sustain the growth locally and globally. **TJ**

### Sources Referred

- www.irda.sorg
- www.ibef.org
- www.livemint.com
- economictimes.indiatimes.com
- PwC's 23rd Annual Global CEO Survey
- The India Payments Handbook 2020-2025
- Blog on Digitalization of Payments in The Insurance Sector – What It Means for You
- www.who.int
- Statista Research Department, Mar 2, 2021

**Merit Winner**

**Technical Paper Essay Competition (Life)**

# Life Is a Marathon Race – Whole Life Plans Stay Till the End of This Race

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## Abstract

Millennials, at 426 million, are emerging as a very large segment of Indian life insurance market. Insurers need to understand the real financial needs of Millennials, to help them navigate through new uncertainties of life. The millennials have some distinct characteristics. They spend a lot on apparel, exotic food, foreign travels and sophisticated electronic gadgets. They spend very little to meet future financial goals. They venture into new areas of activities even by leaving comfortable jobs. All this makes the millennials vulnerable to many financial risks.

Term insurance, as the name suggests, is a short term plan for those who are young but have a lot of liabilities to take care of. But, it does not serve any other purpose. Whole life plans, though much more expensive than term plans, make money available under multiple contingencies in later part of life. The millennials earn well these days and should be able to afford whole life plans after a few years of commencement of their career.

Those who think Term plans are better than whole life plans, implicitly suggest the millennials to follow the principle of "buy the

term and invest the difference". They advise the millennials to invest heavily on riskier asset classes like equities. The equities do not necessarily fetch high returns in the long run as long term return can not be expected to be more than 9 to 10 percent. The return under whole life policies is quite decent at around 6.5 percent. On top of it, they cover life risk of the policyholder upto the age of 100 years. Term plans can not address the liquidity needs of the millennials at the later life stages. Due to expectation of longevity at birth, poised to touch 80 by 2050, a millennia's post-retirement life can be as long as the active working life.

The millennials will pass through various uncertainties of life. Economic recessions, pandemics, climate changes etc will make the future life very uncertain for the millennials. Therefore, they should not invite further risks in their lives by heavily purchasing equities or equity rich mutual funds. They may invest in such risky assets to a limited extent, though. But they must purchase Whole Life policies, to reduce the overall volatility of the returns under their portfolios.

The millennials have to live a very long life. Living too long can be risky proposition for those who do not make financial provisions for old ages. So, in their own interest, the millennials should purchase Whole Life plans as these plans will be more useful when the earning capacity will diminish considerably.

Moreover, this plan will enable the millennials to leave a sizable legacy for the use of those who may require it for their sustenance, in the absence of millennials.

### Keywords

Millennials, Whole Life Insurance, Term Insurance, Mortality, Mutual Fund, Equity, Investopedia, Deloitte.

## I. Purpose of This Technical Paper

### Millennials are powerful forces in the economy

Life is full of aspirations and myriad career opportunities for the millennials today. The millennials are now in the age group of twenty five to forty and life has a lot to offer to them. India is home to 426 Million millennials1. This is much greater than the populations of most developed countries including US. Together with Gen Z, the millennials are fuelling India's consumption growth which in turn is keeping India's growth story alive.

### Millennials face new uncertainties in life

But the lives of millennials are full of new uncertainties. As they have a habit of venturing into unchartered waters, they invite more risks than ever before. The question is, are they taking necessary measures to ensure that enough financial resources are available to them in changing circumstances? To take on diverse challenges of life, millennials

do not just need right attitude and right skill-set, they also have to take prudent financial decisions. Unfortunately, the millennials, in most cases, are found to be rather casual while handling personal finances. They are found to be grossly underinsured in terms of life insurance while the fact is, life insurance world over is considered as the cornerstone of any sound financial plan. What is even more disturbing is that many millennials consider Term insurance as the only form of life insurance that deserves their attention while they know little about the merits of other life products.

### Many millennials are committed to the principle, "buy term and invest the rest"

Many millennials endorse the narrative built up by some experts in the financial market which says that Term Insurance takes care of all life insurance needs and that the millennials should focus more on investing in assets that promise to fetch high returns. The reality is, returns under the popular asset classes mobilising small savings are steadily going south. Equity and equity related funds claim that they bring high returns, though. So, our debate essentially boils down to whether the millennials should invest according to the principle, "buy the term and invest the rest" or they should start putting sufficient money in Whole life plans as well.

**Indian Millennials are not yet aware of the merit of all Life insurance products**

When we are debating on whether Term insurance or Whole Life insurance is the right plan for millennials, people around the world are buying Whole Life products in larger numbers. In India, however, Whole Life plans are not much popular currently. The plans which are available under the name of "Whole Life" insurance are hybrid types, with the elements of annuity or health insurance built into these. Perhaps, many insurers are not too sure whether a pure Whole Life policy will find favour in the market. Already, campaigns like "Mutual Fund Sahi Hai" have become quite popular among a section of the Millennials. Most of the DMAT accounts being opened these days are by millennials only. It appears that the millennials have started believing that they should buy Term insurance and then put the remaining investable money into assets that can earn high returns. The campaign launched by the life insurers, "Sabse Pehle Life Insurance" seems to be a half-hearted attempt in increasing insurance awareness among the insurable population of the country.

**Life insurance remains a necessity as long as one lives**

Term insurance is a good plan. But, as the name suggests, this is for a limited period only, say for 20 years, 25 years or at best 30 years. Whole life insurance, on the other hand, is a permanent life insurance which lasts for lifetime. As the average longevity of the millennials can be anything between 80 and 90 years, it does not make much sense if the insurance cover ends at the age of 50 or even 55 years. For many successful Millennials, life may start at 50. There may indeed be need for life insurance and cash values after one turns 60, 70 or even 80. Life is not a 100 metres sprint. It is won by those who are left with resources to run the last laps well.

## II. A Look at the Term and Whole Life Products on Offer Today

Millennials have to manage two types of risks

Essentially, all millennials have to manage two distinct types of risks.

One is dying prematurely while at the prime of their earning life. The other one is living too long, requiring a good amount of money even when earning capacity is depleted considerably. The question is how to handle both types of risks. Let us consider some current facts on the longevity of Indians. Average longevity of an Indian is 70.80 today (Source: The Wire)2. It was just 33.94 in 1950. If we go by the projections of UN, life expectancy at birth for Indians will go beyond 80 years after the year 2050. Most of the Indian Millennials will be alive on 2050, for sure. The question is, are they bracing themselves to manage the risk of living upto 80, 90 or even beyond? Can the institution of life insurance be of use to them in making their future life comfortable? Before we seek answers to these questions, let us quickly see what Term Assurance and Whole Life plans are available in the market now.

**Term Insurance products**

This is a pure protection plan. The millennials can get this policy for high sum assured at a low premium. On maturity, either nothing is payable or premiums paid are refunded. It is not a big deal because this payment is factored in, while determining the premium. If one wishes to buy a new term plan after maturity, premiums will either be very high or the person may not be found suitable for term plan at that age. Let us see some of the prominent Term Assurance plans launched by insurers in the market:

**Table-1: Features of some Popular Term Assurance Policies**

| Name of the Insurer | Name of the Product | Benefits under the policy in brief |
|---|---|---|
| **LIC of India** | Jeevan Amar | • Offline term assurance plan with minimum sum assured Rs. 25 lac<br>• One can opt for either Level Sum Assured or Increasing Sum Assured<br>• Coverage available upto the age of 80 years<br>• No maturity benefit available |
| **HDFC Life** | Click 2 Protect | • Available with 3 options<br>• Under Life & Critical Illness (CI) option, facility of auto balancing of death and CI cover as age increases<br>• Under Life Protect Option, premiums paid are refunded on maturity<br>• Under Income Plus option, guaranteed income of 0.1% of sum assured available from age 60 onwards |
| **SBI Life** | Smart Shield | • Available under both Level sum assured and Increasing Sum Assured options<br>• Min. Sum Assured Rs. 25 lac<br>• Coverage available upto the age of 80 years<br>• Rewards for maintaining healthy lifestyle |
| **ICICI Prudential** | i-Protect Smart | • There are three options to choose from<br>• Under life option, sum assured is payable only in the event of death or terminal illness<br>• Under Life Plus Option, an accidental benefit is also paid in case of death by accident<br>• Under Life and Health option, the life assured is also covered by Critical Illness benefits which cover 34 Critical illnesses. When CI claim is paid, death benefit is reduced. |
| **Max Life** | Online Term Plus | • Available at a discount of 10% of premium<br>• Available with or without return of premiums on maturity<br>• Options such as life cover plus monthly income and life cover with increasing monthly income are also available<br>• Cover is available for the age upto 85 years |

**Pure Term plans are not in demand**

In the above table, we find that two types of term plans are being marketed now. One is pure term assurance plan (e.g. LIC's Jeevan Amar) where money is payable only on death during the term of the policy. The other plans are a mix of Term insurance and health insurance or annuity or even whole life insurance. Firstly, that makes the term plans expensive. Secondly, it clearly means that there is not much scope to sell plain vanilla type term assurance plans that financial planners advise millennials to buy. Since, pure term plans are something Millennials are not too comfortable, the insurers have no alternative other than developing combo type of Term plans. Although they show that their term plans cover the risk upto 80 or 85 years of age of the policyholders, they hardly say that premiums under such long term products are very expensive. Some insurers are adding an annuity element in the term plan but the amount of annuity is too small to be of much use. Some are adding whole life element into the term plans but the most useful benefits of Whole Life plans are missing in such plans. Some are adding CI elements into term plans but reducing the risk cover when CI claims are paid.

**Term insurance is low cost only for the very young**

Term assurance products are competitively priced for say a non-smoker individual aged 25 years taking a term plan for a term of 20 or 25 years. If he attempts to buy a plan that covers his life upto an age of 85 years, the premium will be about 2.5 times that he pays for a plan for 20/25 years. Term assurance is completely different from endowment or whole life plans. Unlike endowment/whole life plans, premium under term plans increase sharply with age since mortality at advanced ages is a few times more than at lower ages. This plan is ideal for youths (say, below 30 years of age) who have quite a few dependents to be looked after, while their incomes are not enough to buy permanent type of life insurance. Term plans can then give much needed protection to the entire family in case something unfortunate happens to the sole breadwinner in the near term.

**Whole Life Assurance Products**

This type of insurance is for the individuals who need life insurance protection throughout their lifetime. Here, money is available under all contingencies - maturity (say at 100 years of age or even earlier), death, emergencies etc. These products are generally available with profits and that means cash values under these plans keep on increasing. Premiums are much higher (five to ten times) than the Term Insurance but Whole life plan is something which millennials should be able to afford, given the rate of pay rise they are experiencing. Let us look at the features of some of the Whole Life products available in the market.

**Table-2: Features of some Whole Life Insurance Policies**

| Name of the Insurer | Name of the Product | Benefits under the policy in brief |
|---|---|---|
| **LIC of India** | Jeevan Umang | • Insurance cover upto 100 years of age<br>• 8% of sum assured payable as survival benefit each year after the end of premium paying term.<br>• On the date of maturity, the policyholder gets the sum assured along with vested bonuses and final additional bonus.<br>• Loan/Surrender facility available |
| **HDFC Life** | Sampoorn Samridhhi Plus | • Limited premium whole life plan<br>• Risk cover available upto 100 years<br>• Guaranteed additions for first five years and participation in profits thereafter<br>• Loan/Surrender facility available. |
| **SBI Life** | Shubh Nivesh | • This policy can be taken upto 50 years of age<br>• Age at maturity is fixed at 100 years<br>• Policy term is 100- entry age; so policy participates in bonus distribution for a very long time<br>• Loan/Surrender facility available |
| **IDBI Federal** | Whole Life Savings Insurance | • Coverage upto 100 years<br>• Maximum premium paying term 30 years<br>• Guaranteed additions for first five years and reversionary bonus thereafter<br>• A maturity payment along with bonus is paid after premium paying term. Another sum assured is paid on the policyholder's attaining 100 years. |
| **Max Life** | Whole Life Super | • This policy can be taken upto 60 years of age<br>• Age at maturity is fixed at 100 years<br>• Policyholder is entitled to Terminal Illness benefits.<br>• Loan/Surrender facility available. |

## Whole Life plans make money available in multiple contingencies

From the above table, it is clear that under Whole Life plans, money is made available in various contingencies. In that sense, these are hybrid type Whole life plans, too. Sometimes, regular flow of income is available (e.g. Jeevan Umang). Sometimes, lump-sum money is available immediately after the premium paying term  In all policies, a lump sum is available on the life assured attaining the age of 100 or a heavy sum is available to the

dependants of the life assured if he passes away before reaching 100. Since, policy continues to participate in profit sharing, the policyholder/claimant gets a good tax-free sum towards the end. But, most of these hybrid Whole Life policies reduces the flexibility of users as they can not control the way cash values can be utilised. But, still these are more useful products than Term insurance as money is available at various life stages and not just on death.

Negligible numbers of people die prematurely: An Illustration

If 100 people aged 25 are given insurance at ordinary rates, only 4.19 people are expected to die before 50 and 6.84 before 55. That means, if people are encouraged to buy only term insurance, only 7 people are likely to be benefitted, provided they keep their policies in force for 30 years. This result can easily be found out if one does the calculations on the basis of 2012-14 Mortality Table3 on Indian assured lives, available with the Institute of Actuaries of India. Table-3 shows the calculated numbers.

**Table-3: Table Showing Expected No. of Deaths at various ages**

| Age of the Policyholder | Mortality Factor | Expected No. of deaths out of 100 insured lives within 1 year | Age of the Policyholder | Mortality Factor | Expected No. of deaths out of 100 insured lives within 1 year |
|---|---|---|---|---|---|
| 25 | 0.000931 | 0.0931 | 40 | 0.00168 | 0.165201 |
| 26 | 0.000931 | 0.093013 | 41 | 0.001815 | 0.178176 |
| 27 | 0.000934 | 0.093226 | 42 | 0.001969 | 0.192943 |
| 28 | 0.000942 | 0.093937 | 43 | 0.002144 | 0.209678 |
| 29 | 0.000956 | 0.095243 | 44 | 0.002345 | 0.228844 |
| 30 | 0.000977 | 0.097242 | 45 | 0.002579 | 0.251089 |
| 31 | 0.001005 | 0.099931 | 46 | 0.002851 | 0.276855 |
| 32 | 0.001042 | 0.103506 | 47 | 0.003168 | 0.306761 |
| 33 | 0.001086 | 0.107765 | 48 | 0.003536 | 0.34131 |
| 34 | 0.00114 | 0.113 | 49 | 0.003958 | 0.380692 |
| 35 | 0.001202 | 0.11901 | 50 | 0.004436 | 0.424979 |
| 36 | 0.001275 | 0.126086 | 51 | 0.004969 | 0.47393 |
| 37 | 0.001358 | 0.134123 | 52 | 0.00555 | 0.526714 |
| 38 | 0.001453 | 0.143311 | 53 | 0.006174 | 0.582682 |
| 39 | 0.00156 | 0.153641 | 54 | 0.006831 | 0.640707 |

Total number of deaths upto an age is found by adding the number of deaths at successive years upto that age. As most of Millennials will still have an active career ahead at 55, they will be in need of life insurance

cover beyond 55. Whole Life plan is surely a plan which the millennials will require even after the age 55. The Whole Life plan is five to ten times costlier than a Term plan. But, it is also a fact that if a millennial

aged 25 earns X, he will earn 2X before he is 30 and possibly 6X or even 8X when he reaches 40. That is the time when they can surely afford purchasing a Whole Life Plan (even without surrendering the existing

Term plan). For the millennials who have an earning spouse, the Whole Life plan can be purchased much earlier in life.

### Whole Life plans offer guarantee, flexibility and liquidity

Whole Life insurance has always been popular in mature life insurance markets. In US, for example, 33% of the life insurance products sold is whole life type. To be precise, people in developed markets prefer more of permanent insurance. Under permanent insurance, comes three types of policies – Whole Life policies, Universal Life policies and Indexed Universal life insurance. What makes such products so attractive to a large number of insurable people is some guarantee in returns (albeit not too high) under these policies, enough flexibility and the ease with which a tax efficient money is passed on to the next generation.

## III. Why Term Insurance Is Popular Among a Good Number of Millennials

### One crore of risk cover is irresistible

Millennials look for buying term insurance for two reasons. First, they get thrilled by the fact than a one crore policy is available at a measly annual premium of just ten thousand rupees per annum or even less. Second, this product is very easy to understand and there is full transparency in product features.

Most term plans are available online and can be purchased with the help of a few mouse clicks. Furthermore, special discount is available if the whole buying process takes place without the intervention of intermediaries.

### Millennials have myopic view on Life Insurance

As has already been said, one powerful narrative, "Buy the Term, Invest the rest" has caught the imagination of our millennials. This narrative is peddled everyday through many business magazines, business channels on television and also on social media. Many millennials have started believing that only term insurance is relevant in their lives and other insurance products help only the insurers and their intermediaries to make money. There is no strong and organised counter-narrative to temper their myopic views on life insurance.

## IV. How Millennials Spend, Behave and Think About the Future

### Millennials like to spend money on Experiences

Millennials are slowly driven to a lifestyle that is totally different from that of the previous generations. Economy is already moving according to the changing lifestyles of the millennials. Spending habits of millennials are significantly impacting the nature of economic activities everywhere, India of course included. According to

a recent report by India Infoline Securities Ltd (IIFL)4, 47% of the workforce now pertains to millennials and that makes it the largest demographic segment of the country. While Gen X (born between 1964 and 1982) spent money more on assets (physical and financial), Gen Y (and also Gen Z) spend primarily on experiences.

### Millennials live in the moment

This generation prefers to "live in the moment" and they do that, even at the expense of liquidating existing investments. A vast majority of DMAT accounts are being opened by millennials only. But, that does not mean, they keep their money invested for any considerable time. Since they "live in the moment only", they lack patience and motivation to see their investments growing into huge wealth in course of time. In most cases, they go for short term gains and that ultimately results in wealth destruction. They are not really in the habit of investing money for generating wealth over a long period of time but to use the short term profits made from these investments to finance short term spends like buying a car, spending on expensive vacations, buying the latest electronic gadgets, going for expensive plastic surgeries to get a facelift that their social media friends will appreciate.

### Millennials have bleak expectations about future

The millennials have bleak expectations about the future of

the economy and that is why even five years is too long a time for them. More than half the millennials think that their personal financial condition may worsen in near future. About 45% millennials said that they had little faith in political leadership. So, in their own interest, they should consider buying something that can surely be of some use to them whatever the macroeconomic situation of the country is. Whole life insurance is one such product they have to seriously think of buying.

### Millennials will require passive incomes

Uncertainties will affect Millennials in other ways, too. There will be less of job security. Covid kind of situation may slash their incomes by as much as 50% while their expenses are not always possible to be curtailed. Various climate change events will take them by surprise and there can be permanent loss of properties and business opportunities. The millennials will realise that they will need some source of passive income and emergency fund till the last day of their life. They need to build some financial assets which can stand them in good stead when regular income. Whole life insurance is such a product which can remain a ready source of funds.

## Why Whole Life Plan Is Most Relevant For the Millennials

### Millennials have to fend for themselves

We have already seen that only about 7% of young millennials

buying term assurance today will probably die before they are 55. With the advancement of medical science, the proportion is sharply going down further. The 93% of millennials will survive the term and most of them will live beyond 80 or even 90 years. They will need enough money to live for another 30 years. How will that be possible? The age of defined benefit pensions have long been over. Terminal benefits that the millennials will receive from employers will be inadequate. A good number of millennials will prefer to be self-employed. They will build start-ups and many of them may even fail. So, millennials have to invest their money very prudently during working life. They can not invest a large proportion of their money in risky assets. Whole life insurance may appear to be a little bit costly but will be with the millennials till the very end.

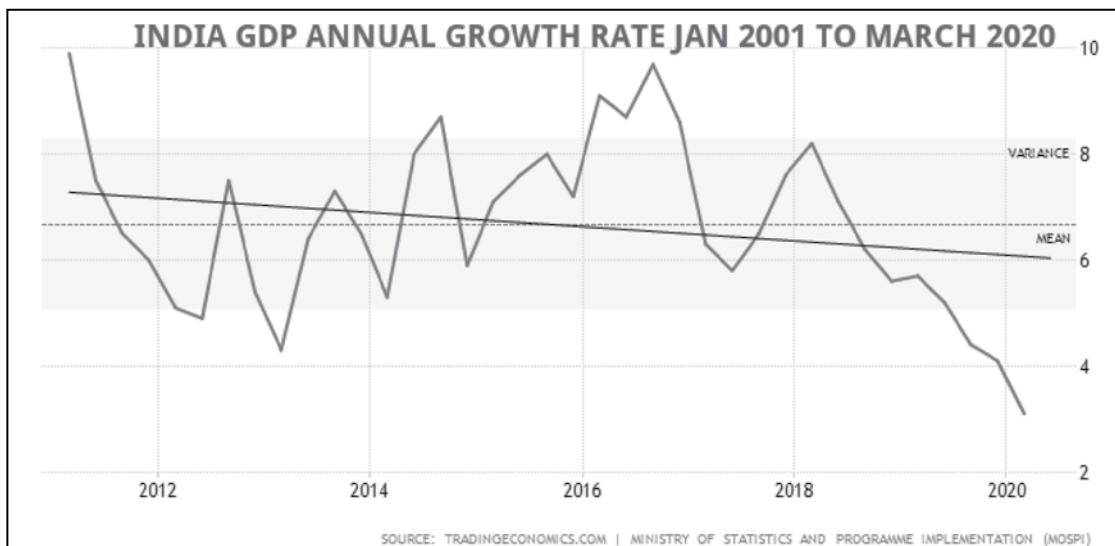### Indian Millennials can afford Whole Life plans

It is a historical fact that economic growth leads to higher purchase of whole life insurance products. India is an emerging economy and income of the educated and professionally qualified millennials has been rising steadily for last two decades. Higher disposable income allows people to go for permanent insurance cover.

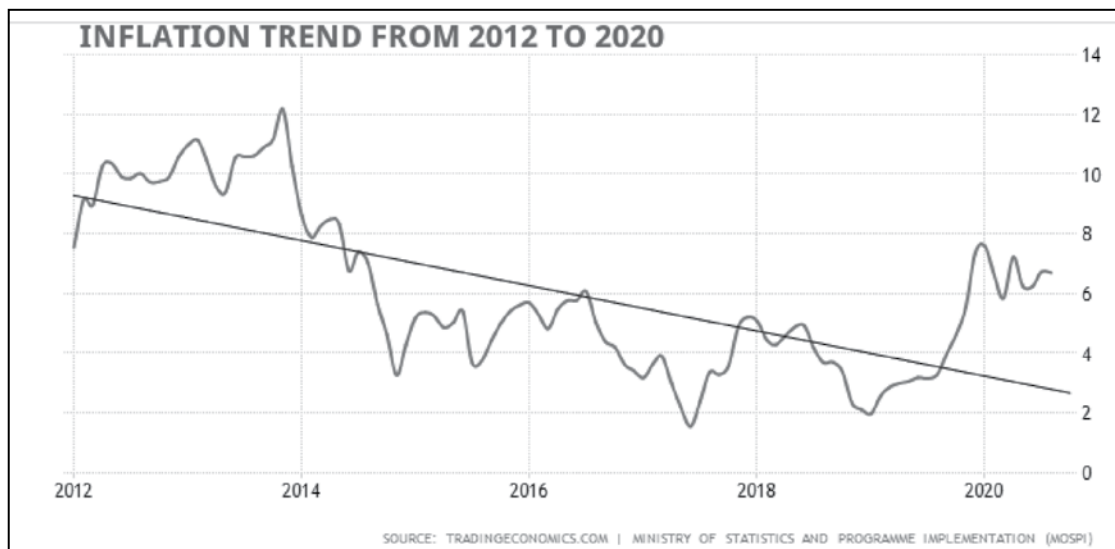### Millennials are losing money to over ambitious investment programs

According to Affluent Millennial Survey made by Investopedia, 46% millennials said that their ambitious investment programs have led them nowhere. 39% millennials feel that they have to work beyond retirement age to make adequate saving for their own future. Although the respondents are mostly the millennials of the developed world, there is no reason that our millennials will arrive at better investment decisions.

### Long term Equity Fund returns have not been too lucrative

Let us see how lucrative are the investments made in riskier assets like equities and mutual funds. Khandelwal has shown that long term return under equity diversified funds will hardly be more than the long term growth rate of GDP. In nominal terms, India's GDP grew by a CAGR of 12% in the last 8 years (including 6% of inflation rate). It can also be shown that in the long run, even stock markets tend to give the same return as the growth rate of GDP. However, one can get very high returns during short term fluctuations. But, the oft repeated narrative of "keep money invested in equity funds for a long term and prosper" may just mislead the Millennials. Chart-1 shows how India's growth of GDP has come in the last 8 years. The chart shows inflation adjusted growth rates.

