Market Microstructure: An Analysis of Indian Life Insurance

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Abstract

In this paper, the concept of life insurance as distinguishable from other financial assets and investments is clearly differentiated. The objective is to study Market Microstructure (MM) pertaining to the Indian Life Insurance market which has not been studied so far. The paper provides a framework of MM and delves deeper into the origin; market participants, market form and organizational structure, pricing, legal framework, role of information, impact of technology, recent market trends and future prospects. Using semi-log regression equation, growth rates of new life insurance business, total premium and channel-wise businesses are estimated to analyze the market trends. The current penetration and density are found to be low and thus the Indian life insurance market could at the best be described as an emerging market and hence the market still has huge potential for growth. We have therefore analyzed the MM of India n life insurance market which is not found in the strands of literature on economic theory, finance theory and life insurance literature. It becomes evident that we need a different approach while studying life insurance as opposed to stock markets.

Key Words: Indian Life Insurance Market, Financial Assets and Investments, Market Microstructure, Penetration, Density, Growth, Economic Theory, Finance Theory.

1.0 Introduction

The exchange of products and services takes place through markets. Markets for all types of products and services donot have the same sizes and structures. The number of buyers and sellers vary and their behavior patterns differ. In some markets, the buyers have better negotiating power whereas in others, the sellers may be stronger. Both of them act according to the information they have, which may not be the same. The final exchange takes place at a price which is acceptable to both the buyer and the seller. The ex change, in certain cases is influenced by regulation (law) and the price may not be decided freely. Also, the price once fixed is liable to change because of

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further changes in the market size and structure, information, regulation, etc. Market Microstructure (MM) studies the whole gamut of behavior dynamics behind the functioning of a market and the role of the various participants, the pricing rule and the framework. MM looks into what lies behind the supply and demand curves. It analyzes the descriptive aspects of the market structure in a granulated way. In this paper, we study the market microstructure pertaining exclusively to the life insurance market.

The paper is organized and discussed in the following sections:

Section 2.0: The concept of life insurance and its uniqueness as a financial product, which distinguishes it from other financial assets.

Section 3.0: The concept of market micro structure and the related literature.

Section 4.0: Methodology

Section 5.0: Market microstructure of the Indian life insurance market

Section 6.0: Conclusion

2.0 Life Insurance Products and Financial Assets

Very often we refer to the term 'financial products' and use it to include shares, mutual funds, bank deposits, insurance or any other type of financial investments. These are all assets held in the form of financial contracts on paper. But, in order to underst and how life insurance products are different from others, we need to know first the difference between a financial asset and a financial product. Financial asset is the one which normally gives a financial return and the purchase decision involves a comparison between risk and return. Risk measures the difference between the expected return and the actual return. So, financial assets are purchased with a view to obtain a return and are easily tradable, hence, these have a well-established secondary market). Stocks, which mainly include shares, are the best examples of financial assets. Unlike financial assets, financial products possess many features and are purchased to enjoy those features and not just to have capital gains. So, the life insurance products surely do not fit in the category of financial assets and so we can call them financial products because of the various distinct features they possess.

The differences between life insurance products and financial assets are shown in Table 1 with the help of 10 attributes. The main argument is that life insurance is a composite financial product while shares, stocks and bonds are financial assets.

Table 1: Differences between Financial Assets and Life Insurance Products

S. No.	Basis of Difference	Financial Assets	Life Insurance Products
1	OBJECTIVE	Financial assets are purchased with the objective to have financial returns - revenue and capital gains	Life insurance products are purchased for various reasons - life cover, tax benefits, children's education, etc.
2	PRINCIPLE	The returns on the assets are based on the duration for which these are held and various market forces. So, the risk factor is attached to the returns is the probability which lies between 0 and 1. It is based on 'principle of risk'.	The concept of life insurance is based on an uncertain event, i.e. death where the uncertainty is regarding the time of occurrence. Here the probability of death is either 0 or 1 i.e. either a person will live or die. It is based on 'principle of uncertainty'.
3	TYPE OF RISK	Risk in the case of financial assets is the difference between the expected and the actual return. There are various causes for the occurrence of risk. The measure of the quantum of loss attached to such risk is a part of the risk.	Here the risk refers to the probability of pauperization of the next of kin upon death of the insured. The introduction of products that offer some bonuses also introduced financial risk, in the case of these products but this risk is not the main risk factor in the case of life insurance.
4	TRADABILITY	Financial assets are tradable	Life insurance policy products are not tradable.
5	SECONDARY MARKET	There is a fully developed secondary market for trading in securities.	There is no secondary market for life insurance products.
6	GAIN AND HOLDING PERIOD	In the case of financial assets, the return is ordinarily viewed as a short-term return which is a speculative gain receivable only on trading.	Life insurance products are not purchased to have short-term gain but are held for long periods to fully avail the needed/promised benefit.
7	NATURE	Singular: Meant to give financial return	Composite: It has several attributes/ benefits: - Covers risk of death - Often gives some return - Useful for taking loan against paid-up premium, and - May give tax benefit