**Chart-1: Growth rate of India's GDP in last 20 years**



INDIA GDP ANNUAL GROWTH RATE JAN 2001 TO MARCH 2020

SOURCE: TRADINGECONOMICS.COM | MINISTRY OF STATISTICS AND PROGRAMME IMPLEMENTATION (MOSPI)

**Debt funds have given even lower returns**

Khandelwal's report also mentions that Debt Funds of India have historically given a return equal to the rate of inflation and interest over a long term. That rate is found to be 6% in nominal terms. Chart-2 shows the changing rates of inflation for the period 2012-2020.

**Chart-2: Inflation Trends of India during last 8 years**



INFLATION TREND FROM 2012 TO 2020

SOURCE: TRADINGECONOMICS.COM | MINISTRY OF STATISTICS AND PROGRAMME IMPLEMENTATION (MOSPI)

Since these data have been culled from the website of the Ministry of Statistics and Programme Implementation, the veracity of these can not be questioned.

## The expected return from the Portfolio

Now, let is assume that the millennials keep 80% of investable surplus in Equities (X) and 20% in Debts (Y). Then the weighted average of the expected portfolio return (E) comes out to be as under:

E(X+Y) = 0.8 * 12% + 0.2 * 6% = 10.8%

If we assume that the millennials are less aggressive on equities as they approach the age of superannuation and invest 50% on Equities and 50% on Debts on an average over the total investment horizon, then the return comes out to be as under:

E(X+Y) = 0.5 * 12% + 0.5 * 6% = 9%

At 10% taxation, the actual returns can be around 9.7% and 8.1% respectively for the two scenarios. Definitely, the returns are more than the life insurance policies. But, it has to be kept in mind that these returns are available only if the investor survives the full term to keep the money invested. No insurance cover is available to protect this wealth generation plan.

## Some hard facts about equities

Let's talk about some hard facts about equity funds. Most equity mutual funds have given negative returns in last two years. In fact, equity as an asset class never gives linear returns. There can be some outstanding returns for a couple of years followed by a few more years

of high volatility. That is the nature of equities. Value schemes are good but they take long time to fetch high returns. Now, another narrative is that under SIP, there is the scope of cost averaging and the investor can always get positive returns. The real fact is that even under SIP, how much return an individual investor will get depends on when he enters the SIP investment plan and when he makes an exit. One can make good profit only if he enters in a bear phase and leaves the SIP in bull phase.

## Return under a Whole Life Plan (LIC)

Now, let us attempt to find out the returns under a Whole Life plan, to enable us to make a comparison of this asset with Equity rich assets. To illustrate the matter, let us assume that a Millennial had taken a Whole Life policy (LIC's Table-2) at the age

of 35 with a premium paying term of 45 years for a sum assured of Rs. 5 lac. Under this plan, premium was supposed to be paid for 35 years or life assured attaining the age of 80 years, whichever comes later. The premium comes out to be about Rs. 15,000 per annum for this instant case. Now, let us look at the bonus rates declared for the policy in the past:

## Whole Life plans give higher returns

It can be readily seen from Table-4 that the bonus rate under Whole Life insurance is much higher than the traditional endowment plans. While bonus rates under ordinary endowment type plans vary between Rs. 38 and Rs. 48, Bonus under Whole Life assurance is steady at Rs. 70. This is only to be expected. In Whole Life assurance policies, the money invested by the policyholder

**Table-4: Bonus rate declared for LIC's Whole Life Policy**

| Valuation Year | Reversionary Bonus Rate for Table-2 (per thousand Sum Assured) |
|---|---|
| 2018-19 | Rs. 70 |
| 2017-18 | Rs. 70 |
| 2016-17 | Rs. 70 |
| 2015-16 | Rs. 70 |
| 2014-15 | Rs. 70 |
| 2013-14 | Rs. 70 |
| 2012-13 | Rs. 70 |
| 2011-12 | Rs. 70 |
| 2010-11 | Rs. 70 |
| 2009-10 | Rs. 70 |
| 2008-09 | Rs. 70 |
| 1st September, 2016 | Special Diamond Jubilee Bonus |

Source: Intranet site of LIC

is kept invested for a much longer duration (45 years in our case). So, these policies contribute more to the generation of surpluses. Insurer is therefore able to reward the holders of Whole Life policies handsomely.

In addition to Simple Reversionary Bonus (also known as Vested Bonus), the Whole Life policyholders get very attractive Final Additional Bonus (FAB) as well. FAB is given as a further reward to long term policyholders. This depends on both the sum assured and duration of the policy. At age 80, policy duration is 45 years and the appropriate FAB rate is Rs.3550 per thousand. So, a person holding a Whole Life policy of Rs. 5 lac sum assured, FAB comes out to be 500 X Rs. 3550 = Rs. 17,75,000. That is the power of Whole Life insurance policy. In this case, FAB exceeds even vested bonuses. This happens when the policy is kept in force for a very long time. The FAB used in this illustration is as per FAB declared by LIC in 2010, 2011 and 2012.

For the Millennial taking the policy in 2010 and the policy being in force for 45 years, a Diamond Jubilee Bonus of Rs. 10 per thousand in addition to regular bonuses is also admissible. Now, let us see what amount will accumulate in the account of the Millennial when he reaches the age of 80. The calculation is shown below.

| Basic Sum Assured | Rs. 5,00,000 |
|---|---|
| Vested Bonus (for 45 years) | Rs. 15,75,000 |
| Final Additional Bonus | Rs. 17,75,000 |
| Diamond Jubilee Bonus | Rs. 5,000 |
| **Total Payable** | **Rs. 38, 55,000** |

This is the sum that the life assured will get on attaining the age of 80. The policy can be surrendered anytime during the term of the policy. The policyholder can also take loan upto a sum of 90% of the surrender value.

**Internal Rate of Return under this Whole Life plan**

We need to understand that there are two components in Whole Life plans, protection and investment. A part of the premium goes towards protecting the millennial for a sum assured of Rs. 5 lac. The balance is invested in various securities under the provisions of Section 27A of Insurance Act, 1938. To calculate the return under investment portion, let us look at Table-4 below.

| Age of the Life Assured (1) | Mortality Factor corresponding to the age (2) | Premium payable by the Assured (3) | Portion of Premium going into Protection (4) = (2) X (3) | Portion of Premium going into Investment (5) = (3) − (4) |
|---|---|---|---|---|
| 35 | 0.001202 | 15000 | 18.03 | 14981.97 |
| 36 | 0.001275 | 15000 | 19.125 | 14980.875 |
| 37 | 0.001358 | 15000 | 20.37 | 14979.63 |
| 38 | 0.001453 | 15000 | 21.795 | 14978.205 |
| 39 | 0.001560 | 15000 | 23.4 | 14976.6 |
| 40 | 0.001680 | 15000 | 25.2 | 14974.8 |
| 41 | 0.001815 | 15000 | 27.225 | 14972.775 |
| 42 | 0.001969 | 15000 | 29.535 | 14970.465 |
| 43 | 0.002144 | 15000 | 32.16 | 14967.84 |
| 44 | 0.002345 | 15000 | 35.175 | 14964.825 |
| 45 | 0.002579 | 15000 | 38.685 | 14961.315 |
| 46 | 0.002851 | 15000 | 42.765 | 14957.235 |
| 47 | 0.003168 | 15000 | 47.52 | 14952.48 |
| 48 | 0.003536 | 15000 | 53.04 | 14946.96 |
| 49 | 0.003958 | 15000 | 59.37 | 14940.63 |
| 50 | 0.004436 | 15000 | 66.54 | 14933.46 |
| 51 | 0.004969 | 15000 | 74.535 | 14925.465 |
| 52 | 0.005550 | 15000 | 83.25 | 14916.75 |
| 53 | 0.006174 | 15000 | 92.61 | 14907.39 |

| 54 | 0.006831 | 15000 | 102.465 | 14897.535 |
| 55 | 0.007513 | 15000 | 112.695 | 14887.305 |
| 56 | 0.008212 | 15000 | 123.18 | 14876.82 |
| 57 | 0.008925 | 15000 | 133.875 | 14866.125 |
| 58 | 0.009651 | 15000 | 144.765 | 14855.235 |
| 59 | 0.010393 | 15000 | 155.895 | 14844.105 |
| 60 | 0.011162 | 15000 | 167.43 | 14832.57 |
| 61 | 0.011969 | 15000 | 179.535 | 14820.465 |
| 62 | 0.012831 | 15000 | 192.465 | 14807.535 |
| 63 | 0.013765 | 15000 | 206.475 | 14793.525 |
| 64 | 0.014792 | 15000 | 221.88 | 14778.12 |
| 65 | 0.015932 | 15000 | 238.98 | 14761.02 |
| 66 | 0.017206 | 15000 | 258.09 | 14741.91 |
| 67 | 0.018635 | 15000 | 279.525 | 14720.475 |
| 68 | 0.02024 | 15000 | 303.6 | 14696.4 |
| 69 | 0.02204 | 15000 | 330.6 | 14669.4 |
| 70 | 0.024058 | 15000 | 360.87 | 14639.13 |
| 71 | 0.026314 | 15000 | 394.71 | 14605.29 |
| 72 | 0.028832 | 15000 | 432.48 | 14567.52 |
| 73 | 0.031638 | 15000 | 474.57 | 14525.43 |
| 74 | 0.034757 | 15000 | 521.355 | 14478.645 |
| 75 | 0.038221 | 15000 | 573.315 | 14426.685 |
| 76 | 0.042061 | 15000 | 630.915 | 14369.085 |
| 77 | 0.046316 | 15000 | 694.74 | 14305.26 |
| 78 | 0.051024 | 15000 | 765.36 | 14234.64 |
| 79 | 0.056231 | 15000 | 843.465 | 14156.535 |

Table-5 shows what happens internally within the plan, when the policyholder keeps on paying the level premium every year. We find the amounts being utilised every year by the insurer towards protecting the life for a sum assured of Rs. 5 lac. This is calculated in column 4. After setting aside money towards protection, the balance is invested by the insurer. The amounts taken for investment are shown in column 5. On attaining age 80, the life assured is expected to receive a maturity claim amount of Rs. 38,55,000. We have assumed the rate of reversionary bonus constant at Rs. 70 per thousand. If the performance of the insurer improves (there is every chance now for that as investment norms are likely to be more flexible in future), the return will be much higher. The IRR in this case is estimated as 6.46%, if we do some financial mathematics in excel sheet. We have to keep in mind that the life assured not only gets a return of

6.46%, he has had always enjoyed a risk cover of Rs. 5 lac in the past 45 years. There is no product in the financial market which gives such dual benefits. While the rate of return is less than equity diversified funds, the policyholder can trade off the extra returns under riskier assets for a precious risk cover that is available upto the age of 80 along with vested bonuses.

### Another illustration makes the comparison complete

There is an interesting illustration in Pallavi Verma's article in the Economic Times dated March 12, 2020. It compares investments made in asset classes fetching a return of 7% to investments made in a Whole Life Policy for a sum assured of Rs. 50 lac. In the first case, a person aged 40 years invests for 20 years in asset class bringing 7% annualised return. In the second case, a person aged 40 years invests money (premium) for 20 years and do not pay anything thereafter (it being a limited pay Whole Life plan). The proceeds of the policy is available when he passes away at the age of 90 years. The result is mentioned in the table below:

### A scenario under the above illustration

Some may still argue that a Whole Life Term plan providing coverage upto the age of 85 years can be better than Whole Life plan mentioned in the above illustration. The Policybazar App gives the premium rates of various lea dinginsurers who can insure a person aged 40 years upto his attaining the age of 85 years. The premium rates are found to be no

**Table-6 Effectiveness of Traditional Investment Assets vis-à-vis Whole Life Policy**

| Particulars about the Investor | Traditional Planning | Planning through Whole Life Policy |
|---|---|---|
| Annual Income | Rs. 30 Lac p.a. | Rs. 30 Lac p.a. |
| Legacy | Rs. 4 Cr | Rs. 4 Cr |
| Age | 40 | 40 |
| Investment Duration | 240 months | 240 months |
| Per Month Income | Rs. 2.5 Lac | Rs. 2.5 Lac |
| Per Month Investment | Rs. 80,000 | Rs. 16,733 |

less than Rs. 22,000 per annum. As there will be sharp increase in the premium rates of Term plans very soon, these premiums will reach at least Rs. 25,000. If the life assured survives upto the age of 85, he will get zero at the end of the term. Even if there be a Refund of Premium option, then the policyholder will get Rs. 11, 25,000. Had this money been invested in Whole Life plan, the total corpus would have been Rs.5.72 crore. Even if the millennial dies at the age of 70 (being the current expected longevity), the death benefit could be Rs. 1.97 crore. So, in no way, Term insurance scores over Whole Life plans.

## Insurers Have to Make Whole Life Insurance More Attractive

### No insurer sells Whole Life plans aggressively

It is true that the insurers do not market Whole Life plans too aggressively. Even a few months back, private insurers had been earning most of their premium incomes through Unit Linked Insurance Products (ULIPs) which had little insurance to offer as compared to the quantum of premium. LIC have always been selling conventional insurance but

they too, did not sell Whole Life in large numbers. The insurers can not avoid their responsibility to educate the millennials through workshops, symposiums and Webinars throughout the year and show them, with the help of illustrations as mentioned in the previous section, why they can not say no to this valuable asset.

### Suggested changes in product features

Certain interesting features can immediately be built in Whole Life plans. In the developed markets, some guaranteed rate of return is a common feature in such policies. We have guaranteed additions in some products, only for initial few years. When people get some guarantee (however small that may be) for the whole term, they become more interested in buying such products.

One more interesting feature can be added in whole life policies. The senior people who are not in a position to pay premiums regularly for some reasons beyond their control, should be given the option to use the cash values to pay a few premiums. This facility is available in almost all Whole Life plans of developed markets. This kind of flexibility can make Whole Life products more attractive.

Insurers can also make the plan attractive by making these products available online so that the benefits of lower administrative expenses can be passed on to the long term customers in the form of better returns (i.e. in the form of higher cash value accumulations). For Whole Life customers, insurers can change the distribution model from the age-old commission based push model to value-adding advice model. Of course, the people offering such advices have to know every details of the functioning of this plan.

Right now, most Whole Life products are hybrid types. They either offer "Maturity Value" after premium paying term along with bonus or start giving annuities at a pre-determined rate after premium paying term etc. All these "extra" benefits simply increase the premiums. When there are good endowment and annuity products, Whole Life plans should be allowed to give the customers more flexibility in using their cash values as and when they need them.

## Term Life vs. Whole Life: Other Considerations

### Term insurance has specific uses

If the coverage need has a definite end, like mortgage payments,

then Term life insurance is a good option. Among the Millennials, we have unskilled and semi-skilled migrant workers who are employed in unorganised sectors of the economy. For them, term insurance is really a must. For those who earn even less, Pradhan Mantri Jeevan Jyoti Bima Yojona which offers insurance cover of Rs. 2 lac at an annual premium of only Rs. 330 is the most ideal insurance plan. So, term assurance like PMJJBY can be of great use to the poorest of the poor. Among educated millennial too, low cost commercial term assurance can be the preferred insurance plan at the beginning of career when affordability to buy permanent life insurance is not there.

### Millennials may need insurance at advanced ages

An important characteristic of the millennials is that they are getting married late in life. Naturally, buying a low cost term insurance plan at the age of 25 does not make much sense to them when they marry at late thirties and will have of children depending on them even in the later part of their life. Whole Life plan ensures that the millennials remain cash rich always.

### Whole Life is a great liquid asset

Traditionally, people have a habit of leaving properties like land and houses for their progeny. But, these are illiquid assets and converting them into cash has always been a cumbersome process. When children are settled in overseas locations, it may not be possible or even desirable by them to come

and sell their parents' properties where they had been grown up in childhood. The proceeds under Whole Life plans can be easily distributed among the beneficiaries.

### Salary Replacement after retirement is falling everywhere

Proportion of salary replacement after retirement is going down in US and in all European countries. Even in France and Germany, known for their concern towards the well-being of senior citizens, the "Pension Salary Replacement" has plummeted to 67% and 53% respectively. Even healthcare spending on the part of the governments is coming down sharply. In Whole Life plans, millennials are discovering additional or alternative retirement funds. In developed markets, people in lower income segments are demanding savings related long term life insurance products.

### Life is much more valuable than "one crore" Term cover

Life is like a Marathon race. In this race, last laps are extremely important from financial planning point of view. When one is in a position to earn, meeting life's goals is easier. When one grows old, he has to depend on the fruits of the earlier investments. This is most applicable for the millennials as they have to live a very long life. Term insurance serves some important purposes in case of premature death. But there has to be some insurance that looks after the sudden liquidity needs at the old ages. That is why Whole Life insurance is so relevant to millennials. Life for millennials

will be thirty years of working life followed by thirty years of life spent in activities they are passionate about. The second innings may or may not bring huge monies. But, millennials will always follow their hearts. We have seen, as millennials grow in age, Term insurance lose its relevance as millennials make much more than that "one crore" from their professions. Whole Life policy, if taken for an adequate sum, ensures that the millennial never suffer financial difficulties and at the end, also leave a legacy for those who can make a living out of that. **TJ**

### References

1. https://www.outlookindia.com/outlookmoney/insurance/life-insurance-opportunities-for-millennials-4206#:~:text=India%20has%20one%20of%20the,of%20the%20total%20Indian%20population data retrieved on April 4, 2021

2. www.Science.thewire.in data retrieved on March 31, 2021

3. Mortality Table published by IAI http://www.actuariesindia.org/publication/Indian_Assured_Lives_Mortality_(2012-14)_Ult._(IALM_2012-14).pdf  data retrieved on April 4, 2021

4. IIFL Report https://www.iifl.com/blogs/assets-vs-experiences-how-millennial-spending-differs-their-parents#:~:text=It%20is%20also%20said%20that,more%20than%20any%20other%20generation.&text=A%20Deloitte%20India%20report%20in,on%20apparel%2C%20accessories%20and%20entertainment.

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# A Deep Dive into the Psychology of Insurance Frauds

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## Abstract

In today's age – one of the biggest causes of concern for all Insurance providers is Insurance fraud, in terms of cost. The currently used systems heavily leverage on Fraud Monitoring Units, Rule engines, Structured data analytics seem to capture fraud to a limited extent. There is a need to relook & possibly revamp our traditional systems of fraud identification and management systems alike. This brings us to explore the need to deep dive into the psychology of insurance fraud and look for non-traditional data proxies, behavioral nudges to accurately identify and take preventive measures. In this paper, we abstract the different fraud scenarios into broader concepts of claims, application, opportunistic and organized fraud. The paper of examines psychology of insurance frauds into motivational factors and neutralization factors. Another lens which is explored here - are the role of societal structures, the idea of inter-subjective, as well as the individual ego centric psychoanalysis. Neighborhood interactions, the elements of insurance contracts themselves (like deductibles), financial stability of the insured and the perceived financial wellbeing of the insurer, internalization of the norms of honesty seem to correlate with psychological motivation for fraud.

Delving deep into the personality traits, it has been observed that there is a positive correlation between the dark triad personality traits (Machiavellianism, Subclinical Psychopathy and Subclinical narcissism) and propensity of insurance frauds. Deriving from research on criminology, the paper looks at the different neutralization techniques often displayed by the perpetrators like "vocabularies of adjustment" and "Famous five". The "fair game" perception is quite prevalent in case of insurance as perpetrators often tend to portray fraud as victimless crime. The final section of the paper presents the different portions available to insurers and regulators to provide the right set of nudges to the policyholders. While regulators can influence the decision making by increasing the cost of sanctions, insurers can work on increasing the chances of ensuring fraud detection. The latter can be achieved through alternate and unstructured data sources, investments in data analytics and mining novel complex relationships from the existing datasets. Drawing from the award-winning research in behavioral economics, insurers and insure-techs have added simple yet effective changes in their claims process to effectively "nudge" the customer to be more truthful. The case studies highlighted in this paper show that the early adopters are showing quite promising results which can be gradually adapted and customized by insurers.

## Introduction

Insurance Fraud is one of the biggest areas of claims leakage for insurers across the world. In 2019 alone, insurance fraud has led to INR 45000 crore loss for insurers in India alone. And if we compare it with the other nations across, the numbers do not paint a rosy picture. The amount of money lost in insurance fraud account to $100Bn in US, $4Bn in Australia, $3Bn in UK and $2-3Bn in other EU countries. These numbers are staggeringly high, in a fiercely competitive insurance market. Insurance Frauds directly affect the bottom-line performance of an insurer and puts undue stress on the capital. [1]

Insurers, on average, tend to lose 10-15% in insurance frauds across all lines of business. For health insurance, the number can be staggering 35%. [1] Given that loss ratio/incurred claims ratio of most insurers tend to be in the range of 60-80% (much higher for some insurance companies in India) [2], frauds adds to additional burden to the performance. One-way Indian insurers tend to counter the effect of fraud is through price increases. However, increased prices can have an impact on customer satisfaction & hence retention becomes an inadvertent area of concern. In such markets, accurately identifying and preventing frauds can not only save leakage but can also become a source of competitive advantage for insurers.

The above statistics also highlight another problem when it comes to insurance frauds - it is still quite difficult to accurately identify and prevent frauds. While there are business rules, fraud prevention units, investment in IT, and adoption of traditional and AI based models there is still a fair amount of leakage in play, despite all measures being taken. This is partly because traditional datasets do not capture all the effective interactions / behavior of the customers. There are exogenous factors which are not captured by models trained on traditional data sources. Also, monitoring systems cannot accurately measure the innate complex interactions of different actors in an insurance setup.

Therefore, there is a need for insurers to delve into alternative sources of information to ensure increased accuracy in capturing and effectively preventing insurance frauds. The branch of psychology, is one such area of research, dedicated to the understanding of human behavior, which can throw some light on the underlying causes of insurance frauds and can help in its prevention.

## Typical Fraud Scenarios

Fraud scenarios can be varied and specific to lines of business. A fraud scenario for an accident and health claim will be quite different from the ones in motor insurance. However, previous research (Smith et al 2010

[4]) has grouped fraud into different categories as follows:

- **False Detail:** Failing to declare information (previous convictions, pre-existing diseases, past claims etc.) to secure a low premium

- **Forged Documents:** Using false document and identities to secure a cover

- **Claims inflation:** Exaggerating claims amount to secure a larger claim amount

- **False Claim:** Creating a false claim to secure payment

- **Staging a claim:** Creating a real incident to secure payment. There is a specific area of research on "Cash-for-crash' claims in case of motor insurance [5]

The above scenarios can lead to one of the four types of insurance fraud:

- **Claims Fraud:** Customer makes a fictitious or intentionally inflated insurance claims

- **Application Fraud:** Customer mis-represents in the application processes.

- **Opportunistic Fraud:** Customer commits a fraud in the spur of the moment. In some cases, individuals can be encouraged by societal / factors

- **Organized Fraud:** The fraud is planned, coordinated and conducted by group of people working together. This type of fraud will have the signatures of most or all the above scenarios.

Different psychological aspects of the individual play a role in the different scenarios of insurance frauds. It is important to note that these psychological effects are also applicable for commercial insurance. A company is essentially an inter-subjective abstraction of individuals coming together to believe in a common cause (in this case the identity of a company) [6]

## Roles of Societal, Situational and Psychological Factors of Insurance Fraud

In this section, we deep dive into the psychological factors of insurance frauds. It is important to note the difference in the factors of motivation of fraud and that of neutralization of fraud. While the former leads to attitudes which make an insured commit fraud, the latter leads to rationalization of the actions/ neutralization of the moral objections. Having said that, the boundaries between these two are grey. There are overlaps in these psychological drivers and influences.

### Motivational Psychological Factors

***Role of Neighborhood and Peer Group Influences:*** The study of peer group interactions has been an active area of research in the domain of learning and attitude formation. Crane 1991 [7] and Wilson 1987 [8] argues that peer group influences are important in determining individual's ethics, norms and morality. So, a person belonging to the societal construct where insurance fraud is commonplace is more likely to commit insurance fraud. Therefore, the individual's perception and psychology is determined by the general ethical climate of the community.

***The Role of Financial Stability & Internalization of the Norms of Honesty:*** In her research, S Tennyson [9] shows that neighborhood influences along with the perceived stability of the insurer plays an important role. In an experiment designed to assess fraud attitudes, respondents who have lower faith in the financial stability of the insurer had shown more proclivity to commit fraud. It is worth noting that the one's own financial stability also contributes to attitude of fraud tolerance. Those who sees insurance premiums as a "burden" to their own financial situation have generally more acceptable attitude to fraud.

Moreover, the study has also shown that a person's internalization of the general norms of honesty determined the his/her attitude to fraud. There was a significant correlation between those who have responded that Yes to "It is all right to not report some of your income

to IRS" and individuals who have responded yes to "It is acceptable to recoup deductible from insurers".

***Psychological impact of the elements of insurance contract:*** Several studies have shown the effect of the amount of deductible on insurance frauds. It is well established that the perception of unfair treatment by insurer, in the form of higher deductible amount, leads to a more propensity of insurance frauds. In their study, Lu-Ming Tseng et al (2014) [12] show that deductible premium ratio is also an important predictor in forming attitudes to fraud. In another scenario-based test by Miyazaki (2009) [18] revealed that higher deductibles also posed a potential justification for insurance fraud abuse, thus also leading to a neutralization psychological factor.

***The Role of Ego/Power:*** The role of ego and power is another psychological motivation for all types of white-collar frauds. This can lead to power over situations as well as power over individuals. As Stotland (1977) [19] points out, there is a satisfaction among criminals which they derive from the act itself. He termed the motivation as "ego challenge" and the motivation is essentially the mastery and a sense of excitement of overcoming the challenge.

***The Role of Dark Triad Personality Traits:*** There are lot of models of human psychology which are

studied & explored in depth. Most researchers try to model different aspects of human personality and cluster them in terms of pathological and non-pathological traits. Of these non-pathological themes, Pauhans and Delroy [14] coined a term called "dark triad" personality traits (DT). These are mainly offensive but non-pathological personality traits namely Machiavellianism, subclinical narcissism and subclinical psychopathy. The DT traits are distinct but overlapping constructs, that explains a variety of behavioral responses such as unethical responses, blameworthiness, deceitful response, manipulative behavior and self-centeredness.

People who are high on Machiavellianism and subclinical psychopathy seem to be deceptive callous, amoral and self-centered. The latter personality type is also impulsive in nature and often resort to "spur of the moment" reactions. In their study, Williams, Nathanson, & Paulhus, 2010 [15] shows that when it comes to copying exam answers, high Machiavellian correlate with essay plagiarism whereas psychopathy correlates with impulsive copying.

Narcissism personality types often display characteristics like self-importance, arrogance, entitlement and a dire need of admiration. These traits are generally correlated with negative work behaviors like theft, rumour mongering, and sabotage

in a research by O'Boyle, Forsyth, Banks, & McDaniel in 2012 [16]

While most research on personality types are related to different behaviors across, research on correlation of these traits to insurance fraud is limited. This is mainly due to data confidentiality and other data related challenges. However, research by David et al 2018 [17] on online claims scenario has shown that these traits positively correlates with claim sizes and overstating claim amounts.

## Neuralization Psychological Factors

Neutralization psychological factors kick in as a rationalization of the act of committing the fraud. These psychological factors help in justifying the act of committing fraud and reduces inhibition.

***The Famous Five:*** Sykes and Matza (1957) [20] are one of the early pioneers of neutralization research. The research on juvenile delinquency lead to the creation of the famous five of neuralization techniques – denial of responsibility, denial of injury, denial of a victim, condemnation of the condemners and appeal to higher loyalties. In the context of insurance frauds, denial of injury and denial of victim becomes quite prominent. Negative perceptions either due to social interactions or personal experience, can lead to the condemnation of the condemners. Analysis of

the statements by embezzlers, Cressey (1953) [21] found that the perpetrators used what he termed as "vocabularies of adjustment" (like "only borrowed the money") to rationalize their deed. The typical vocabulary in the insurance setting can follow a similar pattern ("they can afford it", "they had it coming") [22]

***The "Fair Game' perception of insurance fraud:***  The perception of fair return of premium paid often drives insurance fraud. This is primarily driven by lower level of trust in the insurance sector compared to other sectors. Insurance products are legal contracts where insured does not gain personal satisfaction after purchase. It is a product, purchased out of a fear, of some risk which might happen in the future. The complex documentation, wide variety of coverage options, misunderstood claims processes, poor customer service can add up to the fair game perception. Some of these are intrinsic to the nature of the business but there are few aspects which are in the control of the insurers. Complicated customer journeys, confusing terms, lack of communication from the side of the insurer, perception of unfair practices can erode the trust even further. This perception leads to normalization of the actions on the part of the customer, thus making insurance fraud a "victim less crime". This is further reinforced in social structures where majority of
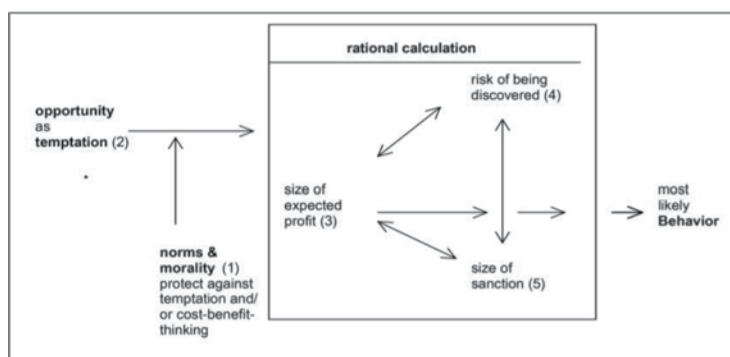
the actors have gone through a bad customer experience.

In her work S Tennyson [11] analyzes the effect of insurance experience and customers' attitude to insurance fraud. The research shows that customers who has 1-2 products from an insurer are more likely to have a positive attitude towards fraud. The rate of fraud acceptance goes from 12.8% to 6.7% as customers extend their relationship with more than 2 products. The study also points out that superior claims experience can have a negative impact on insurance frauds. Moreover, the relationship



seems to be a direct relationship rather than an indirect one.

## Levers for Insurers and Regulators in Terms of Fraud detection and Prevention

So far, we have dealt with the motivational factors and the neutralization factors which are at play on the side of the insured to gain a deeper understanding of the act of committing a fraud. The next logical questions are "How can insurers identify these patterns?"

and "What can insurers / regulators do to prevent fraud?" While it is worth noting that capturing every aspect of the human psyche is practically impossible, there are certain proxies which insurers can leverage to identify and prevent fraud.

In his research, Brinkmann (2005) [23] modified the version of Gould Andersen's model [24] of self-interested temptation handling process.

The psychological factors discussed above, affect the perception of the norms & morality (1) and the size of the expected profit (2). Insurers and regulators can influence these levers to reduce adverse behaviors. With increased risk of being discovered (4) from the insurers view- point and increased sanctions (5) from a regulator's standpoint, moral hazard can be reduced.

### Levers to pull for Insurers

There is a need for insurers to go beyond the traditional approaches to fraud identification and prevention.

These methods can range for usage of alternative data elements, including harnessing the power of unstructured data, investments in advancements in AI / ML capabilities and leveraging behavioral science to combat fraud. A brief discussion on each of the aspects are presented below.

**The power of alternative data**

Alternative data need not be just external data. Although the terms are used interchangeably (and so as most alternative data points are indeed external data points), it can also be different representation of the internal data sources for insurers.

Take the case of the different actors of a claim. A typical motor claim can have multiple actors in one claim document. Of course, there is the insured. There can be third parties, location of the accident, damage parts, time of the day, time of the year, broker involved. For bodily injuries, there can be even more actors like the body part injured, the doctor, the hospital etc. While these data points are already captured by most insurers, they reside in traditional databases where each row is independent of each other. This representation of the data misses out on very complex relationships that might exist between these actors of a claim. For example, there can be more than one claim coming from the same

hospital / doctor. Mining these complex relationships can uncover quite valuable insight into the claims process and act as an aid to uncover potential fraud rings. Social network analysis carried out on these data points can also identify communities where the fraud is quite prevalent. Claims from these communities can be sent to fraud monitoring team for review. It goes without saying that the signals need to be tested for potential false positives and needs to be corroborated with other signal / rules from the traditional approaches. Network analysis look at claims not as an independent entity but also as a collective interaction model, hence uncovering any peer psychological factors at play. It is an active area of research and a lot of financial institutions and even insurers are gradually embracing this approach as part of their fraud detection process.

Other source of alternate data sources are really the external data sources. These data elements will vary for different lines of business. Weather data, road accident data, neighborhood crime data, topology etc. can be leveraged to identify and correlate frauds. Digitization of ecosystems and internet of things will lead to more data points being captured. In the world where digital technologies are pervasive, there is a gamut of unstructured data which are available to process. Data from news agencies, tweets, image

data along with tons of network data from social networking sites, blogposts can quickly make the volume of data too huge to process. There is a need for insurers to invest in data ingestion and data management capabilities.

Another challenge with unstructured and alternative data is the veracity of the data. Let us take the case of reviews: if an insurer wants to scrape reviews to understand customer net promoter score and its impact on fraud, it needs to first determine whether the reviews are genuine or not. Same is the situation when it comes to analyzing tweets / news articles published by independent sources. Investment in a data quality process is also key to success in these scenarios.

In a survey by McKinsey and Co [25], 20% of the survey respondents, in life and P&C insurance have identified poor data quality, lack of data integration, and lack of access as a major bottleneck.

**Investment in data analytics**

Another critical success factor in the case of identifying the complex patters and psychological proxies is through investment in data analytics. We have seen a tremendous increase in computing power and ability of complex algorithms to reach superhuman levels of accuracy in certain

domains. Case in point is the GPT-3 AI model released by Open AI. This is the largest language model ever created with 175 Billion different parameters learning complex relationships from text data [26]. In terms of performance, the AI model can engage in a discourse with a fair bit of accuracy and can make arguments quite easily.

While the example presented above might be too extreme, it goes to demonstrate the capability of AI in uncovering massive data. Going back to the previous example of alternate data, even if we take a handful of claims and actors, the number of interactions between them can be huge.

Insurers across the world has taken significant steps in bolstering their analytics capabilities. In 2017 alone, global life and P&C carriers has reported an investment of $80 Million per year in data analytics alone [25]. Moreover, analytics is one of the top 5 priorities for majority of the CEOs. However, the return on investment of analytics project is low to moderate at best on average. In the same survey, the major pain points identified by the respondents were, limited adoption of frontline staffs, lack of alignment of strategic goals and data quality.

The first point is particularly true for fraud detection and prevention. As discussed before, not all data points can be capture using traditional

data alone. Moreover, fraud also keeps evolving as fraudsters find innovate ways to defraud insurers. In this dynamic environment, the shelf life of models decreases. A cross functional team of fraud monitoring group, data science, technology can help bridge this gap and ensure smooth exchange of information. This not only helps in better adoption of technology and models, but also help data scientists to incorporate new fraud scenarios / experiences.

**Behavioral Economics meets Insurance Fraud**

While the previous aspects of alternate data and analytics focuses on fraud identification and action (point 4 of the decision-making process in the diagram above), behavioral economics can help in providing a nudge to customers to prevent fraud. Daniel Kahneman challenged the notion of the rational man and researched on human bias in economic decision making. The research ushered a new branch of economics called behavioral economics and won Kanheman his Nobel prize. Richard Thaler, who got his Nobel Prize in 2017, introduced the concept of Nudge theory – a way to positively reinforce individuals for desired outcome (He famously argued in his book that humans are more like "homo sapiens" rather than "homo economicus" as portrayed in traditional economic views)

Adoption of nudge theory is in its infancy in the insurance space with a handful of insure-techs and insurers being the early adopters. Case in point would be that of Lemonade, the major insure-tech. Lemonade has created a post of Chief Behavioral Officer and has employed behavioral scientists. In order to combat fraud, Lemonade has added a simple "honesty pledge" agreement before beginning of the claims process. A customer signs a digital pledge and then asked to create a short video to report the incident. With this simple change in the claims process, Lemonade was able to bring down the likelihood of fraudulent claims. The reason this worked is because the pledge and the video made it more difficult for customers to lie. Without the pledge agreement and a claim form (with no face attached), the barriers to lie for a customer was quite low. Lemonade just increased the barrier to lie which had an impact on the claim's fraud. [27]

Moreover, the video also provides additional data points over traditional methods for fraud detection. Complex AI algorithms can be trained on the video footage to extract not only the text but also the tone, language, and facial expressions. In fact, Lemonade runs 18 anti-fraud algorithms to check veracity and if they are satisfied, the payment is made in a few seconds.

Behavioral economics and the concept of choice architecture permeates from just insurance claims to other aspects of the business. Proper choice architecture during insurance application can reduce application related fraud and identify theft. Another case in point of application of behavioral economics to enhance the claims experience (which has an impact on fraud as shown in the previous sections) is the case of Snapsheet. Snapsheet is an auto insurer marketplace catering to drivers and motorists and traditional P&C carriers. Snapsheet addresses Autonomy bias through ambiguity aversion and anchoring. They use a checklist approach for the autonomous claims process and provide customers with a reinforcement of shorter claims cycles through numbers. In another use case, P&C carrier All State incorporated a disclaimer with underline talking about how insurance fraud is on the rise and it hurts everyone (including customers). [28]

**Levers for Regulators**

Regulatory bodies and government also play a role in this context. Especially in areas of improving the trust of the customer in the insurance sector in general. This can be done through a long-term public communications strategy and can go a long way in addressing the "fair game" psychological effect on customers. The other areas where regulators can provide support to insurers are creating an effective way to share fraud databases across the industry. There are certain steps taken in this direction (National Crime Database, Stolen Vehicle Database) but the quality and ease of usage of the data can be improved. Toughening actions against dishonest solicitors is another deterrent to fraudulent claims. This increases the barrier for an individual and puts more at stake if caught (size of sanction in the above figure)

## Conclusion

Understanding of the fundamentals of human psychology in the claims process, particularly for fraudulent claims can help insurers garner more insights. Although not all aspects of the human psyche can be quantified and measured, insurers can look for proxies in alternate data sources. They can build the right data management systems, leverage complex AI algorithms, and translate algorithm outputs into strategic business decisions through cross functional efforts. With the right set of people, process and policy levers insurers can deliver superior customer experience and maintain profitability. **TJ**

**References**

[1] https://www.businesstoday.in/opinion/columns/insurance-frauds-control-act-an-urgent-need-in-india-fraudulent-claims-indian-penal-code/story/400212.html

[2] IRDAI – Handbook of Insurance Statistics (https://www.irdai.gov.in/ADMINCMS/cms/frmGeneral_Layout.aspx?page=PageNo3472&flag=1)

[3] http://www.ficci.in/ficci-in-news-page.asp?nid=21359

[4] Smith, G., Button, M., Johnston, L. and Frimpong, F. (2010) Studying Fraud as White Collar Crime. Basingstoke: Palgrave.

[5] Just About Everybody Doing the Business? Explaining 'Cash-for-Crash' Insurance Fraud in the United Kingdom (https://wlv.openrepository.com/bitstream/handle/2436/610823/Button_M._et_al_just_about_everybody_2016.pdf?sequence=6&isAllowed=y)

[6] Jordan Zlatev, Timothy P. Racine, Chris Sinha & Esa Itkonen, Eds. (2008). The Shared Mind: Perspectives of Intersubjectivity, 1-14. Amsterdam: Benjamin (https://www.researchgate.net/publication/232504233_Intersubjectivity_What_makes_us_human)

[7] Crane, Jonathan, 1991, The epidemic theory of ghettos and neighborhood effects on dropping out and teenage child bearing, American Journal of Sociology, 96, 1226-l 259 , (http://www.uvm.edu/

pdodds/files/papers/others/1991/crane1991a.pdf)

[8] Wilson, William Julius, 1987, The Truly Disadvantaged: The Inner City, the Underclass and Public Policy (https://press.uchicago.edu/ucp/books/book/chicago/T/bo13375722.html)

[9] Economic institutions and individual ethics: A study of consumer attitudes toward insurance fraud

[10] Moral, Social and Economic dimensions of insurance fraud, S Tennyson (http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.693.1667&rep=rep1&type=pdf)

[11] Sharon Tennyson, Insurance Experience and Customers' Attitudes towards Insurance Fraud

[12] Lu-Ming Tseng , Chia-Lin Kuo, Customers' attitudes toward insurance frauds: an application of Adams' equity theory, International Journal of Social Economics, 2014

[13] Lu-Ming Tseng, Customer insurance frauds: the influence of fraud type, moral intensity and fairness perception, Managerial Finance, 2019

[14] Delroy LPaulhusKevin MWilliams, The Dark Triad of personality: Narcissism, Machiavellianism, and psychopathy, Journal of Research in Personality,

Volume 36, Issue 6, December 2002, Pages 556-563

[15] Williams, K. M., Nathanson, C., & Paulhus, D. L. (2010). Identifying and profiling scholastic cheaters: Their personality, cognitive ability, and motivation. Journal of Experimental Psychology: Applied, 16, 293–307

[16] O'Boyle, J., Forsyth, D. R., Banks, G. C., & McDaniel, M. A. (2012). A meta-analysis of the Dark Triad and work behavior: A social exchange perspective. Journal of Applied Psychology, 97(3), 557–579

[17] David Modic, Jussi Palomäki, Marianna Drosinou & Michael Laakasuo (2018) The dark triad and willingness to commit insurance fraud, Cogent Psychology

[18] Miyazaki, A. D.: 2009, 'Perceived Ethicality Of Insurance Claim Fraud: Do Higher Deductibles Lead To Lower Ethical Standards ', Journal of Business Ethics 87, pp. 589-598

[19] Stotland, E. 1977, "White collar criminals",Journal of Social Issues, vol. 33, pp. 179–96

[20] Sykes, Gresham M and David Matza. 1957. "Techniques of Neutralization: A Theory of Delinquency." American Sociological Review 22 (6)

[21] Cressey, Donald R. 1953. Other People's Money: A Study of the

Social Psychology of Embezzlement. Glencoe: Free Press

[22] Grace Duffield and Peter Grabosky, The Psychology of Fraud, Australian Institute of Criminology, trends & issues (https://www.aic.gov.au/sites/default/files/2020-05/tandi199.pdf)

[23] Johannes Brinkmann, 2005, Understanding insurance customer dishonesty : Outline of a situational approach

[24] Goul Andersen, J., 1998, Borgerne og Lovene, Aarhus: Aarhus Universitetsforlag

[25] Raising returns on analytics investments in insurance (https://www.mckinsey.com/industries/financial-services/our-insights/raising-returns-on-analytics-investments-in-insurance/de-de#)

[26] OpenAI's new language generator GPT-3 is shockingly good—and completely mindless – MIT Technology Review (https://www.technologyreview.com/2020/07/20/1005454/openai-machine-learning-language-generator-gpt-3-nlp/)

[27] How Behavioral Psychology is fixing modern insurance claim (https://www.mantralabsglobal.com/blog/behavioral-science-in-modern-insurance-claims/)

[28] Leveraging Behavioral Science in Insurance: A Systematic Review

**Merit Winner**

## Technical Paper Essay Competition (Health)

# Wearables and Health Apps for Better Medical Insurance Delivery

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### Abstract

There is a variety of wearables and health applications available in the market allowing the tracking of various health and lifestyle measures like blood sugar, calorie counter, number of steps, sleep patterns etc. After the Covid-19 pandemic, people have become more aware about their health and are using these wearables to maintain a healthy lifestyle. Insurance companies in India are also eyeing the potential usage of these wearables in life and health insurance. The purpose of this research is to look at the emergence of wearables and health apps and their usage in the health insurance industry of India. This study also focuses on how these devices might benefit insurer's business models as well as some of the pitfalls to be considered.

A market survey is conducted to understand customer opinions towards these wearable devices and the usage of wearables in insurance industry. Although the results of the survey show that a significant portion of respondents use these wearables to track their health but their views on the usage of wearables in health insurance industry are very different.

The research would be helpful to the insurance companies as it would help them to understand the customer's viewpoint for usage of wearables in insurance industry. This study would also help insurers to understand new dimensions where the wearables can be used to provide better customer satisfaction and engagement.

The study would be helpful for the customers as the appropriate usage of wearables and IoT, insurance companies can do better pricing which would ultimately help customers.

**Keywords**

Wearables, Internet of Things, Health Insurance, Digital Application, India.

## Introduction

Indian health insurance industry has been growing at a rapid pace. With technological advancement and growing awareness, people have started considering health insurance as an essential buy. While the Covid-19 pandemic has wreaked havoc across sectors, it has proven to be a blessing in disguise for life insurance sector in general and

particularly health insurance sector. Health Insurance segment has seen a rise in the health insurance premiums from April to September 2020 (as shown in Fig 1), before this motor insurance segment used to have the highest market share amongst all the non-life insurance businesses but now health insurance has become the most valuable segment for non-life insurers in terms of premiums collected. This has happened for the first time in the last 20 years of privatization of insurance industry in India there by leap frogging motor insurance.
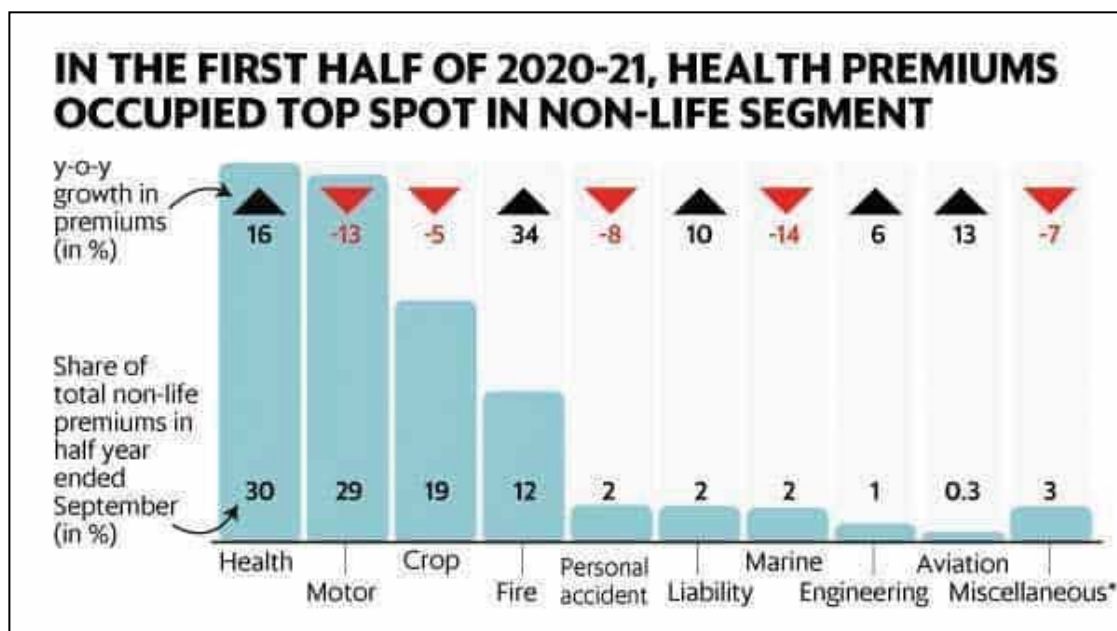


Figure 1: Source- https://www.livemint.com/insurance/news/the-covid-19-boost-to-health-insurance-in-four-charts-11605597369780.html

The pandemic has made people realise the importance of protection products like life and health insurance. From being a push product, insurance has become

a "nudge product" due to the uncertainties.

Along with the digital distribution strategies, insurance companies have also started digital processes

in other departments like underwriting or claims procedure.

Wearables and health apps are also being used by the insurers worldwide to assess the risk,

understand the customer behaviour, incentivise them as well as provide them personalised experiences.

The study focuses on the usage of wearables and health applications in Indian health insurance industry. The study also analyses the customers' behaviour towards the wearables and health applications through a survey.

## What are wearables and health apps?

Wearables are smart devices that can be worn as external accessories, embedded in clothing and garments, implanted in the body, or even adhered to or tattooed on the skin. Nowadays, these smart devices have become very important as they can interact with an array of other devices for computations and communication.

As mobility have increased in the past few years, these devices have become more important as the data can be collected and sent while on the move and the information can be transferred through internet and that helps in taking right decisions.

Some of the wearables available in market are:

1. **Apple Watch:** The Apple watch is very popular smart device with an impressive piece of technology. Heart rate, workout monitoring, and the level of activeness per day can be measured through it.

2. **Fitbit trackers:** Fitbit has many versions available in the market-

Blaze, Alta HR and Charge 2. It has gained very good response in the Indian market. The latest versions -The bands are in the form of a watch-style strap, which is easy to wear, and are equipped with a heart rate monitor.

3. **Jawbone band:** The latest offering by Jawbone is UP2. There is a dedicated app that syncs all the information once the band is plugged into phone's headphone jack.

4. **Google Fit app:** GPS and other sensors as well as inputs from the phone are used in Google Fit app to track the activities. It is a free app and very resourceful and provides many options to track your primary and other health stats.

5. **Moov Now tracker:** Although the Moov Now tracker is not equipped with heart rate monitor, it is a good option for beginners, and it is also waterproof.

6. **Mi band:** The Mi band comes with many features and is quite economical. It can count calories and also can measure distance walked and can also measure sleep patterns.

7. **GOQii band:** A very unique option is GOQii band as it comes with an actual human trainer. The user can talk to the trainer through the app.It also monitors the number of steps and activity level. But the data has to be fed manually into the band like food intake, exercise etc.

8. **Nike Running app:** The app is a good option for people geared towards running. It offers a personalised running plan, heat map, and customised soundtracks.

9. **Runtastic app:** This app was started with its focus on runners, now it targets sportspersons, both amateurs and professionals. Running, cycling or jogging activities are measured through this app.

10. **Healthify Me app:**This app is very popular as it includes Indian diet using its database of more than 20,000 food items consumed across 13 regions in India. Reputable nutritionists, fitness trainers, yoga instructors are available and one can choose their health plan.

## Benefits of Wearables and health apps

1. **Self-awareness about health:** Self-awareness about health is increased as wearable device helps to track daily activities such as eating, walking, sleeping, exercising etc.

2. **Appropriate health management tool:** Using these wearables, people can understand if these workouts are aligned as per the health goals.

3. **Keeping obesity under control:** Obesity which is a worldwide problem can also be managed through these wearable devices. As one can understand the requirement of calorie intake and exercise or other activities, it can

help in controlling the obesity and maintaining the right BMI.

6. **Motivator to keep you on right track:** Wearables can act as great motivator as user can set alerts and accordingly get reminders. It helps to keep the user on track.

7. **Your trusted health consultant:** Medical tips, advice from the doctors, dieticians can be sought on the basis of the data fed on the device.

As wearables and health applications have many benefits, IRDAI had also issued a circular in 2017 encouraging Insurance companies to use wearable devices to measure personal fitness, incorporating healthy lifestyle in the policyholders. Many insurance companies have incorporated the usage of wearables and health apps in their health insurance plans. The next section explains the usage of wearables and health apps by insurance companies.

## Use of Wearables in medical insurance

As healthcare costs have skyrocketed, it becomes very important to purchase health insurance plans, but it is equally important to invest in wellness and preventive healthcare to remain fit. Seeing the importance of preventive healthcare and encouraging healthy life style, many insurers have started using wearables in their health insurance plans.



### 1. For engaging customers

The health insurance companies are using health apps and wearables to engage with the customers. There are many companies like Cholamandalam MS General Insurance Company Ltd.is using mobile application for its health insurance customers. In addition to providing information related to the policy benefits and access to network hospitals, it also has the pedometer, BMI calculator and Blood Sugar tracker which is helpful in engaging customers[i].

Max Bupa Health Insurance Company has also launched a plan-Go Active. They have tied up with premier health and technology companies like GOQii, Practo and 1mg exclusively to design this mobile application, with the intent to empower Go Active customers to seamlessly manage their health anytime, anywhere with a single touch. With the help of this application, customers can book

their consultation and lab tests online at home. They can also have annual health checks and behavioural counselling sessions.

Customers' fitness data and health score from Max Bupa Health Coach mobile app (designed for Go Active customers) are integrated real-time within this app. Google Fit/Apple Health accounts can also be linked track the customers fitness. Blogs, articles related to health and fitness, are also available through this app.

Bharti AXA General Insurance Company launched -Bharti AXA Wellness Cuppa portal under its plan-Health Advantage. Through this app, the policyholders can avail the entire gamut of wellness features and services in one place. Apart from health rewards, some of the features also include video/teleconsultation, pharmacy, and diagnostic services, online chat with doctors, doctor's appointment, doctor on call, and medical second opinion.

**Table 1: Insurance Companies using wearables and health apps for customer engagement**

| Insurer | Wearable/app | Benefit |
|---------|-------------|---------|
| Cholamandalam MS General Insurance Company Ltd. | Mobile application | Policy benefits, network hospitals, pedometer, BMI calculator, blood sugar tracker |
| Max Bupa - Go Active | GOQii, Practo and 1mg | Book their consultation and lab tests online at home. annual health checks and behavioural counselling sessions. Monitor health real time |
| Bharti AXA General Insurance Company Ltd | Wellness Cuppa portal | Video/teleconsultation, pharmacy, and diagnostic services, online chat with doctors, doctor's appointment, doctor on call, and medical second opinion. |

**2. Rewarding healthy behaviours**

External motivators like reward, monetary discounts and digital badges are being used by some insurers to incentivise customers to lead a healthier lifestyle. The reward programs started by insurance companies is listed in Table 2 briefly:

**Table 2: Reward Programs by insurance companies**

| Insurer & Plan | Benefit |
|----------------|---------|
| Aditya Birla capital-Activ Assure | Discount in renewal premium upto 30%.on the basis of healthy heart score and active days. |
| Bajaj Allianz General Insurance company-Health Ensure | reward customers in the form of co-pay deduction in their health insurance policy with maximum co pay of 50% |
| HDFC ERGO insurance company-Health Suraksha Plan | Provides discount in insurance renewal premium on the basis of no. of steps pe week or calories burned per week. |
| Bharti AXA General insurance company-Health AdvantEDGE | The policyholder gets rewarded for adopting healthy habits. These reward points can be redeemed to avail of a discount on the policy premium or a concession on medical bills or consultation fees among others |
| Manipal Cigna- Get Proactiv | Reward points are earned based on the quantum of physical activity. The company uses these reward points to give discount on renewal premium, up to the maximum limit of 10% of annual premium. |
| Policy Bazaar & GO Digit | Proposed in IRDAI sandbox |
| ICICI Lombard | Reward policyholders for their healthy behaviour through various wellness services. |
| Magma HDI | Fitness rewards and wellness series as additional features. Doctor on call , nutritionist e-consultation etc is available |

**3. Wellness Programs**

Reliance General Insurance Company has launched a wellness program through R-card. This card not just for claims, but also provides discounts and deals on a variety of health and lifestyle products and services like Apollo Pharmacy, Lal Path Labs etc.

Universal Sompo also provides wellness program through their mobile application, an insured can avail discounts on outpatient consultation, pharmaceuticals

and diagnostics tests through the empanelled Network providers.

The insured is provided with an individual access to web based Health portal at Company's website and/or a Wellness mobile application by the Company where he/she can perform various healthcare activities like Health Risk Assessment (HRA). The Health Risk Assessment generates a statistical estimate of insured person's overall health risk status and quality of lifestyle, Electronic Health Records: the Insured person can store the medical test reports, prescriptions and other consultation papers in the personalized portal which gets digitized to help create a complete health profile of the insured person. The medical test reports along with HRA provide a health score to depict the health status of the insured person and. Health Screening: On the basis of the health score of the insured person, the insured person shall be categorized as Healthy, in which case there will be no trigger for medical screening. If the score depicts unhealthy status, medical screening is advised to the insured person along with a "Health Goal" which is planned post identification of risk factors for improving insured person's overall well-being. .The insured person will be assigned a dedicated Health Coach who will take care of the complete wellbeing of the Insured Person(s).

Disease Management Program (On payment of additional Premium) Those insured who get detected or are assessed as high risk in the HRA or are already suffering from chronic diseases, the Company offers a variety of Disease Management Programs (DMP). This service aims to help the insured person cope with their disease and show them ways of dealing with them in everyday life. The DMP aims to improve the Insured Person/s quality of life. The DMP is provided for diseases or conditions like Asthma, Diabetes, Hypertension, Thyroid, Heart related, Maternity, Obesity, Tropical diseases etc. Based on the identified DMP, the Company assigns a Health Coach for online diet Consultation & tracking mechanism, indulging the insured into physical activities, encouraging for meditation and breathing techniques at home or online counselling through Company's Health Portal and/or Mobile Application.

The insured will also be provided with services like exercise reminders, medicine and diagnostic test reminders, training videos, health blogs, digitization of health records etc.

Wellness Reward Program: The Wellness Reward Program (WRP) aims to encourage the insured to perform certain activities to stay active and medically fit. WRP is an award program wherein the Insured can earn the reward points termed as "USGI Coins" by performing the activities as mentioned in the below Table. The points can be redeemed against array of options which would help the Insured to improve his/her overall Health Status.

Kotak Mahindra General Insurance has announced a partnership with healthcare wearables maker GoQii Technologies to offer fitness trackers to its existing and new health insurance customers. The move, aimed to help monitor customer's mobility and fitness pattern, will see GoQii assist customers by offering personal coaches, experts and doctors. The fitness trackers will measure customers' vitals such as step count, quality of sleep, and help them maintain a healthy lifestyle.



Figure 2: Wellness Benefits given by insurers.

On the one hand, insurance companies are providing different benefits to the insured using health apps and wearables. It becomes very important to understand the insured insights towards these wearables and health apps. To understand this, a survey was conducted and the response on various parameters like awareness, usage of wearables, the most used features in wearables etc was conducted. The questionaries was given to around 200 people and 121 people responded. The demographic profile of the respondents is:

Out of 121 respondents 45% are female and 55% are male members.

The male and female distribution of the respondents is shown in the Figure 3:
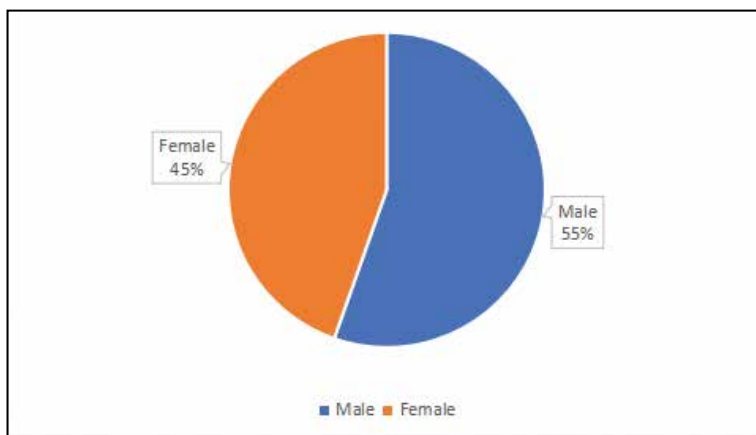


Figure 3: Male-female distribution of respondents

The age distribution of the respondents is shown in the figure 4. The majority of the respondents are of young age, i.e, 41% are in the age group 18-25, followed by the age group of 35-44 as 28 % and around 2)% are in the age group 26-34 years.
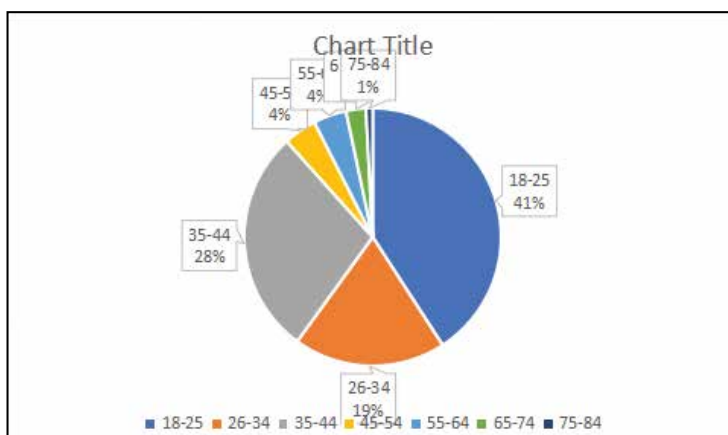


Figure 4: Age distribution of respondents

**Activity Tracked**

The respondents were asked about the activity which they track the most using wearables and health apps. Majority of them track the number of steps, followed by exercise and distance. A few of them also track heart rate and sleep patterns ( shown in figure 5)
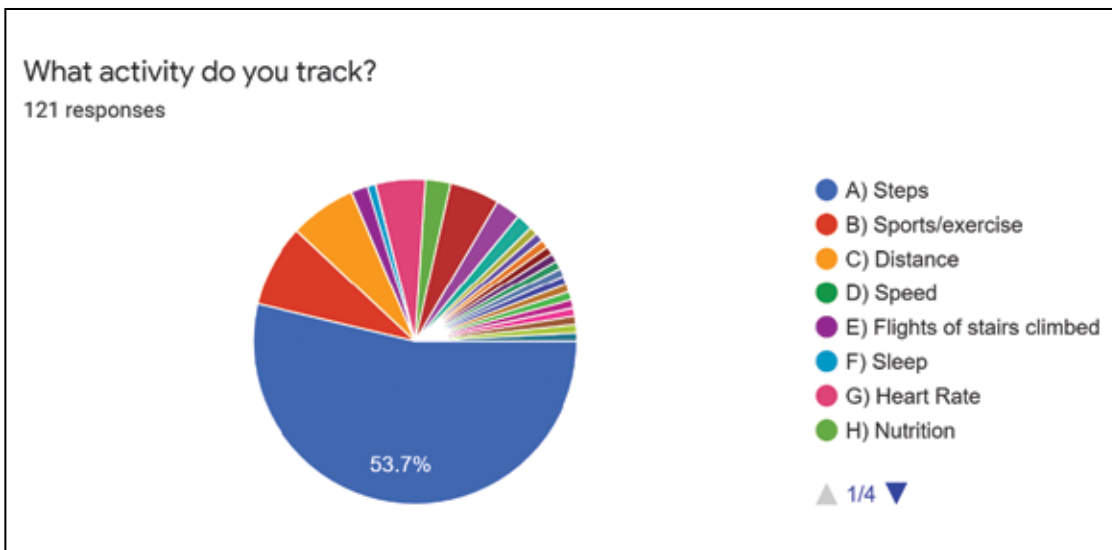
Figure 5: Activities tracked by respondents

Next, they were asked if the wearables or health applications have made any impact on their activity. As shown in Fig. around 70% of respondents have seen increase in their activity levels because of the use of wearables or health applications as shown in Figure 6.
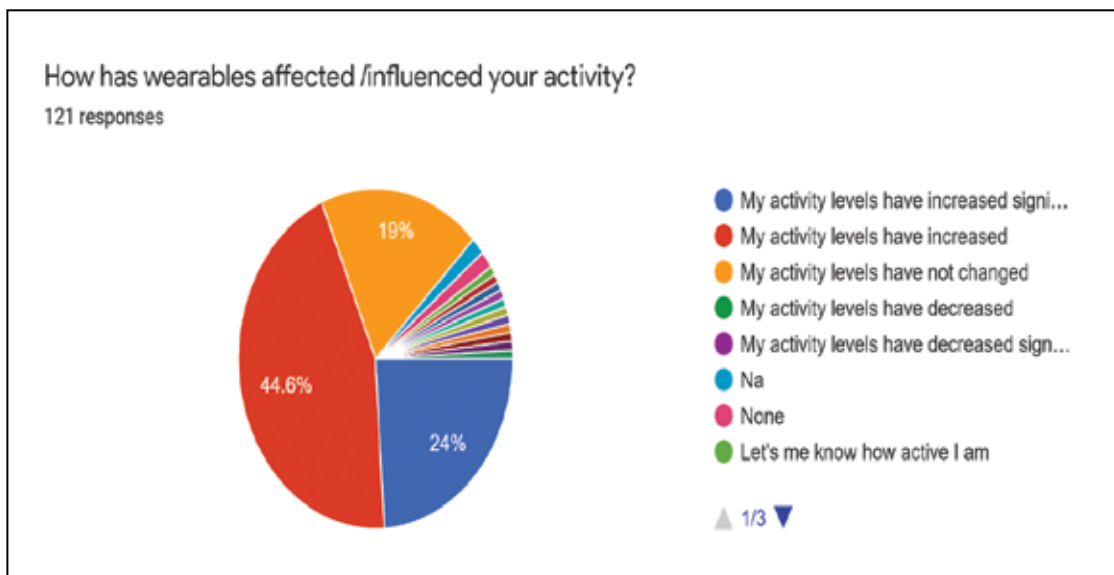


Figure 6: influence of wearables on activities

As a result of tracking their activity, some of the measures have improved for them. The respondents told that their blood sugar level, body fat percentage, waist circumference as well as general level of fitness have improved as shown in Figure 7.
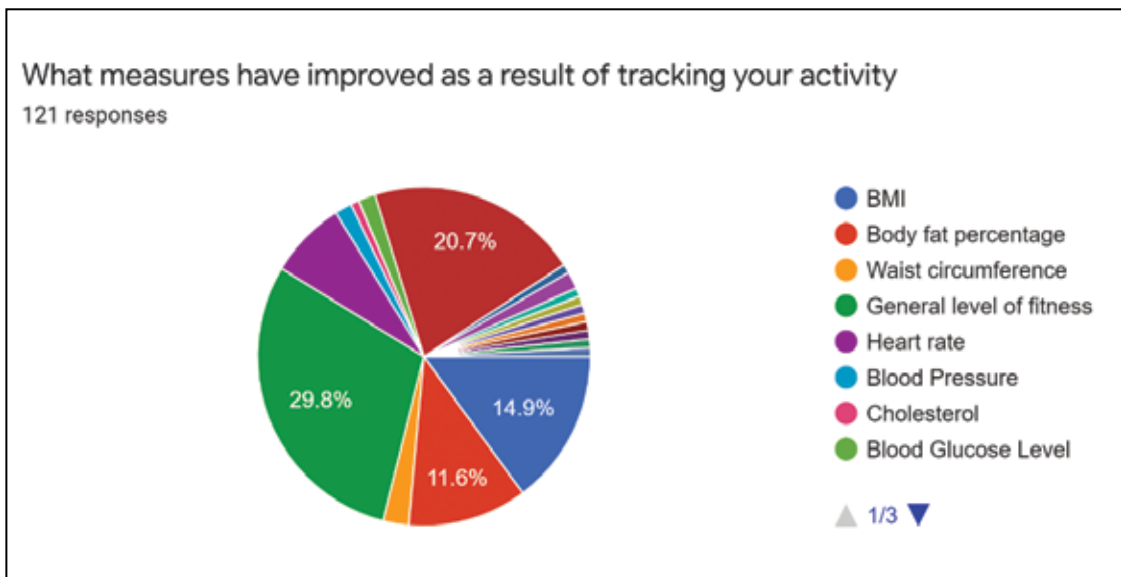
Figure 7: Measures that have improved as a result of tracking the activities.

When asked if they are aware about their health insurance plans, around 50% of population is   aware about the wellness programs or incentives provided by the insurance company and around 35% respondents are not aware about these features as shown in Figure 8.
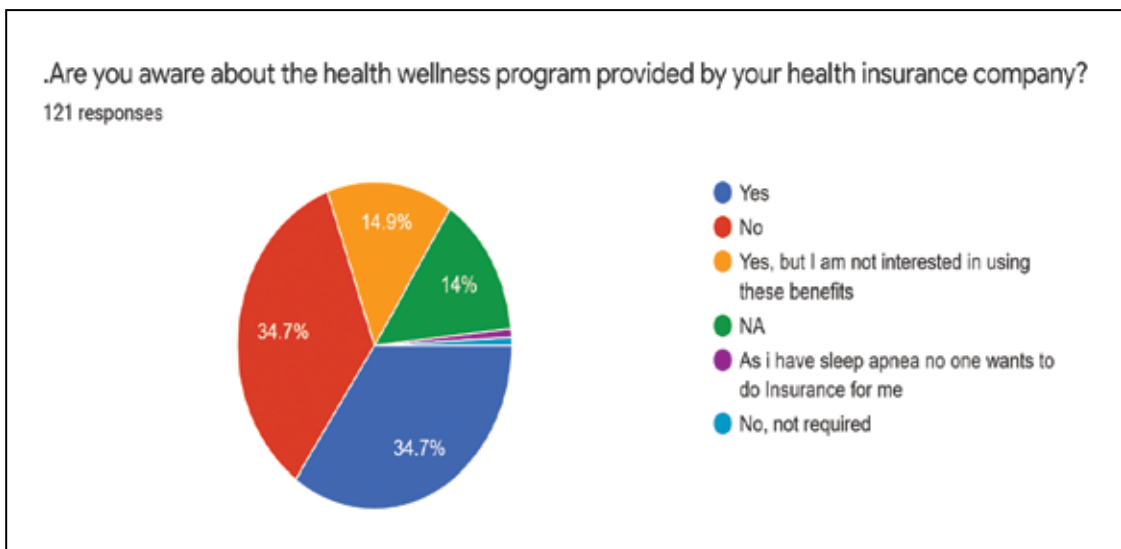


Figure 8: Awareness level about health wellness program

Next, when asked if they were satisfied with the wellness programs of health insurers, only one fourth of population was satisfied with these programs. This gives a scope for improvement to the insurers. (Figure 9)
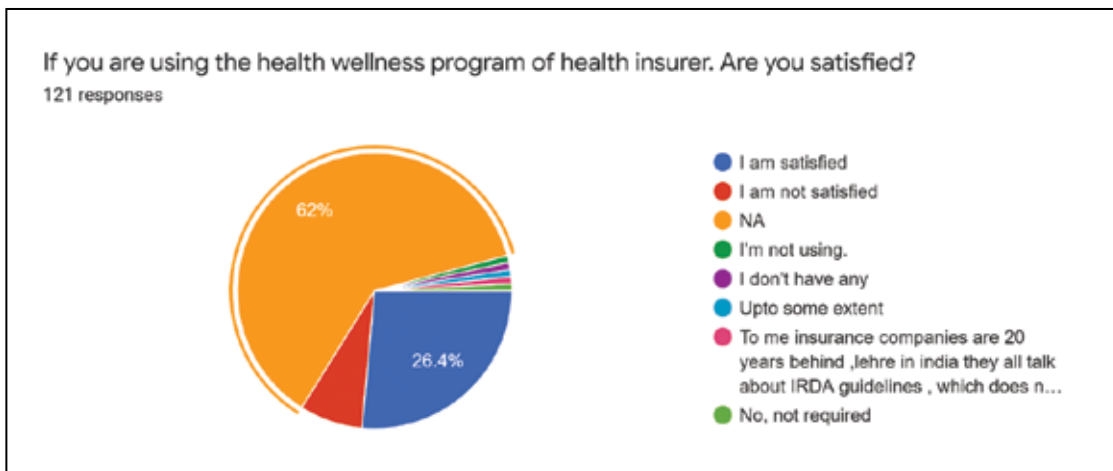
Figure 9: Satisfaction level of respondents

The next question asked to the respondents were related to the sharing of data- if they were comfortable in sharing their health data with the insurer.40% of population is comfortable in sharing their data while remaining 60% respondents is not interested in this.

Next question asked to them was the reason why the respondents are not ready to share their data with insurance companies. The major reason was the concern towards security of data as shown in the figure 10.
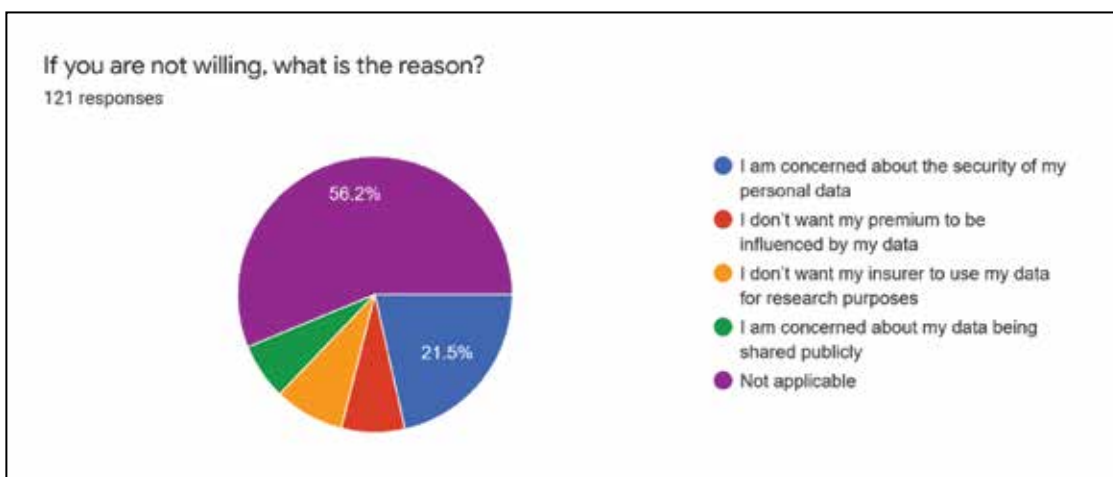


Figure 10: reasons for not sharing data

**Analysis of the survey**

Based on the results of survey we can understand that people are interested in wearables and health applications. They are using these applications and wearables and are also getting favourable results. But they are concerned about the privacy of data if it must be shared with the health insurance companies. Many of the respondents are still unsatisfied with the wellness programs of the insurance companies, so there is huge scope for improvement. The next section discuss about the other areas in which insurers can use the wearables and health apps.

## How Wearables Can Be Extended to Other Areas of Insurance

Already insurance companies are using wearables in customer engagement, rewarding customers for maintaining healthy lifestyles as well as in wellness programs. But there are still many areas which are untouched in India.

### Underwriting

With the help of wearables and IoT, insurance companies can improve their risk selection and hence pricing. When insurance companies have the real data about their customers, they can classify them in appropriate risk bands and accordingly the pricing can be done. There are companies like The Royal London which have launched products for diabetic patients and the companies get the blood sugar data from the wearables and accordingly premiums can be charged.

### Claims Settlement

With the correct prediction of risk, insurance companies can also predict the claims more accurately. This can also help insurance companies to understand the upcoming risks and claim areas. If customer's health data reveal some unhealthy behaviour, companies can also send red alerts to the customers and advise them to go for specifics health checks ups. This way, insurance companies may avoid bigger claims in the future.

### More Value-Added Services

Insurance companies can provide more value-added services to its customers other than providing discounts on renewal premiums. There can be some health articles as per the needs of the customer. For e.g. If the person is suffering from Critical Kidney Disease, there can be health videos related with that disease, diet tips, yoga or exercise videos. There can also be videos related to mental health etc. During Covid-19 it is not possible to visit doctors, the doctors should also be on panel on these wearables and customers can consult them through video consultation.

### Personalised Products

Insurance companies can analyse the data of the customers and can provide innovative insurance products to them as per their requirements. There can be sachet insurance products with lower premiums especially for people with lower income groups.

## Way Forward

Change is the only constant. Technology has brought many changes in Indian insurance industry from tele underwriting and e-KYC to paper less claim, it has brought enormous changes in the way insurers do business and engage with customers. Covid-19 has triggered the pace of technology all over the world. This is going to be the survival of the fittest case, so the traditional insurers can be overtaken by disruptive newcomers if they don't adapt as per the new technologies.

Internet of things and wearables are changing the complete health and fitness industry and can be utilized in making new business models for insurers as well. With the help of wearables and IoT, insurers can understand the customer's behaviour and assess the risk, and accordingly make products and settle claims. On the one hand, it brings opportunities, but also it has its own challenges, there being chances.

There is not enough research or evidence to ascertain if the wearables can change the policyholders behaviours in long term. Cost is an important factor while integrating wearable devices seeing that Indian customers are price sensitive. Data accuracy and privacy is an another important area which should also be addressed.

Further, as a benefit, insurers may also look at covering the cost of treatment of an admissible claim by paying for non-payable items that are specified in the terms and conditions of the base policy. These could be oxygen cylinders, masks, OPD consultation and so on.

Globally, the wellness proposition has been tried and tested in some of the developed countries **TJ**

### References

https://www.livemint.com/insurance/news/the-covid-19-

boost-to-health-insurance-in-four-charts-11605597369780.html

https://www.acko.com/articles/health-insurance/top-7-technological-advancements-in-health-insurance/

https://www.bajajallianz.com/download-documents/press-release/Press-Release-Bajaj-Allianz-General-Insurance-in-association-with-GOQii-launches-BAGIC-GOQii-Co-pay-Option-under-the-regulatory-sandbox.pdf

**https://www.livemint.com/**

https://www.policybazaar.com/health-insurance/individual-health-insurance/news/android-app-for-

health-insurance-customers/

https://www.business-standard.com/article/technology/premium-perks-wearables-apps-are-set-to-transform-health-insurance-120030500010_1.html

https://www.business-standard.com/article/technology/premium-perks-wearables-apps-are-set-to-transform-health-insurance-120030500010_1.html

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC149402/

http://ficci.in/spdocument/23111/Re-engineering-Indian-healthcare-2.0_FICCI.pdf

https://milliman-cdn.azureedge.net/-/media/milliman/pdfs/articles/the_role_of_wearables_in_private_medical_insurance.ashx

https://link.springer.com/article/10.1007/s11628-020-00428-3

https://ieeexplore.ieee.org/document/9058658

https://life.futuregenerali.in/life-insurance-made-simple/cancer-heart-critical-illness-insurance/top-10-healthcare-apps-and-wearables-to-monitor-your-health

https://www.ceoinsightsindia.com/news/digital-ai-to-transform-the-insurance-space-in-india-nwid-410.html

*1 Android APP for Health Insurance Customers (policybazaar.com)*

**Merit Winner**

## Technical Paper Essay Competition (Pension)

# Can NPS be Shaped Up As 'One Nation - One Pension' Scheme

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## Abstract

National Pension System (NPS) is an EEE scheme launched by Government of India. EEE means money the subscribers invest in a scheme which is tax free up to a limit; the growth of the money or gain/profit, that is earned while the subscribers remain invested, is exempted from Income tax; and further, the corpus that subscribers withdraw during maturity is also exempt from Income tax. Rather, it is one of the few EEE schemes available in India which makes NPS a very lucrative option for investment and building a retirement corpus.

The core of NPS is the power of compounding & diversification of a portfolio into various asset classes. Due to its long tenure of investment, it provides the real power of compounding and this can be its real strength too. As per the investment philosophy, even small amounts invested at specific intervals for long periods of time can beat inflation and provide best returns. NPS comes designed with such investment philosophy and it can be the catalyst for its success over the years. Moreover, the option of choosing one's preferred investment scheme and one's Pension Fund Manager (PFM), added with Income tax benefits can

make the NPS suitable for every kind of subscribers with different risk appetites. With further amendments like relaxation in partial withdrawals and some revision in investment scheme preference options in NPS will make it even more suitable for all kind of subscribers and it will pave the way towards a One Nation and One Pension Scheme.

## Introduction to NPS

National Pension System (NPS) is a Government sponsored voluntary contribution pension scheme managed by the Pension Fund Regulatory and Development Authority of India (PFRDA). NPS was launched in Jan 2004 for Government employees and it was opened to all sections of employees in 2009. Contributions can be made by subscribers to NPS during their working time without any restrictions and Corpus can be built. At the age of 60, 60% of corpus can be allowed for withdrawal with tax exemption and 40% of corpus will be used for buying an annuity, thereby ensuring lump sum withdrawal and monthly payments

like pension from annuity. From its introduction, NPS has shown good growth in terms of subscribers due to the structure of scheme. Tier-1 & Tier-2 are two types of accounts available under NPS. Tier-2 is a voluntary one and for opening Tier-2 account having Tier-1 account is a must. Moreover, NPS caters to different class of people having different risk appetites. Non Resident Indian (NRI) can also join NPS but however the account will be closed when there is a change in the citizenship status of Non Resident Indian (NRI). Currently there is no restrictions for the amount that can be contributed to National Pension System under both Tier-1 and Tier-2 accounts.

## Investment Options Available Under NPS

Active choice & Auto choice are the two choices of investment allocation options available under NPS. Auto choice allocates money to different class of instruments such as Equity, Government bonds, corporate bonds and Debentures based on the age slab of the subscriber. Conservative

scheme, Moderate scheme & Aggressive scheme are the three sub options available under Auto choice. The maximum allocation in equity for Aggressive scheme is 75%/ Generally, the younger persons can take higher risk by investing in equity. So, high percentage of allocation will be under Equity in Auto choice Aggressive scheme. The maximum allocation in equity for moderate scheme is 50% and for conservative scheme maximum equity allocation is 25%. As a contrary, some younger persons with low risk appetite want to park their money in Government bonds, corporate bonds and debentures instead of Equity. So, these persons can choose Conservative scheme under Auto choice. The persons with high risk appetite can opt for Aggressive scheme under Auto choice with equity allocation up to 75%.The subscribers can opt the choice of investment allocation scheme according to their risk appetite.

Active choice is a user defined one. The subscribers can enter
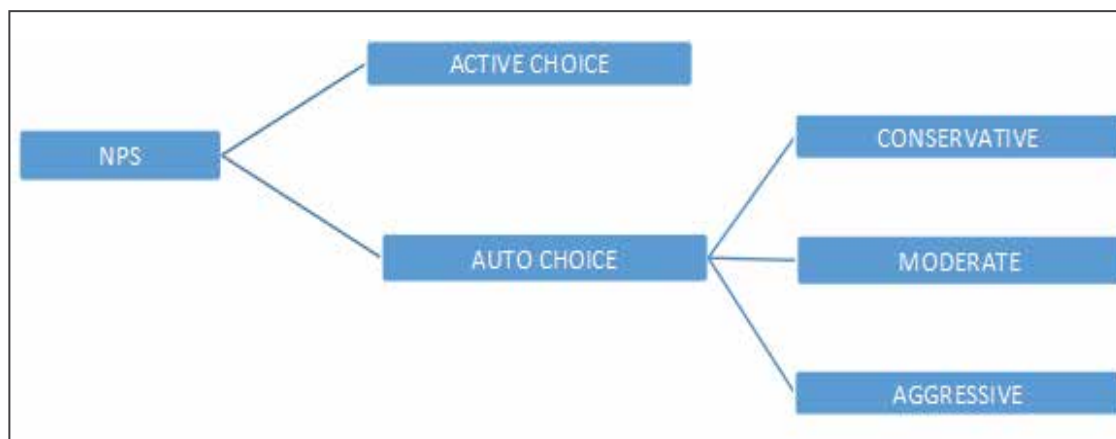
their choice of allocation of money in different asset classes. However, maximum allocation in equity should not exceed 75% and minimum allocation in equity should not be lesser than 25%. Investment management fee charged by Pension Fund Manager is 0.01 % of AUM p.a. for Private Sector & 0.0102% of AUM p.a. for Government Sector & Asset servicing charges of 0.0032% p.a. for Electronic segment & Physical segment which is much lower than the fees charged by any AMC under Mutual funds. Moreover, there is no exit load applicable for withdrawals made in Tier-1 account and Tier-2 account. It can also be a driving point for NPS penetration over the years in India.

## Income Tax Benefits & Other Special Benefits Available Under NPS

Contributions made by the subscibers to NPS Tier-1 account can be claimed as a deduction under various sections available in Income Tax Act, 1961. Under Section-80 CCD (1), maximum of Rs. 150000/- can be claimed as a deduction and under Section-80 CCD (1B), additional Rs. 50000/- can be claimed as a deduction. The speciality of Section-80 CCD (1B) is no other investments will qualify for the deduction under Section-80 CCD (1B) which makes NPS as a distinguishing factor. So, in total Rs. 200000/- can be claimed as a deduction for the contribution made towards NPS Tie-1 accounts. In addition to Employee, Employer is

also contributing to NPS for each individual Employee which can be equal contribution as for employee or unequal contribution. With effect from 01/04/2020, the Government of India enhanced Employer's contribution in case of Central Government employees to 14 %. For other section of employees, Employer's contribution to NPS for each individual employee stands at 10%. Moreover under Section-80 CCD(2), least of contributions made by the employer or 14% of Basic +DA can be claimed as a deduction for Central Government employees & least of contributions made by the employer or 10% of Basic +DA can be claimed as a deduction for section of employees.

One of the most useful benefit available under NPS is Tier-2 account. It is a voluntary account which can be opened by giving specific request. The only criteria for opening Tier-2 account is having an active Tier-1 account. NPS Tier-2 account is a kind of investment account that's free or negligible of any maintenance costs and exit load charges on withdrawal. It can be operated at your free will. Unlike Tier-1 account, Tier-2 account has no specific restrictions on withdrawals. Money can be deposited at any time & it can be withdrawn at any time but no deductions can be claimed for the contributions made by the subscribers to Tier-2 accounts. The persons who want to invest in mutual funds can make use of Tier-2 account as an alternate option. The biggest advantage is its

lower Pension Fund Manager fees & Custodian charges & nil exit load charges when compared to other mutual fund schemes managed by Asset Management Company (AMC). Unlike mutual funds, there is no lock in period for the NPS Tier-2 investments. Similar to mutual funds, Investment allocation options like Equity, Corporate bonds & Government bonds are also available under NPS Tier-2 account. Moreover, as in caseof switching in mutual funds investment scheme, one's preference can also be changed twice in a financial year. To be precise, NPS Tier-1 account can be used to achieve long term goals and NPS Tier-2 account can be used to achieve short term and medium term goals. With competitive returns, NPS Tier-2 account is a better investment choice than other traditional saving options.

The money invested in NPS is managed by Pension Fund Regulatory & Development Authority of India (PFRDA) registered Pension Fund Managers. Currently 8 Pension Fund Managers (PFM) are available under NPS; namely ICICI prudential pension fund, LIC pension fund, Kotak Mahindra pension fund, Reliance Capital pension fund, SBI pension fund, UTI Retirement solutions pension fund, HDFC pension management company and DSP Blackrock pension fund managers. The subscribers can choose PFM according to their choice and they are having an option to change PFM once in a financial year. The NPS subscribers can have two different pension fund managers

and investment scheme preference for Tier-1 and Tier-2 accounts. Moreover, they also have an option to change investment scheme preference twice in a year viz., from active choice to auto choice & vice versa & also to switch between the sub options available under auto choice i.e., from conservative to moderate or aggressive and vice versa. Transparency is one of the most important parameters which can be seen in NPS. This is because the subscribers can see where their money is invested and in what asset classes, with the help of NPS website and NPS mobile application. If the subscribers gets deceased during their investment cycle, the entire accumulated wealth would be paid to the nominee or legal heir of the subscriber. At the age of 60, instead of withdrawing lump sum option will be provided to the subscriber to defer the withdrawal until the age of 70. The subscribers who want to be stay invested after 60 years can make use of this option.

NPS account can be opened with entities known as Point of Presence (POP). Mostly, lot of Public Sector Banks and Private Sector Banks are enrolled as Point of Presence (POP). In addition to that several Financial Institutions also act as POP. The authorised branches of a POP called Point of Presence Service Providers act as the collection points which provides the hassle free way to open NPS accounts. As of now, minimum contribution for NPS Tier-1 account stands at Rs. 6000/- every year which ensures people

with less money can also join NPS and build retirement corpus and it is one of the criteria which makes NPS as a retirement tool for every class of people. Till the retirement, pension wealth accumulation grows over the period of time with the compounding effect, diversification of portfolio and due to the lower pension fund manager & custodian charges, the benefit of accumulated wealth to the subscriber eventually becomes large.

Every scheme may have some kind of problems, grievances and complaints which should be sorted out in a quick manner. Even NPS is not an exception to this. Pension Fund Regulatory and Development Authority of India appoints Ombudsman to receive, consider and facilitate quicker resolution of complaints and grievances. The subscribers can lodge a complaint with the Ombudsman when a grievance lodged by subscribers has not been resolved within thirty days from the date of lodging a grievance with National Pension System trust. The subscribers can also escalate the issue with the Ombudsman when they are not satisfied with the solution provided by the National Pension System trust.

## Recent Amendments in NPS

Like NPS Tier-1 account contributions, investments made by Government employees to NPS Tier-2 account will also qualify for a deduction under Section-80 C in Income Tax Act, 1961 but with a lock in period of 3 years. This

amendment provides an alternative to Equity Linked Savings Schemes with low Pension Fund Manager Fees & Custodian charges. On retirement, NPS Tier-1 account subscriber can withdraw a lump sum of 60% with tax exemption. This limit was increased from 40% to 60%. Remaining 40% of the corpus can be used for buying an Annuity from Annuity Service Provider as per subscriber's choice. NPS was made as an Exempt Exempt Exempt (EEE) product like Public Provident Fund & Sukanya Samriddhi Yojana. Money, the subscribes invest in the scheme is tax free up to the limit, the growth of the money or gain while the subscribers remain invested is exempt from Income tax and also the corpus subscribers withdraw during maturity is also exempt from Income tax. Rather, it is one of the few EEE schemes available in India which makes NPS as a very lucrative option for investment and building corpus.

With effect from 01/04/2020, the Government enhanced Employer's contribution in case of Central Government employees to 14 %. Moreover, NPS has provided an option for Registration of Virtual ID (VID) for making same day investment. Two different Virtual Account Numbers can be created for NPS Tier-1 account and Tier-2 account by providing a request. These Virtual Account Numbers can be used for obtaining same day Net Asset Value (NAV) while making investments. Standing Instruction (SI) can also be setup by using

registration of Virtual Account Numbers in subscribers Bank portal which makes an automatic deduction in Bank account and ensure timely, continuous, seamless investments. Government employees were given the freedom to choose asset allocations, allowing more equity exposure. Partial withdrawals are allowed due to COVID-19.

## Driving Factors And Further Amendments Which Can Shape Up NPS as "One Nation One Pension Scheme"

As of now, two types of investment allocation options are provided to subscibers viz., Auto choice & Active choice. The minimum allocation available in equity asset class is 25%. But there may be very low risk appetite subscribers who don't want to park their money in equity asset class. So, amendment should be made to provide an option to subscribers for parking their money in 100% debt asset class viz., Corporate Bonds, Government Bonds & Debentures. Similarly there may be very high risk appetite subscribers who want to allocate more percentage of their money in equity asset class. Currently, maximum allocation available in equity asset class is 75%. Amendment should be made to increase the maximum allocation in equity. Because, generally equity investments beat inflation and provide best returns when it is invested for long time.

From 01/04/2019 onwards, like NPS Tier-1 account contributions, investments made by Government employees to NPS Tier-2 account will also qualify for a deduction under Section-80 C in Income Tax Act, 1961 but with a lock in period of 3 years. But the same needs to be extended to other section of employees. This will provide an alternative to Equity Linked Savings Schemes with low Pension Fund Manager Fees & Custodian charges. It will encourage subscribers to open Tier-2 accounts which in turn provides an opportunity to them to fulfil short term and medium term goals.

As per NPS investment allocation portfolio, equity, corporate bonds, Government bonds are the various asset classes available currently. Gold should be included as an asset class in NPS which enables diversification of portfolio and provides a hedge against equity. Generally, Gold & equity markets behave inversely. Sovereign Gold Bonds (SGB) scheme is one of the successful schemes launched by Government of India. For obtaining diversification of portfolio and for getting a hedge against equity, most of the people are choosing SGB scheme. If Gold has been included as an additional asset class, then, most of the people will prefer NPS too and it can be a driving point for lot of new NPS subscribers.

Currently NPS subscibers are allowed to make maximum three partial withdrawals during the overall tenure and a gap of five

years must be there between two withdrawals. A subscriber can withdraw up to 25% of his own contributions after completion of three years. Partial withdrawals are allowed for treatment of life threatening diseases, for marriage or higher education of children, for purchase or construction of a property or to start a new venture. Further relaxations should be provided for partial withdrawals. Because of restriction in partial withdrawals, a lot of people desist from opening new NPS accounts. Also a facility should be provided for obtaining loans with the help of NPS corpus as collateral. It will help the subscribers to meet some emergency and unplanned needs. Presently the subscribers can withdraw 60% of their retirement corpus at the age of 60 only. If some employees are opting Voluntary Retirement before 60, they need to wait until 60 for withdrawing retirement corpus. Some provision should be made to them for withdrawing retirement corpus before 60.

NPS provides platform whereby Employers are contributing for its employees in building pension corpus. Currently there are three types of contributions from Employer and employee. It could be equal contributions from employer and employee, unequal contributions from employer and employee, no contribution from employer. For Central Government employees, Government of India is contributing 14% of Basic+ DA to NPS Tier-1 account. For other section of

employees, Employer is contributing 10% of Basic+ DA to NPS Tier-1 accounts. But for unorganised section of employees & Business people, opening of NPS Tier-1 account is not mandatory and they are opening NPS voluntarily. There are no contributions from employer side for unorganised sector employees. At least some minimum percentage of contribution should be made by the Government of India to their NPS Tier-1 accounts. It will encourage the people to open NPS & get the benefits of NPS. Moreover, it will encourage people to the habit of saving and building retirement corpus. Unorganised Employers should be encouraged to mandatorily open NPS for its employees and some kind of enhanced Income tax benefits should be provided to them when comparing with organised sector employers and adopting NPS will not dilute any statutory requirement for the Corporate. It will act as a big step for achieving One Nation One Pension Scheme in India.

Already lot of benefits are already available in NPS. Like it is one of the very few Exempt Exempt Exempt (EEE) schemes available in India. The power of compounding is the principle behind the creation of National Pension System (NPS). Due to its long tenure, it helps the people to build corpus for their retired life and to fulfil long term goals. At the time of maturity, 60% of the corpus can be withdrawn with tax exemption and 40% of the corpus can be useful for purchasing annuity. It provides the combination

of lump sum withdrawal and annuity ensures monthly payments like pension until the death of the subscriber. An annuity provides a regular income it could be yearly, half yearly, quarterly, and monthly at a specified rate for a specified period chosen by a subscriber. At the time of maturity of NPS, the subscriber can pay the money to an Annuity Service Provider and choose an annuity option to ensure a regular income after retirement. However, tax exemption will not be applicable to the annuity income. The annuity income will be added to the subscriber's income and will be taxed as per the income tax applicable to the subscriber. Moreover, NPS is providing the Income tax benefits, Transparency and the advantage of Tier-2 accounts for achieving short term and medium term goals with low Pension Fund Manage & Custodian charges. Also, when switching to other Employer, NPS Tier-1 account can be transferred to a new employer with the help of Permanent Retirement Account Number (PRAN). NPS provides seamless portability across jobs and across locations. It would provide hassle free arrangement for the subscribers to shift to new job without leaving behind the corpus build unlike other schemes.

## Conclusion

Investing in NPS not only helps the subscribers to fulfil their retirement needs but it also helps the country as a whole for developing. The amount invested in NPS will be

allocated in the asset classes like equity, corporate bonds, Government bonds and this will provide needed capital to Corporate and Government for completing their projects, which in turn helps the country to develop infrastructure and technology. Government of India is immensely trying to improve National Pension System by updating with amendments and technical innovations which is very well evident from the recent amendments. By making the discussed amendments in future, NPS can be made a really good and successful scheme and it can be definitely shaped up as 'One Nation-One Pension Scheme'. This will also facilitate India to achieve the dream of reaching the list of Developed Countries. **TJ**

## References

• NPS published by The Economic Times on 10//04/2021.

• Applicable fees & charges levied on NPS Subscribers_ npstrust.org. in

• NPS Login, Scheme & Benefits of NPS published by cleartax.in on 02/03/2021.

• Budget 2019: Amendments in NPS to delight pensioners published by Outlook Money

• www.cra.nsdl.co.in

• www.incometaxindiaefiling.gov. in

• PPF vs NPS published by Mint

**Merit Winner**

## G V Rao Memorial Essay Competition

# Practical Utility of Artificial Intelligence and Big Data in the Insurance Industry

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### Abstract

Big Data and Artificial Intelligence are no more hypothesis being worked upon in some university laboratories, it is right here in front of us. With magnitude of data available with insurers on insured (life and non-life), claim history, natural catastrophic records, underwriting practices etc. make the right ingredient to harness big data and AI to bring about positive changes in insurance industry.

Insurance industry had long been struggling with inherent challenges such as managing complexity of risk profiling, high number of fraudulent claims, unsatisfied customers, slow to adapt new needs of industry and so on. Latest developments in big data and AI technologies have made it possible to be utilized by companies for identified use cases. Though these are still at developing stages and rapid transformation is happening in technology front, it is prudent to give emphasis on big data and AI, as vehicles to help resolve some of the existing challenges of the insurance industry.

The areas wherein these technologies can be used in first phase, are fraud detection and prevention, designing personalized services to customers and

automating processes, which are structured but very time consuming. It can also be used in creating innovative products suiting to customer needs, using sensors and IoT for monitoring risk, real time data analysis, creating predictive modelling. If used with correct datasets and well trained AI model, it will optimize the risk and reduce cost of operations and thus will help in reducing premium of insurance to customers, making it affordable to larger section of society. Larger the spread of insurance in any country, better will be its economy leading to more prosperity to its people.

There is buzz in the market about big data and AI, yet cautious diligence to be done before jumping on the bandwagon. Each organization is different and so are its needs and challenges, comprehensive analysis on why, when and how to adapt these technologies, is to be done. There is lot of cost, efforts and energies are at stake, if desired benefits are not achieved within the timeline, on the other side risk of being behind the curve in market is also there, if journey is not started on latest technologies.

Regularity bodies and governments have to create guidelines to prevent misuse of AI and big data to ensure ethical use, respect privacy, and prevent data snooping, it also needs to ensure customer rights, and avoid unfair advantage by select companies.

## 1 Introduction

Big data and Artificial Intelligence are no more the latest buzz words

of IT industry, rather they have already started penetrating deep into various industries and are trying to help resolve long pending complex problems of the businesses. We are seeing business transformation being promised by deploying chatbots to augment customer service representatives, performing predictive analytics in several areas, and creating personalization of services specific to individual end user. The user data is tracked via multiple digital and offline mediums to understand the user behaviour and thereby creating and customising business offerings to end users, enabling customer delight and loyalty in ever dynamic market. These are some of the examples of AI in real life, which are adding value in various industries.

We have seen role of big data and AI in internet and e-commerce companies such as Facebook, Google, Amazon to name a few, where our usage data is analysed to provide relevant advertisements to our email inboxes and on webpages we surf.

Several companies are now developing their own AI engine, suited for specific industry and trying to solve real life problems which were not feasible earlier. Few companies have developed pre-configured and easy to integrate AI solutions, which can be used by business. IBM, Microsoft, Google, Amazon are some of the some of the examples. More and more AI players are coming into the market promising better business solutions.

Insurance industry can't be immune to proliferation of big data & artificial intelligence and several insurance companies have already started piloting the use cases to utilize big data and artificial intelligence in the areas of customer journey mapping, fraud analysis, user interaction, Robo advisors, and claim prediction analytics.

Big data is the term attributed to large volume of structured, semi-structured and unstructured data. This data is of the interest to the organizations to mine useful information, which can be fed to predictive analytics engine to help make better decisions on business. Insurance industry is well placed to harness full potential of big data, as it can source large volume of data on customer journey, customer financial interactions, customer social media communications, wearable bio-sensors data (Fit bit, Apple Watch etc.), other sensors (telematics data from vehicles, smart home devices, location data of mobile phone etc.). These large volume of structured data, primarily internal data and unstructured data, mostly external data are important to insurance industry as useful information can be fetched to create actionable insights. These actionable insights may help in decision making in the areas of customer policy premiums, allow/reject policy to customer, fraud analysis etc.

Artificial Intelligence, at its core, is the inserting of human intelligence into machines to become smarter

by learning, adapting and creating solutions by their own. Various AI technologies are at various stage of development and are being used in multiple industries; few examples are machine learning, computer vision, robotics, speech analytics, natural language processing etc.

Basically big data and artificial intelligence both are complementary. In big data, we identify large volume of structured, semi-structured and unstructured data, then this is fed to machine learning system to create, train and optimize model to use real time data into useful business decisions such as predictive analytics.

### 1.1 About this paper

This paper outlines the overview of AI and Big data. It also provides the key use cases of AI and Big Data in insurance industry. Along with use cases, this paper touches upon various challenges of implementing AI and Big Data.

## 2 Big Data

### 2.1 What is the Big Data?

There seems to be several definitions for big data depending upon who is the user and wants to benefit from it, these may be governments, business, research bodies and individual.

One definition for big data is the exponential increase and availability of data in our world. [1]

A National Institute of Standards and Technology report defined "Big Data consists of extensive datasets – primarily in the characteristics of volume, variety, velocity and/or variability – that require a scalable architecture for efficient storage, manipulation, and analysis." [2]

The Big Data paradigm consists of the distribution of data systems across horizontally coupled, independent resources to achieve the scalability needed for the efficient processing of extensive datasets. [2]

Big Data refers to large volume of data in various forms is usually characterised by 4 Vs:

- **Volume –** (i.e., the size of dataset); the large volume of data, as per an estimate the digital data will reach 180 zettabytes by 2025. [3]

- **Variety –** (i.e., data from multiple repositories, domains, or type); the wide variety of data types stored in big data systems

- **Velocity –** (i.e., the rate of flow); The speed at which data is generated, collected and processed

- **Variability –** (i.e., the change in other characteristics)

Over the last few years, additional Vs have been attributed to big data, these are mentioned below:

- **Veracity –** (i.e., the quality of collected data); the analysis of data will be useless, if data collected is not correct. Since in current world decisions are being made by computers based on data input, so if quality of data is not trusted, the decision made basis such datasets also will be incorrect.

- **Value –** (i.e., the value inherent in the data); which is of interest to organization. The potential impact of big data on healthcare, might be used to reduce the pricing of insurance premium or segmenting customers to create specific insurance plans.

- **Visualization –** (i.e., the availability of data in easy to understand graphs); data is useful, only when it is presented as actionable insights to stakeholders.

### 2.2 The Big Data process

The process of Big Data is depicted below in context of insurance industry.



Figure 1:  The Big Data process flow

**The details of the process is given below:**

✓ **Capture –** The collection of data from multiple sources. It involves removing the duplicate datasets and messaging to remove any outliers from datasets.

✓ **Process –** The processing of data involves employing various rules on the identified data to produce meaningful information.

✓ **Analyse –** The data analysis is the process of application of statistical and other techniques by the ways of collecting, modelling and analysing data to produce actionable insights.

✓ **Visualize –** The visualization of data is process of representation by visual elements such as charts, graphs, maps, etc. This helps stakeholders to see trends, patterns and enable them to take informed decisions.

**The data sources for insurance industry can be:**

• External sources

✧ Social media data – customer specific data from Facebook, YouTube, twitter etc.

✧ Connected devices data – captured data from smart devices employed in biosensors, automobile, smart homes, IoT etc.

✧ Data procured from third parties – data from other companies, agencies such as credit rating agencies, claims processed data, road transport department, price enquiry on websites etc.

✧ Data from other financial institutions such as banks, regulatory bodies, CIBIL score etc.

✧ Data from group companies – captured data from other group companies about customer journey and purchase history

• Internal sources

o Data on customer and its buying behaviour as well as during maintenance phase

o Underwriting reports on customer profile on various quotation / purchase events

o Risk profiling and analysis based on

**2.3 Utility of Big Data in insurance**

The big data can be employed in insurance industry in several areas, such as:

**2.3.1 Data Analytics**

Major types of data analytics are

• Descriptive analytics: analysis of past data

• Diagnostic analytics: why something happened

• Predictive analytics: what is likely to happen in the near future

• Prescriptive analytics: some actionable insight

Big data can be very useful in further optimizing data analytics, especially diagnostic and predictive analytics to forecast customer behavior and take appropriate action as based on analysis.

**2.3.2 Product Development**

The insurance product development can be strengthened by employing use of telematics. The widely used telematics data is captured in motor insurance. Having said that, telemetry is also gaining traction in the areas of:

Home insurance: Smart devices in connected home providing data on electricity, gas, pressure, security devices

Health insurance: Wearable devices are major sources of telemetry providing reliable data on insured's health and daily routine on health, exercise, sleep pattern etc.

**2.3.3 Marketing**

The big data sourced from social media and various search engines can be used to understand the customer specific need on insurance and design marketing campaigns to target customer on right platforms and channels.

**2.3.4 Distribution and sales**

The insurance product development can be strengthened by employing use of telematics. The widely used telematics data is captured in motor insurance. Having said that, telemetry is also gaining traction in the areas of:

Home insurance: Smart devices in connected home providing data on electricity, gas, pressure, security devices.

**2.3.5 Claim management**

The claim management is the key area, which creates the brand of any insurance company, as any less than wow experience during claim process may detriment the insurer company's image as well as might invite ire of regulatory bodies. Big data can be helpful in identifying the fraud faster in the process and help clear the claim of normal policy holders.

## 3  Artificial Intelligence

In its literal meaning, Artificial Intelligence is creating such a computer system, having intelligence similar to that of a human being.

**3.1 What is Artificial Intelligence?**

The artificial intelligence is amalgamation of various technologies such as natural language processing, computer vision, machine learning, sentiment analysis etc.

AI is the overarching or umbrella term which refers to any or all forms of machine cognizance. These are mentioned below:

- **Reactive Machines**

These are the most basis type of AI system, without forming its memory or past experience. Deep Blue, IBM's supercomputer, which defeated grandmaster Garry Kasparov in 1997, is the example of a reactive machine.

- **Limited Memory**

These are the AI systems with qualities of reactive machines added with historical data and to help make decisions. These AI systems are trained by large volume of data and store it in its memory to create reference model, for using for future problem solving based on previously stored data.

- **Theory of mind**

These AI systems are advance systems, which are still being worked upon in various

laboratories. It is expected to sort human sentiments, emotions and thoughts. An example of this type of AI is Kismet, developed in late 1990 by Dr. Cynthia Breazeal of Massachusetts Institute of Technology.

- **Self-aware**

Self-aware AI systems are the ones which can think on their own and destroy humans. Warnings have been raised by several leading scientists on various platforms about the evolution of self-aware AI systems.

- **Artificial Narrow Intelligence (ANI)**

This is also known as 'week AI'. It is the AI system, which is developed by tech world in today's era.

- **Artificial General Intelligence (AGI)**

This is also known as 'strong AI' allowing a machine to apply knowledge and skills, basis its training with large volume of data and processing to apply it in the context of current problem at hand.

- **Artificial Super Intelligence (ASI)**

ASI is supposed to be better than human in the areas of memory, data processing & analysis, and decision making capabilities. Critics of AI have shared the concerns that ASI could wipe out the human race from earth.
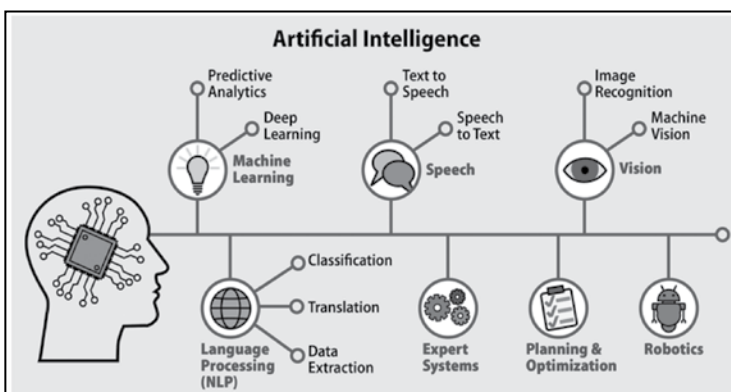


Figure 2: Components of Artificial intelligence (Credit: www.datamation.com)

AI encompasses all intelligent agents (computer systems) that have the capacity to learn, adapt and operate in dynamic and uncertain environments [4].

With proliferation of AI and business demand of utilizing it for top line and bottom line growth, there are risks associated to use AI for data manipulation, unethical practices and unfavourable advantages by the organizations.

We need to implement "Responsible AI" as mentioned by Gartner "From the governance perspective of AI engineering, responsible AI is emerging as an umbrella term for many aspects of AI implementations. These include AI value, risk, trust, transparency, ethics, fairness, interpretability, accountability, safety and compliance. Responsible AI signifies the move from declarations and principles to the operationalization of AI accountability at the organizational and societal levels".

### 3.2 Utility of AI in insurance industry

Insurance industry is suitable field to deploy AI as key ingredients needed for implementing AI system, large volume of data, historical records, computational capabilities, reference model based systems are available with insurance players e.g. insurance companies, intermediaries, insurance industry bodies etc.

Following are few illustrated use cases of AI in insurance industry:

### 3.2.1 Behavioural policy pricing

With the data coming from connected IoT devices from motor or wearable sensors, to the pricing platform, allowing safer drivers and healthy lifestyle to pay for auto insurance (known as usage-based insurance) and people with healthier lifestyles to pay less for health insurance(5).

In the similar way, people will unsafe driving habits can be conveyed about the risk with risky behaviour and corresponding additional premium on policy pricing. This on one side would decrease the workflow in business operations and on other side will reduce cost while improving the customer satisfaction.

### 3.2.2 Hyper personalization

A study by Accenture mentioned that 80% of insurance customers are looking for more personalized experiences. AI can help insurers to understand their customers and offer customized products to them as per coverage need, pricing, and risk profile. AI will enable a seamless personalized customer experience for insurance policy buying via chatbots, customized to individual preferences and needs. This amazing customer experience will cover entire customer journey from quotation to buy to claim

management, thereby retaining the customer for longer years.

### 3.2.3 Expedited and personalised claims settlement

The AI enabled virtual claim manager will enable faster claim processing based on pre-configured rule-sets, which will in turn reduce probability of fraud. System will be designed in such a way to process data coming from multiple sources to process at faster speed to filter out the fraudster from the genuine policy holder.

### 3.2.4 Appeals processing

Once claims are processed, a few claims can result in appeals. These appeals processing takes longer time to close, as manual work is involved of reviewing the appeal made, document processing etc. With the help of AI enabled bots, it can be automated. Workfusion claims that it can automate 89% of appeals processing with a 99% accuracy rate.

### 3.2.5 Reduction in fraud and money laundering

According to insurance stats, every year, insurance companies report fraud of more than 80 billion dollars, only in USA[3]. The AI can enable insurance companies to process huge data about policy holder, retrieved from social media and other communication channel, including 3rd party sources. This helps minimizing the fraud. When
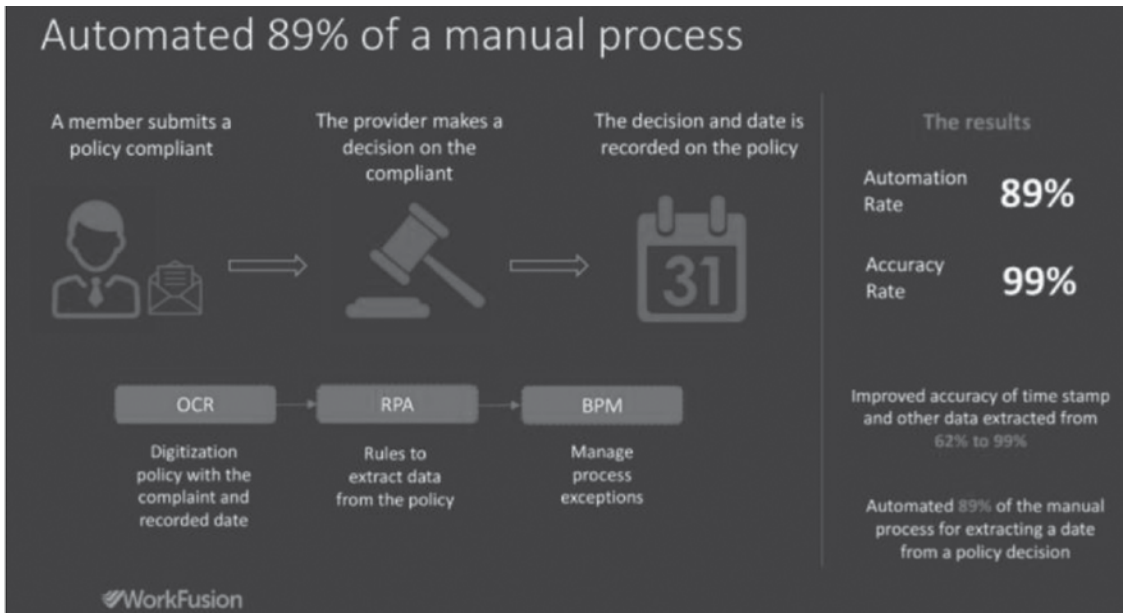
Figure 3: Automating Appeal processing (Credit: Workfusion)

we use machine learning on such data, the AI model will improve over time.

### 3.2.6 Digital Employee aka bot

AI can enable to have digital employee aka Bo for insurance companies. These digital employees can be utilized in many ways, such as:

• Claims coordination: The bot can be trained to understand free text in the form of chat, email and documents. Over time the learning can be improvised to enable bot to perform better and mimic human agents and pass on the details and control to human agent in the overall process.

• Front line support: Front line support is very crucial in insurance industry and any bad experience to
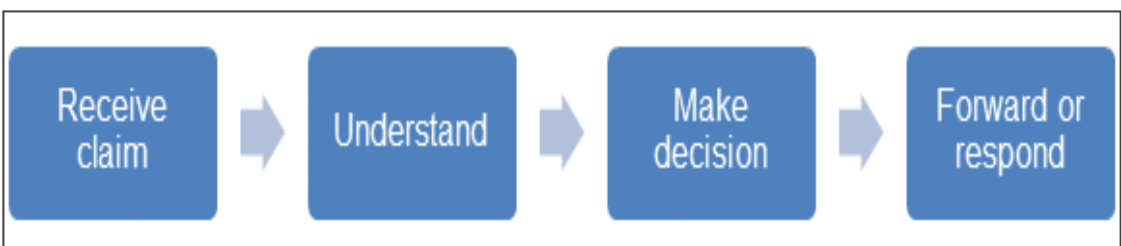


Figure 4: Use of digital bots in claim coordination

prospect or customer may lead to permanently losing the customer to competition. This area can be strengthened by using Bots by augmenting it with human agents, targeting 90% of queries to be handled by Bot and remaining 10% complex ones routing to human agent. Bots are highly useful here as most of the time the range of queries are repetitive and answered well by Bot.

Figure 5: Use of digital bots in front line support

**Benefits of using digital employee / bot:**

✓ Customer satisfaction

o 24/7 operations

o High speed of delivery

o Consistency

✓ Team motivation

o Removal of mundane tasks

o 0Happy employees

✓ Operational efficiency

o Higher tickets resolution per employee

o Faster claim processing

o Cost reduction

## 4 Challenges with Big data and AI implementation for insurance industry

There are definite benefits of implementing Big Data and Artificial Intelligence in insurance industry, where new technologies will add value by enabling better risk management and possibly reducing policy pricing while controlling fraud. There are few challenges as well, which we need to resolve in order to fully benefit disruptive technology.

These challenges may be different for various stakeholders.

### 4.1 The insurer

For insurer, the challenges can be summed up as:

### 4.1.1 Penalties for violating data privacy law

Failure to safeguard sensitive personal data of customer, or If the proper consent is not taken in advance, then it may be detrimental for insurer as hefty fines (up to 4% of its annual turnover under GDPR) will be imposed by regularity authorities. More importantly it will generate wrong publicity and brand image of the company will be severely impacted.

### 4.1.2 Anti-competition law

AI and Big data if implemented without unchecked on ethical grounds, may lead insurer to have undue advantages as compared with other players in industry, in some countries, this is against prevailing competition laws, and infringement of the same will cause fine to insurer.

### 4.1.3 Low ROI on AI implementation project

There are various attributes, if not managed timely and correctly, might lead to failures of AI initiatives. Which means entire efforts and cost spent on infrastructure, team, analysis etc. will not give desired return on investment.

These attributes includes team, skills of team, infrastructure, planning, execution, management support etc.

### 4.1.4 Technological challenges

Technology is evolving at unprecedented pace and it is true for disruptive technologies such as big data and artificial intelligence. There are various attributes, if not managed timely and correctly, might lead to failures of AI initiatives. Which means entire efforts and cost spent on infrastructure, team, analysis etc. will not give desired return on investment.

These attributes includes team, skills of team, infrastructure, planning, execution, management support etc.

### 4.1.5 Talent gap

An AI project is highly complex and needs team consisting of data engineers, developers, data scientists, SMEs and other individuals with special skills and knowledge. Hiring and retaining of

these diverse skills is difficult as talent is scares and costly.

### 4.2 The insured

For insured, the challenges can be summed up as:

### 4.2.1 Encroachment of privacy

Various tools and systems being employed for getting customer behaviour data for big data and AI, snoop the user and pass the information to insurer or other 3rd party agencies. This is like intruding into personal space, without intimating the user. If this personal data is not defended properly, may land into the hands of cyber criminals which means getting exposed to crime.

### 4.2.2 Unfair treatment by insurer

The personal data in the hands of insurer may enable insurer to add loading on insurance premium, causing unfair treatment to select group of customer on the basis on attributes such as nationality, colour, demography, background etc. This will lead to unethical practices.

### 4.3 The intermediary

For intermediary, the challenges can be summed up as:

### 4.3.1 Connecting consumers and insurer

The key business of intermediaries being in the middle of insurer and consumers, their key area of

expertise is to provide services to insured and/or insurers. They don't usually have the resources for implementing the big data and AI from ground up. It becomes sometime difficult to sustain the business if insurer itself starts to offer services to insured by using big data and AI, thereby cutting some of the services of intermediaries.

For example, the physical verification and audit of the insured article e.g. Vehicle, home etc. can now be done by few photographs sent directly by policy holder and need for surveyor and auditor is not needed.

### 4.3.2 Ever increasing customer expectations

The customers are becoming better equipped about product and services, thanks to penetration of internet and easy accessibility of information to users. The intermediary companies are finding it difficult to manage customer expectation within the constraints of cost and quality.

### 4.4 Legal Issues

Below are few examples of legal challenges of AI in insurance.

### 4.4.1 Fixing the liability

As insurance is highly regulated industry, the deciding liability of the failure of AI is challenge. Who will own the AI failure or any wrong decision made due to wrong training

data used to create AI model failure to safeguard sensitive personal data of customer, or If the proper consent is not taken in advance, then it may be detrimental for insurer as hefty fines (up to 4% of its annual turnover under GDPR) will be imposed by regularity authorities. More importantly it will generate wrong publicity and brand image of the company will be severely impacted.

### 4.4.2 Unclear policy and regulation on AI

As AI is still evolving and the impact of big data and AI are still being studied across the globe. We are yet to see proper guidelines and regulations around use of AI in insurance industry. Though some steps have been taken by various governments, it is far from clear.

## 5 How to prepare for AI and Big Data for thriving in insurance market

The implementation of big data and AI will accelerate insurance industry into new era, promising better policies designed for individuals and better risk management, keeping tab on prices.

The adoption of AI should be done in planned way to achieve the stated objectives as we ROI.

### 5.1 Understand Big Data & AI trends

Ignoring of AI and Big data technologies will have similar impact on insurance companies, as

was done to Kodak on not changing with time. PoC and pilots should be designed to have correlation of AI enabled actionable insights adding value to decision making for business goals.

### 5.2 Create comprehensive & strategic plan

Comprehensive strategy is the key requirement, which will sponsor from senior management. The major areas of focus should be:

Make or Buy - Whether to buy AI technology from IT service providers / vendors or have own team in-house?

People – What should be the talent / skill strategy to hire and retain key talent? How will teams be structured?

Process – What process to create, monitor and control various initiatives on AI projects?

Platform – Devise long term approach for a platform supporting long term technological roadmap, delivering value with specific milestones.

Change Management – Business needs are ever dynamic. Technological innovations are also very fluid in current market. Proper change management process and governance structure need to be implement for fine tuning the balance in business priority.

### 5.3 Develop future ready data strategy aligned with the ecosystem

Data is the new gold. It is the most valuable asset of any organization which is equally applicable to insurance industry as well. Well thought out and structured data strategy need to be created to tackle internal and external data. The source of data very vital, as it has attributes on authenticity, variety, availability. Most of the time cost of acquiring external data is high as compared with internal data. Company should give special emphasis to provide for procurement, processing, messaging and transformation of data.

### 5.4 Enable system for right talent and technology

Insurance organization of future will require talent with right mix of skills, i.e. technical, insurance domain, empathy etc. Additionally these talents need to be flexible in terms of skills, as the technology will keep on changing with rapid speed, so they should be able to keep updated themselves as per changing needs of the customer and industry.

New team structure of future insurance organizations will consist of amalgamation of roles such as data scientists, data engineers, cloud computing specialists, customer experience designers. It will be difficult to hire, re-skill, retain

such a diverse skilled workforce, so organizations will take help from partners which can help augment staffing needs as per demand.

### 5.5 Monitoring and Control structure with defined business objectives

Implementing AI infrastructure and teams take lot of efforts and money, if not managed properly it is bound to fail and demoralize the entire team. The failed AI initiative not only will not only amount to loss of money and efforts, it may badly impact its medium to long term prospects in highly competitive market. A monitoring and control structure involving governance and program management with frequent dashboard for reporting and risk planning will enable stakeholders to keep track of progress made as well as make informed decisions in case things are not going as planned.

## 6 Conclusion

AI is already here and insurance industry has started adopted it in pieces, some of the insuretech companies are coming forward to embrace AI & big data to tackle legacy.

Insurance players, which are operating in insurance sectors for decades. These insuretech companies are fast and using latest technology to fill issues of legacy insurance players. These gaps are longer time to customer acquisition,

slower process of underwriting, inefficient claim management and increasing fraud.

While there are benefits of AI and Big Data, insurance organizations have to consider below points, in order to make their AI journey successful and rewarding.

### 6.1 Embrace AI but follow phase wise approach

Companies have to adopt to AI, but before that deep emphasis is to be provided on why AI is needed, what benefits are we expected from AI, what ingredients are to be achieved in house and what all to be procured from outside.

Once strategy is finalized, companies need to implement AI with small PoC, Is the result of PoC are promising, then only proceed to implement it. The AI should be implemented for identified use cases and not all use cases should be planned in one go.

### 6.2 Legal boundaries

Insurance being highly regulated industry and constrained by various laws and regulations. Most of the times, these regulations and laws are interconnected. During AI implementation the strict focus should be given to compliance as well. Some of the laws, wherein emphasis needed are:

- Insurance Law
- Re-insurance Law

- Health Services Law
- Banking Law
- Capital Market and Securities Law
- Information Technology Act
- Data Privacy and Security Act
- Companies Act
- Anti-Competition Law
- Department of Labour Law

### 6.3 Skilling the team

While the benefits of AI seems tempting and every company is looking to reap benefits of AI and use it in enhancing operational efficiency and improved customer engagement, the real challenge of AI initiatives lies with skills of the team. AI being primarily a multifunctional domain, requires diverse talents with skills ranging from data science, technology, cloud, big data,

designers and analytics. These skills being complex and scarce in market, it makes paramount to get right skills in team as well as utilize them to best of the AI program needs. It is not a good idea to start AI program if hiring and retaining complex skills is not the core DNA of the company.

### 6.4 AI is tool and not the target

AI is just a tool to achieve business goals and does not give guarantee to achieve business benefits. It definitely promises to improve operational efficiencies and enhance customer engagement but just implementation of AI will not help achieve any benefits if it is not integrated well with business goals. While implementing AI in organization, focus should always be on business objectives. **TJ**

**Acronyms**

| Term | Definitions |
|------|-------------|
| AI | Artificial Intelligence |
| Insuretech | Insurance Technology companies |
| IoT | Internet of Things |
| GDPR | General Data Protection Regulation |
| ML | Machine Learning |
| PoC | Proof of Concept |
| ROI | Return on Investment |

**References**

1. University of Wisconsin website https://datasciencedegree. wisconsin.edu/data-science/what-is-big-data/ Accessed on 25-Apr-2021

2. https://bigdatawg.nist.gov/_uploadfiles/NIST.SP.1500-1.pdf

Accessed on 25-Apr-2021

3. https://insurancefraud.org/fraud-stats/ Accessed on 01-May-2021

4. Miailhe, N. (2018), Competing in the age of artificial intelligence: current state of AI & interpretation of complex data, https://www.

scor.com/sites/default/files/focus_scorartificial_intelligence.pdf.

5. https://emerj.com/ai-sector-overviews/artificial-intelligence-in-insurance-trends/

6. OECD (2020), The Impact of Big Data and Artificial Intelligence (AI) in the Insurance Sector, www.oecd.org/finance/Impact-Big-Data-AI-in-the-Insurance-Sector.htm.

7. https://www.mckinsey.com/industries/financial-services/our-insights/insurance-2030-the-impact-of-ai-on-the-future-of-insurance#

8. https://www.mckinsey.com/industries/financial-services/our-insights/insurance-2030-the-impact-of-ai-on-the-future-of-insurance#

9. https://www.ibm.com/downloads/cas/5AJENON7

10. https://research.aimultiple.com/ai-insurance/

11. https://www.lexology.com/library/detail.aspx?g=856b1ec3-94e5-41d9-9466-9ebe3e7c7042

12. https://bigdata-madesimple.com/how-will-ai-and-data-technology-transform-the-insurance-industry/

13. What Are The Challenges To AI Adoption In Insurance? 11 Experts Share Their Insights - Disruptor Daily

14. https://www.insurereinsure.com/2020/01/29/top-10-insurance-laws-and-regulations-of-the-decade/

15. https://www.simplifai.ai/en/digital-employees-forsurance/?gclid=EAIaIQobChMI6N2-8Nq08AIVkH8rCh3rBQ1zEAAYAyAAEgKN4fD_BwE

16. EIOPA Consultative Expert Group on Digital Ethics in Insurance <https://eiopa.europa.eu/Pages/News/EIOPAestablishes-

Consultative-Expert-Group-on-Digital-Ethics-in-Insurance.aspx>

17. https://www.datamation.com/artificial-intelligence/what-is-artificial-intelligence/

18. https://www.analyticsinsight.net/7-types-of-artificial-intelligence-propelling-the-technology-development/

19. https://www.h2o.ai/solutions/usecases/personalized-product-bundling/

20. https://cdn2.hubspot.net/hubfs/495128/Combining%20RPA%20+%20AI%20Everest%20Feb%2014%20Webinar.pdf

21. https://www.britannica.com/topic/insurance/Historical-development-of-insurance

22. https://en.wikipedia.org/wiki/History_of_insurance

23. http://wsrinsurance.com/how-insurance-began-3000-years-of-history/

**Merit Winner**

## G V Rao Memorial Essay Competition

# Practical Utility of Artificial Intelligence and Big Data in the Insurance Industry

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**Abstract**

Artificial intelligence has paved the path of automation in insurance industry. However it's a distant dream for insurance industry in our country, as policy seekers and holders are still looking forward with awe for productive and efficient automated communication channels with the insurers. Automation has arrived to some extent, nevertheless it is also noticed that complete automation still needs a lot of dedicated efforts from insurers as well as from insured's in the requisite direction. Research aims to discern solutions though highlighting prospects of holistic growth in insurance functions through alignment of bigdata and eminent AI technologies. AI and Bigdata as a resource has emerged as driving force for insurance industry to take tenable leads in near future and thus insurers in India should put forward their concentrated efforts in this direction. It has been signaled remarkably in the research how indispensable AI Analytics and bigdata has emerged as a perfect match to induce excellence in the operations of the industry. Its high time regulators, insurers, data analytics and BI intellects should come forward to

engage in brainstorming exercise tofructify this elusive aspiration

## Artificial Intelligence and Big Data

### Introduction

Artificial Intelligence in its cognate expression signifies applied knowledge and skills embedded into the machines through programming language to make them think and work like humans. AI fashions a machine which is controlled by binary coding to easily perform tasks commonly being handled by intelligent beings. Not everything could be managed through machines, nevertheless it is also worth noting that precision level obtained through AI in robotics controlled operations could never be challenged. AI is new normal for fast paced and technically driven human society. Human brain is one of the most complex yet most compelling organ in human body with more than 86 billion nerve cells. The way it functions and helps human being to execute normal to critical tasks, is still an enigma to be resolved. Similar is the functioning of AI, which executes unbelievable errands with same levels of unambiguity.

BIG DATA on the other hand is programming tool to extract relevant data from raw input, analyze it further for making informed decisions and obtaining strategic business positions. AI supports bigdata computations, which makes them almost inseparable. Data is as indivisible resource for

AI as heart is to functioning of human body. AI enabled machine learning languages automate data analysis due to which too large and complex set of data is easily handled with immaculate precision to generate fresh insights which were once impossible. Customer Data generated within organizations is stored in severs withexecution of each of its business negotiation. Data collected is not just huge, complex and highly heterogeneous, but it is incomprehensible too. Such humungous data stored in servers is of no use unless patterns are identified and bigdata is synergized through AI for extracting meaningful insights for reaping ultimate benefits.

Insurance as a sector has come of an age, present pandemic has infused more strength into its presence as last resort and as ray of hope to reach out to masses, in troubling times. Now insurance is seen, as essential as having food, clothing and shelter for peaceful coexistence of human race. Product availability with insurers to cater to needs for securing ones interest in an asset and to indemnify the insured in the case of an unfortunate event is unparalleled. Insurance is now seen as provider of unprecedented solutions for many problems, which were once a cause of sleepless nights for many. Insurance products for Life, Motor, Travel, Health, Property, Mobile, Cycle, Bite size etc., snatch ones worries and promise the insured to make the loss good in an untoward

or unforeseen event. It is also to be taken into cognizance that it has some liabilities and conditions attached to it, which makes it to be referred as a product which can never be sold but is always a subject matter of solicitation. So many enigmas hidden behind this propagation come out as one tries to delve more into it. One can easily bet that it's more like opening a can of worms. Big Data and AI has come as savior for insurers as well as insured's to deal with most of these worms or skeleton coming out of the closet, in a manner which is most commendable in present times of uncertainty and internet supremacy.

### AI to Make Revolutionary Changes in Insurance Sector?

Could we expect AI and Bigdata to make revolutionary changes in ways insurance industry functions? You may think it's highly unlikely but the truth is otherwise. AI and Bigdata are future driving forces, which will take over almost every single job across the table to make it free from human control, that too beyond ones imagination. Advent of Tesla's Driverless cars which is based on unsupervised machine learning, navigates the mighty beast through freeways and even serious congestions with sheer ease says it all. Insurance industry is also going to join the AI technological bandwagon sooner or later to bring automation in most of its tasks. If at present ones takes hours to

choose a better policy combination or product for his/her personal requirements, with AI and Bigdata automation it will left to be matter of few seconds. AI and Bigdata are going to bring insurance operations on auto pilot. Yes, you heard it right, Auto Pilot. Does this mean no human intervention at all? How this transformation will take place, what will be its aftereffects, which work segments will be automated, what AI tools will enable this transformation, and to what extent, let's just put forward our insights about it.

## Rate Making

Rate making is one of the most critical of all operations for an insurer. In a competitive world no one wishes to lose prospective customers for want of fair and adequate premium quotes. Generally a rate is price per unit of insurance for each exposure component. Other than goal of having profitability for insurers, rate making is driven by several set of standards which include compliance with regulatory norms, ease of cognizance for prospective buyers, minimization of client dissatisfaction, harmony with economic and global market conditions, price affordability and finally the loss control. All these set of considerations require ceaseless brainstorming over humungous set of data using cumbersome actuarial sciences namely Judgment rating, Class Rating, Manual Rating and Merit rating. Lot of technologically driven machines, Cloud Calculations, Predictive

models, Collaborative tools, analog pattern analyzers and spreadsheet makes this job easy, however it still takes lot of time and is not void of inaccuracies. It is believed that AI and Bigdata combined together would relieve this apprehension of the insurers by making it effortless. Bigdata obtained about a particular customer class from application servers of reinsurers, distributors, service providers, manufacturers,wrt Taste and preferences, Driving skills, Family health and medical history, Eating habits, Work or occupational information etc will be reviewed using AI Algorithms supported by combination of deep learning and machine learning, this entire exercise will enable insurer to identify patterns, to determine a rational rate for its segmental outcome. Automated data processing coupled with unsupervised machine learnings helps insurers to attain actionable insights for staying ahead of competitors, by offering products with differentiated price, value, characteristics and experience.

## Underwriting

Underwriting brings risks to the insurers. Not all-risks could be accepted or assented, to be made good in the event of losses. Presence of this phenomenon necessitates the need for reasonable selection, classification and pricing insurance for prospective applicant. Underwriting as a job could result into serious repercussions, it could make or break an insurer. As per

latest research reports underwriting losses for Indian insurers have surged to Rs 22,859 Crores in FY 2019-20. Major insurers are on verge of bankruptcy. Latest debacles of Aviva Life Insurance Ltd. (India), Conseco(USA), Conservatrix (Netherland) are just tip of the iceberg.  It is expected that due to ongoing pandemic situation across the world, the losses are bound to aggravate and so are bankruptcies. A mindful underwriting could save a future and it could not be an exaggeration to believe,there could be no tougher job for an insurer then insurance underwriting.AI and Bigdata is expected to change the way insurers underwrite their risk for variety of products across property, life, general, casualty, marine, fire, liability and social insurance.Artificial intelligence techniques namely Machine learning, Deep Learning, Robotics Automation, Snapshot and Machine vision are expected to perform underwriting data analysis tasks which generally take hours to complete, in the blink of an eye. Pricing decisions will observe sea of transformation due to block chain computations using AI mechanism, allowing insurers to take leverage for the technological advancementsin their actuarial data attainment and processing functions over their peers.Underwriting demands choosing prospective insured's considering risk procurement standards of insurers, so that the expected future loss experience does not exceed the loss experience

predicted in the rating schedule. Major view behind this principle is to keep the risk of adverse selection at bay or at its barest minimum. AI algorithmic applied sciences helps insurers in meeting this goal in its entirety. For instance AI Neural Networks algorithms which mimic human brain, enables insurers to construct events, guess incidents and predicts the future patterns of human behavior through diverse data interpretations. Casualty insurers are processing present and historical complex data's of their prospects, through AI algorithms to predict contingencies and are making underwriting decisions accordingly. This enables them to reduce adverse selection, take maximum acceptable risk and that too at a fair price.

## Production

Production indicates generation of business. Earlier major business was generated through sales and marketing teams which includes Insurance Agents, Development Officers, Managers, ChFC, CFP's, CCE's (Customer Care Executives) and so on, but due to growth of IoT and Online enabled business solutions, tasks now a days are being managed by Applications, Websites, Chat-bots, E-mails, Search Engines, Insurance Blogs, Social media channels, Vlogs etc. Offline and Online resources have their pros and cons however as an insurer major contention is to keep the ball rolling and generating as much positive leads as possible.

Appropriate Selection, management, training, supervision and control over production team is of inevitable significance. Insurance is product of lifetime and so is its service. Disservice may not only result into loss of future clientele, but also affects brand image and goodwill.

Insurers have started using AI monitoring tools to identify inappropriateness, inefficiencies in operations and develop real time solutions of problems. This Bigdata and AI pattern analysis over operations and employee performance statistics helps them to take quick hire or fire decisions. Insurers are embedding AI in functions of Employment, Sourcing, Training, Performance evaluation,Resource retention etc. Not just that many insurers are using AI backed Chatbots to understand issues faced by intermediaries. Chatbots allow teams down the line to share their concerns, mental wellbeing, performance charts etc and enables management to remove bottlenecks immediately. Insurers are also using AI and cloud based tools and applications like Otter.ai, Zoom, CISCO Webex, Google meet, Bluejeansetc to schedule meetings, sharing spreadsheets, managing CRM, and training, thus enabling employees to work efficiently and effectively. Real time responses to FAQ's via AI and cloud applications helps employees relieve queries of clients with much ease and in lesser time. It is expected in times to come production is tend to streamlined

and rationalized to a greater extent in insurance industry, due to the effect of real time analytics of Bigdata and AI.

## Claim Settlement

Claim settlement function involves determining coverage, investigating claims, and adjudging the claim. Job seems uncomplicated but is it so? Claim settlement requires exceptional expertise and skills as casual adjusting of claims may result into losses to insurer from fraudulent requests, on the other side rejection of bona fide claims may result into loss of goodwill, which ultimately effects fresh business. Every claim request is a catch 22 situation for insurer. Claim settlement team is always on its toes to ensure job is served in most legible propositions and any possibilities of injustice is avoided at all costs. This task becomes onerous due to requirements of collection of evidence, serving notice, making computation and adjudging settlement amount etc. AI tools embedded with machine learning, enable teams to make real time assessment, corroboration of evidences obtained, Visual Analytics through image recognition technology and usage of bigdata tools in determination of coverage and indemnity amount with the objective of uprooting majority of issues thus enabling prompt, fair and equitable settlement of claims. Insurers have started implementing use of bigdata tools like Hadoop, HPCC, Storm, Qubole, Cassandra,

Statwing, CouchDB, Pentaho, Flinketc to access and stream real time processing data computations from out stationed servers.

Ding Sun Bao, AI operated software of Ant Financial uses machine vision technology to obtain images of the damaged vehicle, big data tools work on the images obtain and stream real time information about the extent of damage to the insurers. This enables insurers to appropriately assess the severity of damages, estimate repair expenditure, and adjudge the claim. Data accumulated in cloud servers of clients regarding previous and latest claims, enables organizations to take decisions wrt rating and future underwriting.

On similar lines several claim settlement departments of Indian insurers too have started establishing API gateways which combine data in public domain with the proprietary data of the prospective clients to enable individual specific deliverables. Edelweiss General Insurance (EGI) has become India's First cloud-native insurers to launch Application programming Interface Gateway enabled with AI & Bigdata to promote digital platforms for its business operations. Code samples are also listed with API gateways to enable digital economies to function appropriately by making necessary changes in system. Where adjuster have reasons to believe that claim submitted is fraudulent, AI analytics and API gateways provide necessary

technical data assistance to resolve the conflict. All these efforts help claim settlement operations to have requisite information for taking on time well-judged decisions.

## Reinsurance

Reinsurance department deals with requirements for transferring of risk portfolios to other parties either in part or full as per agreement terms, to reduce the likelihood of payment of huge obligation which may arise from an insurance claim. It allows insurers to remain solvent in uncontrolled and unforeseeable catastrophic events.Reinsurance requires cumbersome statistical and actuarial calculations to be made on large amount of historical data and event trends. Executives gauge reinsurance needs for every big project, as individually they do not hold enough capacity to write large amounts of insurance. AI and Bigdata enables reinsurance teams to delve deep into sea of data to gain hidden insights. Through AI enabled machine leaning insurers analyze historical trends, patterns, data and other nuances to formulate strategies for futuristic loss controls through reinsurance programmes. As per latest research statistics world has lost around 9 Trillion US dollars in economic output due to Covid-19 pandemic. World Bank also expected 5.2 percent contraction in Global GDP due to pandemic. All this has severely affected insurance industry.

As per Brodies LLP latest research,

insurance industry has incurred losses for a sum of $ 114 Million in the form of compensation payment towards cancellation of World Tennis Championship "Wimbledon" which was designated to be held last year in June 2020. On the similar lines analyst at Jefferies have expected that cancellation or postponement of Tokyo Olympics scheduled to take place in June 2021, will result in $2 Billion in insurance compensation disbursements plus $600 Million for hospitality.

In Year 2020, Swiss re has reported to have borne losses worth $250m due to cancellation of Tokyo Summer Olympics as a reinsurer for 15% share in event cancellation cover. It could be easily identified that losses could have been huge for first insurer or ceding company, had it not implemented strategies to pass part or all of its risk from insurance policy portfolio to reinsurer.

Now many insurers have started taking pandemic and catastrophic events seriously and started devising strategies to overcome losses from contingent compensation commitments that may arise due to unfortunate incidents.AI, Machine Learning, Algorithmic Tools, Cat Modelling Techniques& Bigdata have made it possible for insurers to make calculation, forecast losses or predictions of probabilities of untoward incidents to make informative policy decision with respect to transfer of risk to

prevent catastrophic losses resulting into insurer bankruptcy. Asset Monitoring, Usage of Data Sensors and Risk Alarms technology bundled with AI is helping reinsurers to safeguard their interest. Reinsurers like Swiss Re have started to keep checks on insured custom port locations through AI enabled technologies, to identify and report man made irregularities in the form of excess cargo accumulations, to avoid any similar exposure as resulted at Tianjin Port, Binhai, China in 2015. As per legible sources insurance industry had collaboratively suffered losses around USD 3.5 Billion from Tianjin Port Explosions. This disaster ranks among top worldwide in terms of insurance losses resulting from manmade disaster, all this made insurers to devise AI supported risk management system to control such incidents in future.

## Emerging AI Technologies for Insurers in India

• **Automated Machine Learning:** It involves execution of cumbersome modelling tasks without the help of learned data scientist for achieving swiftness in detecting solutions by unlocking the power of data. Insurance industry has started to leverage upon machine learning to improve operational efficiencies,  one such example is use of ABIe (Allstate Business Insurance Expert) Virtual Assistant tool by Allstate Insurance, Illinios USA which operates on machine learning algorithm for guiding

insurance agents in resolving more than thousands of support queries per month. Automated Machine Learning has greater role to play for solving issues of insurance industry if proper measures are taken in this direction.

• **Image Analytics:** Image Analytics is process of extracting meaningful information from analysis of large amount of complex data in the formdigital images. Insurers have always rooted their efforts to collect and analyze data for managing claim and appropriate risk assessment though use of most economic means. Image Analytics as AI technology is in process of transforming health & motor insurance industry by enabling insurers to take quick rational decisions by use of models to extract meaningful insights from image categorization and classifications to uphold end to end claim automations. Recently Tokio Marine Insurance implemented AI OCR application to handle hand written claims documents which resulted in efficient and fraud free claim processing. This saved insurers from habitual exercise of conducting targeted investigations for identifying forged documents and thus resulted in saving in costs.

• **Deep Neural Learning:** It is a kindof AI functionality which consist of networks proficient of unsupervised learning from unstructured raw data. It imitates human brain while processing data and creates pattern for supporting

decision making and resolving queries. Deep Neural Learning is widely being used by insurers for object identification, image analysis, sentiment analysis, data processing, assessing damages during an accident and detecting billing anomalies. Actuarial decisions for product pricing, rating, ratemaking requires analysis of huge historical and present data sets, neural learning provides pragmatic solutions for holistic decision making. Insurers are also using AI enabled deep learning solutions for detecting hidden correlations in data supplied by claimants with the motive of ruling out any foul play.

• **Natural Language Processing:** AI branch which supports human interaction with machines. It enables computer to decipher written or spoken words and interpret them for further processing. NLP applications include search engines, chatbots, spam filters, translation software etc. These tools are mainly used in sentiment analysis, simulation, modelling data, aspect mining, named entity recognition. Insurer have started implementing NLP techniques like chatbots in their web portals to gauge customer's requirements and provide them with handy solutions for resolution of their queries. This enables insurers to save huge cost on development and maintenance of support staff. For Instance Taiger, Singapore has supplied NLP solutions to number of insurers worldwidein the form of virtual assistant to handle functions from clients query resolutions to

claims processing.

• **Audio and Speech Analysis:** AI technique which allows Virtual Assistants like Alexa, SIRI, Google Home to automatically recognize speech commands of the user and provide the expected output. It works on principle of extraction of meaningful information from audio signals. Such kind of applications and AI techniques are widely being used by insurers for customer satisfaction analysis from support call reviews and chatbot conversation probes. Advent of this technology has resulted in enhanced customer engagements and holistic business growth. It is being used by insurers to address long pending issues of business transparency, attaining customer gratification insights and ceaseless agent training for achievement of sustainable business results. Speech analytics enables insurers to enlighten themselves about market information from the customer perspectives and thus undertake required changes in their pricing and service mechanism to perform better.

• **Sensors and Internet of Things:** IOT enabled sensors like Acceleration sensors, Gyro Sensors, Thermistors, Imaging sensors, Sound Sensors etc are able to detect and measure various physical phenomena's such as heat, pressure, smell, sight hearing, touch, taste and sound. Many insurers are thus using these IOT sensors to support interactions

with customers, rationalize underwriting and adjudication of claims. Sensor driven technology provides steams of data other than what is generally available with the insurer and thus enable insurers to detect fraud and fulfill claim settlement responsibilities with utmost care and precaution. Motor Insurers recommend their clients to get their smartphones and vehicles connected to standardized applications, approved software and sensors for better driving experiences. These applications collect and stream real time data of insured vehicle and their owners which ultimately help insurers to take rational decisions at the time of claim processing and settlement.

• **Advanced Data Visualization:** Business intelligence also known as advanced data visualization has come a long way to provide sustainable solutions to insurers for augmenting their functions of underwriting, risk management, attaining customers insights, distribution and services, claims handling, fraud detection, cyber security, database management, budgeting and reporting. Insurers have started to upgrade their systems with business user friendly interfaces to gain insights which were not possible earlier. Now they are using AI to extract and interpret data from sources such as social media, search engines history, online shopping apps etc. Set of right AI Tools are enabling data aggregation and collation for creation of usable information silos

for spreadsheets, web analytics, filing cabinets and other data requirements of insurers. Advances data visualizations also help in studying trends and information's for uncovering weakness and threats to insurer's cyber security.

• **Knowledge representation:** As an AI tool it supports computers in solving real world complex problems with greater ease. Ultrasound and diagnostic machines like MRI, functions through knowledge representation. It does not merely signifies storing of human knowledge and intellect skills into the machines database but involves intelligent learning and reconditioning through recent experiencing. Knowledge representation is being used on wholesome basis by insurance industry for interactive selling of its services. Insurers used applications supported with knowledge representation to ensure fruitful dialog with their customers.

• **Natural Language Generation:** NLG which is subset of NLP transforms structured data into human readable form. It enables insurers to assess, analyze and communicate data with speed and accuracy, ultimately resulting into productivity surge for the organization on the whole. It is well recognized fact that delays in data assessment and communication creates dissatisfaction at both ends and to allay anomalies of similar kind insurers ply NLG analytic solutions. It not just automates

creation of monotonous reports like compliance sheets, account statements, comparative reports, contractual documentsetc but also decipher patterns in customers data's and also reports about preferences, key elements, andbehavioral tendencies. NLG detects fraudulent activity, doubtful links, fake documents, and skillful patterns from tremendous volumes of real time data to enable insurers to prevent losses from delinquent elements. It provides insurers with great scaling potential for repetitive report generation requirements and ensures maintenance of consistency in output.

• **Graph Analysis:** AI tool also known as network analytics undertakes investigation into the relation among systems component such as customers, products, services, departments, markets, devices and operations. Insurers have started using these analytics for comparative assessments of structured and unstructured data gathered from various sources to obtain insights indirectly. It helps understand strength and direction of relationship between objects in a graph. Mainly insurers are using Graph analysis to identify frauds, as traditional business methods, rules and red flags have become defunct and infertile in generating reliable results. Graph theory enables insurers to connect the dots in the cases involving suspicions of fraudulent motives and disintegrate false negatives with ease. It enables insurers to connect and discover

various types of collusive behavior amongst fraudsters. Insurance fraud rings and syndicates which is a highly common phenomenon, to dupe insurers which involves a team of lawyers, doctors, hospital chain, and client who collude to effectuate scam by submitting sham claims, could be detected with high accuracies with AI enabled network analytics.

• **Machine Translation:** Also known as automated translation used to translate text in one natural language to another in very short time. Now a days it capacitates insurers in understanding client's foreign language documents, making quick searches for relevant terms, eliminate human translator requirements, investigating text to gauge patterns. Even social networking platforms and shopping applications are now a days equipped with Machine translation AI to transcend linguistic barriers and support knowledge dissemination to obscure end users.This has enabled insurers to concentrate on lost business opportunities which were once a distant dream. In Indiamedical tourism health insurance has come a long way and thus insurers have realized necessity of implementing machine translation AI systems for enabling them to serve their diverse foreign clientele.

• **Simulation Modelling:**A technique of AI which creates and analyze digital prototype of a physical natural model of an

entity, to predict its performance in real time situations. It's similar to forming a 2D, 3D model of a planned township using algorithms and equations to identify lacunae and remedial measures before execution of the project. Simulation modelling mimics human intellect such as perception, learning, reasoning, problem solving and decision making abilities, thus it is widely used in insurance industry to study problems and identify possible solutions. Even insurers model simulations of financials for an insurance scheme or product before it is launched in market. These models also guide insurers to understand their requirements of reinsurance by modelling catastrophic events and probable outcomes. Health insurers across the world use AI simulation models to gauge coverage and cost effects of proposed policy options over its financial solvencies. It helps them finally to determine appropriate premium for their products and avert rate making risk.

• **Image recognition API:** Image classification, segregation and assessment using algorithmic equations and logical simulations to discover information and desired pattern. It is a unique workflow that processes structured and unstructured data in the form of images to extract metadata and decisive knowledge. These tools are being used to improve business performance by analyzing images and videos. Usage of facial recognition of clients for identity

verification of customers is nothing but image analytics. Insurers are gaining insights using images analytics for property insurance, vehicle insurance etc where image output is processed to determine premium costs, damage cover and adjudge claims. Damage inspection though Image recognition API's has taken over the manual job of surveyor and loss assessor and established it's eminence as handy tool for undertaking predictive assessments and automating claim processes.

• **Predictive Analytics:** It is a sub set of advanced analytics used to make predictions about uncertain and unforeseeable future events. It involves use of techniques namely data mining, modelling, machine learning, statistical algorithms, predictive modelling to analyze current and historical events, facts, data's and information's to generate predictions about future or otherwise uncertain events. It models a unit using data available and test it to assess the likelihood that a similar unit in a different sample will manifest akin performance. Foreign insurance firms are using this AI technique to account for risk exposure and to determine the related costs needed to mitigate the risk. It is enabling health and casualty insurers to make proper pricing decisions for their customers and enabling them to mitigate certain customer specific risk to certain extent. It ultimately makes customer acquisition process risk free and more efficient. Faster

determination of future events, information and other risk factor that could affect outcome of claims through predictive modelling technique enables insurers to make informed rating and underwriting decisions. As competition in industry is stiff, customers are able to gauge pricing information's and make reasonable comparison among peers comfortably then it was possible in golden times, seems SOS calls are already being made and reasonably satiated. Predictive Analytics has come forward as savior for technologically driven insurers, helping them to attain significant leads in product pricing, product optimizations, Claims settlement, Behavior analysis, New customer risk and fraud detection etc. It has enabled insurers to not only detect high risk customer but applications misrepresentations too. Underwriting has become more sustainable due to advent of AI enabled predictive analytics.

• **Robotics Process Automation:** Automation of repetitive tasks though use of AI enabled software technology to bring efficiencies and reduction in costs. It reduces human capital cost as well as results in avoidance of errors. Generally RPA uses structured inputs and logics to handle repetitive, rule based, monotonous tasks. RPA bots which are similar to conventional chatbotsare majorly used by insurers to resolve repetitive, redundant, predictable and usual queries of prospective and present clients. RPA's are not only gathering

data's from insured for risk rating, underwriting, claim processing obligations but also handling task of policy surrender and cancellation with greater efficiencies. RPA tools like Uipath, Blue Prism, KOFAX are highly popular amongst insurers for automating redundant transactional and clerical tasks. Due to seamless advantages of RPA, insurers across nations have concentrated their efforts towards alignment of RPA and Bigdata, for optimizing their front office and back office assignments.

## AI And Bigdata Synergy is Indispensable for Insurance Sector Sustainable Growth

Artificial intelligence and Bigdata are going revolutionize the insurance sector in times to come. The benefits from synergies of AI &Big data to the insurers are infinite. They not only support in faster claim processing but provide multitude of other advantages which include easier policy surrender, better productivity, advanced customer experiences, data accuracies, standardized operational processes, reduction in processing time, reduction in operational costs, automated detection of fraudulent claims, seamless two way communications etc. AI and Bigdata alignment has offered greater opportunity for insurers to transform the ways, it was accustomed to function. In India it might be difficult for insurers to immediately shift from traditional business model to automated one,

but once shift is made endless synergies will achieved.

## Conclusion

AI and Bigdata has supported and taken over the industrial revolution across nations decades ago. In India it is yet to witness light of the day. This is because of countries specific factors such as huge population, scarcity of resources, talent generation and management issues, nonexistent government and regulators support and so on. Insurers, Industry stakeholders and regulators have to ponder and understand that world is moving fast on track to absorb technological changes enabling them to take significant leads. Under prevalent circumstances sitting ducks are tend to lose opportunities. It is pertinent to motivate segments and stakeholders to reap maximum of benefits from the opportunities, before its foregone.

**Acronyms**

AI: Artificial Intelligence

FY: Financial Year

ChFC: Chartered Financial Consultant

CFP: Certified Financial Planner

CCE: Customer Care Executive

IoT: Internet of Things

Vlogs: Video Logs

FAQ: Frequently Asked Questions

CRM: Customer Resource Management

EGI: Edelwiess General Insurance

API: Application Programming Interface

GDP: Gross Domestic Product

LLP: Limited Liability Partnership

ABIe: Allstate Business Insurance Expert

OCR: Optical Character Recognition

NLP: Natural Language Processing

NLG: Natural Language Generation

RPA: Robotics Processing Automation

2D: Two Dimensional

3D: Three Dimensional

SOS: Save our Soul **TJ**

**References**

[1] https://en.wikipedia.org/wiki/

Artificial_intelligence

[2] https://towardsdatascience.com/how-are-insurance-companies-implementing-artificial-intelligence-ai-aaf845fce6a7

[3] https://emerj.com/ai-sector-overviews/machine-learning-at-insurance-companies/

[4]https://www.slideshare.net/maryasholevar/chapter-4-40596655#:~:text=2.,3.

[5] https://bernardmarr.com/default.asp?contentID=1251

[6] https://www.mckinsey.com/industries/financial-services/our-insights/insurance-2030-the-impact-of-ai-on-the-future-of-insurance#

[7] https://www.economicsobservatory.com/how-coronavirus-affecting-insurance-industry

[8] https://www.accenture.com/_acnmedia/pdf-84/accenture-machine-leaning-insurance.pdf

[8] https://automatedinsights.com/blog/top-5-hurdles-in-insurance/

# Unit Linked Insurance Policy – A Product for Wealth Creation With Life Insurance

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Unit Linked Insurance Policy is a unique Policy in the basket of Insurance Products. It is an investment linked insurance policy. This is different from an Endowment Policy, which is considered as an Insurance Cum Savings Product. ULIP Policies were first introduced in India by Life Insurance industry in early 2000s.

ULIP is market linked product. The return on Policy depends on the market conditions and it will have a direct impact in it. These are non-participating policies. On the other hand, the return on Endowment Policies are impacted by the market conditions indirectly.

ULIP can be viewed as a Unit Investment Instrument with term assurance benefit. It differentiates from Mutual Funds with respect to one feature. ULIP carries an Insurance element which is not present in Mutual Funds.

ULIP Product is regulated by the Insurance Regulation and Development Authority of India (IRDAI) and Mutual funds are regulated by the Securities Exchange and Board of India (SEBI). The IRDAI (Unit Linked Insurance Products) Regulations are applicable to all the Unit Linked Insurance Products offered by Life Insurers.

ULIP products are available to cater to the different needs of the market. There are Pension Products, Health Insurance Products, Wealth Creation Policies, etc. with rider benefits.

A ULIP product has unique features which makes it different from an ordinary life Insurance Policy. The main feature is that whatever premium is paid by the Policyholders will be converted into a Capital Fund, which is called as Unit Capital Fund.  The unit Capital amount is arrived at, after deducting certain charges like allocation charges from the premium amount received from the Policyholders. Units with face value of Rs.10 each, will be issued at the NAV rate applicable on the date of the allocation.

The unit Capital amount will be invested as per the pattern applicable to the fund opted by the Policyholder.

In each scheme of any ULIP, there will be different funds as mentioned below:

**Growth Fund:** Major portion of this fund, say 70% to 80% ,  is invested in Equity shares and 20% to 30 % will be put in Debt Instruments like Bonds, NCDs, etc..   Normally this fund carries high return as well, since it is said that risk and reward goes hand in hand.

**Debt Fund:** In case of debt funds, a major portion of the fund is invested in debt instrument like Bonds and Non-Convertible debentures. In this case, the return will be low and risk is also low. Return is mainly from coupons from the Instruments and valuation gains.

**Balanced Fund:** The pattern of investments in debt and equity will be balanced with almost equal exposure.  It is 50% to 60% in Debt Securities and 40% to 50% in Equity Shares.  Investors who wish to earn returns higher than those generated by the debt funds but are averse to the high-risk strategy of equity funds find respite in balanced funds. These funds are a combination of equity and debt funds and follow a moderate investment strategy. The risk is moderate and the returns are decent which are higher than debt funds but lower than equity funds.

The Policy holder of ULIP has got a choice to opt for any fund depending upon his risk appetite and the objective of Investment Planning, whether for Retirement Corpus, Wealth Creation, Children Education or education, etc.,

The Insurer has to comply with the IRDAI (Investment) Regulations, 2016 while investing the unit capital of each fund.  The investment of funds of ULIP have to be as per the pattern of investment, which is offered to and subscribed by the policyholders. Investment assets should be invested in marketable and readily realizable investments within the approved pattern as per the product regulations. However, the investment in Approved

Investments shall not be less than 75% of the fund(s). All prudential and exposure norms, have also to be followed at the level of the individual fund.

Switching is another unique feature of ULIPs. Depending on market movements, the Policyholder will have the facility to shift his unit capital fully or partially from one fund to another fund. Let us assume a situation in which a policyholder, who is a unit holder in growth fund, faces a declining trend in NAV of the growth fund.   He has the option to switch to a debt fund or a balanced fund to safeguard his units from losses. Similarly, there may be handsome growth in the NAV of his fund, which has reached a resistance level. In such a situation he can book the profits in the growth fund by exiting from it and switching to another fund, say a Debt fund or secured fund. In other words, a policyholder can use this system to stop loss or book profits.  There is no entry load or exit load in the switching.  These switches are free charges to some extent, and later on can be affected with nominal charges. There is no maximum restriction on the number of switches that a Policyholder can make during the tenure of the Policy. Policyholder can do the switching online as many of the Insurance companies have extended this facility.

Another feature of ULIP is Charges on the Policy.  The Policyholder has to pay different kinds of charges

on these Policies. They include Allocation Charges, Mortality Charges, Policy Administration Charges, Fund Management Charges, switching charges, discontinuation charges etc. These charges may differ from scheme to scheme for the same company. They also differ from company to company, subject to limits prescribed by the IRDAI. In practice, it has been observed over the years, that the charges are getting reduced and have become competitive. The charges play an important factor in marketing the products. The allocation charges on the old products was high compared to the charges presently charged on new products. The current trend is that Insurers are competitive in prescribing the charges. It may be noted that charges like Allocation Charges are imposed while allocating the premium to unit capital Account. Mortality charges are initially collected from the premium and later on adjusted from the redemption of units made for this purpose. These charges tend to come down over the tenure of the Policy with the increase in Unit Capital Value. Fund Management Charges are levied at the time of computation of NAV, which is usually done on a daily basis. The various charges will be made known to the Public through its Scheme Prospectus.

There is a lock in period of five years in case of ULIP Policies during which the Policyholder cannot exit

out and can receive the value of his units. This should be a positive point in the sense that staying long in an investment is advantageous from a return point of view. This will even out the losses in valuations arising due to volatility. The Impact of charges will be low since they will be spread over the long tenure of the Policy.

Another unique part about ULIPs, which is absent in other insurance plans, is the facility of partial withdrawal. In ULIPs, the policyholder can withdraw the Fund Value partially for any financial needs without hampering the plan's continuity. This withdrawal can be made any time after the first five years of the tenure of the Policy and a limited number of with drawls are also free of cost.

These policies got the facility of revival within three years from the date of lapsation. Grace period for paying premium is available in the same way it is applicable to Non-linked products.

Transparency is another important feature of ULIP products. The Investments made from each fund will be disclosed in the Website of the Insurance Company by way of disclosures. This will enable the Policyholder to know the details of the investments in which the fund was invested. This is just like a fact sheet of schemes of a Mutual Fund. Periodically the Insurer sends a statement of account relating to the ULIP to the Policyholder.

NAV reflects the performance of the ULIP funds. The Policyholder can keep track of the NAV and take switching decisions and take entry and exit calls. NAV forms the basis for allotment of units for premiums paid and redemption of units on account of claims, partial withdrawal and switch out, etc.,

NAV of any fund is calculated as per the formula given below:

(A) / (B)

(A) Market Value of Investment held by the Fund + Value of Current Assets – (Value of Current liabilities and provisions, if any

(B) Number of Units existing on Valuation Date (before creation/redemption of units)

The NAV calculated above, in respect of each fund, shall be declared daily on the Insurer's Website and Life Insurance Council's website.

In case of Regular (non-single) premium Policies, upon expiry of the grace period, in case of discontinuance of the Policy due to non-payment of premium, the fund value, after deducting the applicable discontinuance charges, shall be credited to the discontinued policy fund. In such a case, the risk cover and riders attached to the Policy will cease to have effect. The positive point to be noted here is that the amounts credited to this discontinued fund will earn minimum guaranteed interest of 4%.

The ULIP Policies also carry Life Insurance (death risk). The minimum Sum Assured coverage is as follows:

Life Single premium (SP) Policy ………. Minimum Sum Assured 125% of Single Premium

Life Regular Premium (RP) Policy ………… Minimum Sum Assured 7 times the annualised premiums

Three types of tax benefits are available under ULIP. 1. Investment made is eligible for tax exemption under Section 80 C up to Rs. 1.5 lakhs. 2. Death benefits received are tax free in the hands of the claimants, 3. Maturity benefits are tax free under Sections 10 (10D) subject to certain conditions.

The capital gains arising on maturity claims/Partial withdrawal amounts received on all the Policies issued up to 31/01/21 are fully exempt from Income Tax. They will not be subject to Income Tax in the hands of the Policyholder under Section 10 (10D) of Income Tax Act.

However, the exemption is not available to any ULIP Policy issued from 1/2/21 if the amount of premium payable annually for any previous year during term of such policy exceeds Rs. 2.5 lakh. Where a person takes more than one policy on or after 1/2/21, if the annual premium payable does not exceed Rs.250000, then the maturity proceeds on such policies

are exempt from Income Tax. If the Period of holding is to be 12 months or more, it will be treated as Long term Capital gain and accordingly taxed at 10% without indexation benefit on the amount of gains exceeding Rs. 1 lakh as provided in Section 112 A of Income Tax Act.

It is tax effective, so one can say that the post-tax IRR on the Investments will be higher if the tax saved on account of deduction for Premium from taxable income is taken into account

All these features make a Unit Linked Insurance Policy unique. This can be used as a tool for achieving one's Investment objectives. They may be Wealth Creation, or for creating a retirement corpus, for creating an adequate provision for Children's education and marriage, or for owning a House, etc., while covering the risk of these objectives going awry due to early death.

According to IRDAI annual report 2019-20, ULIPs registered a growth of 9.0 per cent in premium from Rs 76152 crore in 2018-2019 to Rs 83050 crore in 2019-2020. Accordingly, the share of unit-linked products in total premium is 14.50 per cent in 2019-2020 as against 14.98 percent in 2018-2019. The share of ULIP premium has increased compared to its share of 12.63% in 2016-17.

ULIPs made their appearance almost 20 years ago and, over time, have transformed into very different products from what they used to be earlier. From the time ULIPs were introduced in the early 2000s to where they have reached today, these products have become a value-packed proposition for the customers.

ULIPs also provide customers with the flexibility to choose their asset allocation between equity and debt, depending on their risk appetite. These products are now smart, investor-friendly, more transparent, cost and tax-efficient. With new guidelines such as increasing disclosures, minimum lock-in period increased to 5 years and commissions capped, the new age ULIPs have become better financial products. The charges of ULIPs were brought down and spread out evenly over the tenure of the policy and the disclosures were made more detailed for the benefit of investors. To attract customers, some of the insurers decided to remove policy administration and premium allocation charges completely. The investors get the mortality charge back once the plan matures, indicating that ULIP is a unique investment option with a free life cover.

With care full and proper planning, one can use ULIPs as a tool for wealth maximisation while enjoying risk cover.

# Role and Importance of Reinsurance in Economic Growth and Development- (Discussion on Setting up a State Owned/ Sponsored, Locally Registered Reinsurer)

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Insurance is, in a way, the formation of a financial community of persons and firms who are exposed to risks of loss of life, property, bodily injury or even liability to others/ third parties. Members of the community have a common desire to spread or share the risk. The thought process behind formation of a community is the fact that though all members of the community may potentially experience a loss, in reality, only a few will actually experience the loss. The value proposition for all the members and to the economy and society as a whole is the availability of financial resources to assist the recovery of those who experience the loss.

Insurance and reinsurance plays an important role in supporting the growth and development of any economy. Insurance helps supporting individuals as also industry in case of mishaps and insurance investments that are long term in nature help in infrastructure development for a developing economy. Insurance industry also plays an essential role in mitigating risks in the economy by encouraging proper risk management and providing a source of financing to respond to the damages and losses incurred by households, businesses and Governments.

Reinsurance is a contract of indemnity through which in exchange for a consideration (premium), a specified portion of the risks under one or more insurance policies is further transferred. Parties to a reinsurance contract are 'ceding insurer/ reinsurer' and 'assuming insurers' or 'reinsurers'. Reinsurance serves an important function as protection for cedents against the accumulation of losses. A primary insurer/ insurance company transfers insurance

liabilities to a reinsurance company through a process called 'cession'. 'Cession' refers to the portion of the insurance liabilities transferred to a reinsurer. The passing on of peak risks assumed by primary insurers, especially, the risks with low probabilities of occurrence, but high severities get transferred to the reinsurers. Reinsurance helps limit an insurer's loss experience resulting from the risk exposures and increase an insurer's underwriting capacity without the need of injecting more capital. Reinsurance also offers stabilisation for underwriting results of direct insurance companies and achieve risk diversification.

The global reinsurance market includes variety of reinsurers. There are global professional reinsurers, some State owned/ sponsored reinsurers, regional reinsurers and some reinsurers domiciled in offshore financial centres. Munich Re, Swiss Re, Berkshire Hathaway Reinsurance Group, Syndicates at Lloyd's of London are examples of professional reinsurers. There are developing countries that have promoted country domiciled reinsurers, however, they also have to rely on the support from professional global reinsurers. Africa Re and Asian Re are examples of regional reinsurers.

A question comes before the planners in developing countries as to should the country have its own reinsurer. There are many facets to this. If the answer is in affirmative, i.e. to have a country domiciled reinsurer, the assumptions could be that the risks ceded to global/ foreign reinsurers are safe (better than the global average, or rates for coverage are above the rates offered elsewhere), yet, due to lack of country based reinsurance

capacity the good risks are shared abroad and that there is a drain on foreign exchange in the form of premium paid to the reinsurers. A State owned/ supported reinsurance company or a specific purpose pool created also emerges as a solution to manage some risks such as terrorism risks that are seemingly beyond the capacity of private insurance industry.

On the basis of the above, developing countries would wish to have its own reinsurance company. However, the decision is not simple and there are some points that would make one rethink on the concept of creation of a national or country based reinsurer. Reinsurance is a capital intensive business. It also has to follow reserving rules that are similar to insurers, which makes it an industry that will have to wait for long to see profitability and declaration/ release of dividends. It is an industry, whose prospects are linked with those of primary insurers and in the era of cut throat competition and inadequate/ unscientific ratemaking at primary insurers' end, reinsurer making profits is a distant dream. Reinsurer would also have to follow the principle of spreading risk and not putting all eggs into one basket. As such, however good may be the risks accepted, reinsurer would also be retroceding some risks and seeking protection for its portfolio of risks. Reinsurance market functions on the credit rating strength and global rating agencies would take some time for affirming ratings to the new reinsurers. Reinsurers would also require skilled manpower, and, insurance educated and experienced manpower is not available in abundance. Reinsurers would also have to go through the local regulation while creating

capabilities matching with those of global professional reinsurers who are in the market with decades of experience and strong balance sheet and reserves to fall back on during stressful times.

Speaking of the developing economies, GIC Re was set up as Indian reinsurer in 1972. It began its operations mainly acting as a single point of contact for protecting risks of the four State owned Indian general insurance companies, and, thereafter, expanded to become a full service global reinsurer. Established in 1971 to oversee the development of local insurance, Bimeh Markazi Iran (Central Insurance of Iran), functions as country's official reinsurer. IRB Brazil played a similar role till it was privatised. In Nepal the insurance pool has been converted into Nepal Re in 2014 and in Bhutan a local reinsurance company was set up in joint venture with foreign partner in 2010.

There is a general trend that the locally registered/ State owned reinsurers get a preference over other reinsurers and get compulsory/ obligatory cessions from all the participants of the local market. The logic behind this to maximise retention in the country.

During early phases of development of an economy, many Governments feel a need for having a locally registered or State owned/ promoted Reinsurance Company mainly to maximise retention and save foreign exchange. However, the decision to create a locally registered, State owned/ promoted reinsurer would depend on ability to raise adequate capital, having skilled resources/ manpower, expertise and backing of a supportive regulation in absence of an investment grade credit rating.

# *Guidelines for contributors of the Journal*

## Note to the Contributors:

"The Journal" quarterly publication of Insurance Institute of India, Mumbai. It is published in the month of Jan/April/July/Oct every year. "The Journal" covers wide range of issues related to insurance and allied areas. The Journal welcomes original contributions from both academicians and practitioners in the form of articles and case studies. Authors whose papers are published will be given honorarium and two copies of the Journal.

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    ii.  Font: Times New Roman - Normal, black

    iii. Line spacing: Double

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8. Usage of abbreviations in the text should be avoided as far as possible and if used should be appropriately expanded.

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# Appendix I

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I/we(Full Name of the Author(s)) …………………………………………………………………………… …………………………………………… hereby declare that I/we are the author(s) of the paper titles "……………………………………………………………………………………………………………" (Title of the paper), which is our original work and not the intellectual property of any one else. I/we further declare that this paper has been submitted only to the Journal of the Insurance Institute of India and that it has not been previously published nor submitted for publication elsewhere. I/we have duly acknowledged and referenced all the sources used for this paper. I/we further authorize the editors to make necessary changes in this paper to make it suitable for publication.

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COLLEGE OF INSURANCE

## Virtual (Online) Training Schedule from December 2021 to January 2022

| Sr. No. | Tittle of the Training Program | Tittle of the Training Program | Timings (IST) | Fees |
|---|---|---|---|---|
| **December - 2021** | | | | |
| 1 | Personal Financial Planning and Role of Insurance | 1st December, 2021 | 10.00 am to 1.00 pm | Rs. 1500/- + 18% GST |
| 2 | Liability Insurance  - Financial Lines | 8th to 9th December, 2021 | 10.00 am to 1.00 pm | Rs. 3000/- + 18% GST |
| 3 | Actuarial Science - Appreciation Programme for Life Insurance | 14th December, 2021 | 10.00 am to 1.00 pm | Rs. 1500/- + 18% GST |
| 4 | Programme for Certified Insurance Anti Fraud Professional (CIAFP) | 15th to 17th December, 2021 | 10.00 am to 6.00 pm | Rs. 7500/- + 18% GST |
| 5 | Mass Media and social Media Marketing for Insurance Business | 21st December, 2021 | 10.00 am to 1.00 pm | Rs. 1500/- + 18% GST |
| 6 | Emerging trends in Motor Insurance Claims | 28th to 29th December, 2021 | 10.00 am to 1.00 pm | Rs. 3000/- + 18% GST |
| **January - 2022** | | | | |
| 7 | Programme for Principal Officers of Corporate Agents | 4th to 5th January, 2022 | 10.00 am to 1.00 pm | Rs. 3000/- + 18% GST |
| 8 | Basics of Health Insurance - Preventive Care | 7th January, 2022 | 10.00 am to 1.00 pm | Rs. 1500/- + 18% GST |
| 9 | Marine Cargo Claims and Fraud Management | 11th to 12th January, 2022 | 10.00 am to 1.00 pm | Rs. 3000/- + 18% GST |
| 10 | Medical Management and Fraud Control | 18th to 19th January, 2022 | 10.00 am to 1.00 pm | Rs. 3000/- + 18% GST |
| 11 | Management of Renewable Energy Insurance- Solar, Hydro and Wind | 21st January, 2022 | 10.00 am to 1.00 pm | Rs. 1500/- + 18% GST |
| 12 | Aviation Insurance | 27th - 28th January, 2022 | 10.00 am to 1.00 pm | Rs. 3000/- + 18% GST |
| 13 | Horticulture, Floriculture, Plantations and Vegetable Insurance- 1st Step to enter Rural Landscape | 29th January, 2022 | 10.00 am to 1.00 pm | Rs. 1500/- + 18% GST |

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