8	RETURN	Short term	Long term
9	TIME FRAME	Investment at a point of time	Investment as an annuity for long term
10	DERIVATIVES	There could be some derivatives based on the primary assets	No derivatives

(Source: Author's Own)

3.0 Market Microstructure: Concept and Literature Review

3.1 Concept of Market Microstructure

Market microstructure has its roots in industrial economics and micro-economic theory. Both economic and finance theories provide a gross analysis of the markets. Economic theory talks about the price determination of products under various market forms (monopoly, perfect competition, etc.) based on the demand and supply analysis. Finance theory talks about determining the price of financial assets based on the Efficient Market Hypothesis (EMH). However, both the theories fail to explain the variations in the markets and do not provide a descriptive analysis of the market. These theories do not explain the hidden factors at play behind the demand and supply curves and the granularities of the market. So, we need a separate framework to study the dynamics of the market, which include: the role of market participants, legal framework, information, technology and so on in arriving at the final demand and supply. This framework is provided by Market Microstructure (MM).

3.2 Market Microstructure: Literature Review

While the theory of market microstructure applies to the exchange of real as well as financial assets, more evidence is available on the microstructure of financial markets due to the availability of the transactions data. So, when we look at the functioning of financial markets, we are dealing with the exchange of financial assets, viz. securities like shares, debentures, etc.

Garman (1976) gave the phrase "market microstructure" as the title of an article about market making and inventory costs. The phrase became popular in relation to the works that describe and investigate the economic forces affecting trades, quotes and prices.

O'Hara (1997)gave a detailed account of the market microstructure theory focusing mainly on the securities' markets.

Spulber (1999)has presented an in-depth analysis of how markets function and the role of firms. Highlighting the different roles assumed by firms, he has presented a clear view of the formation and boundaries of firms and microstructure of markets. Considerable light is thrown on the formation and market-making activities of the firms through models of intermediation and microstructure from microeconomics and finance.

Madhavan (2000) identified the informational research in microstructure to be falling into four areas (a) Price formation and price discovery; (b) Market structure and design issues; (c) Information and disclosure especially market transparency; and (d) Informational issues arising

from the interface of market microstructure with other areas of finance, including corporate finance, asset pricing, and international finance. Market microstructure is concerned with how the various frictions and departures from symmetric information affect the trading process.

Biais, Glosten and Spatt (2004) have opined that market microstructure offers a unique opportunity to confront directly microeconomic theory with actual workings of markets. This facilitates both tests of economic models and the development of policy prescriptions. They have focused on literature related to price formation and market design.

Bhanumurthy and Singh (2012) have discussed the market microstructure in relation to initial public offering (IPO) markets.

Carter and Diacon (1991) have examined the microstructure of London insurance market by describing its organization, regulation and competitive nature. They have discussed the market equilibrium in the London insurance market in relation to two types of insurance: (i) where loss probabilities are fairly known to the insurers and(ii)the high risk insurance products where the loss probabilities are not known. The roles of various market players like the underwriters, brokers and re-insurers arediscussed at length.

3.2.1 Gaps in Literature on MM

As highlighted in the review of literature, MM literature has come from stock markets. All the cited studies (except the last one) examine the market microstructure of stock markets. There is no study which talks about the MM in relation to life insurance market. The differences between financial assets and life insurance products (discussed in Table 1) show that these are two distinct markets and, therefore, the MM relevant to stock markets cannot describe the functioning of life insurance markets. We, therefore need to look specifically at MM of life insurance market in order to understand role of various market participants, price determination, legal framework and so on. This justifies our approach to study the MM pertaining to the Indian life insurance market.

4.0 Objective and Methodology

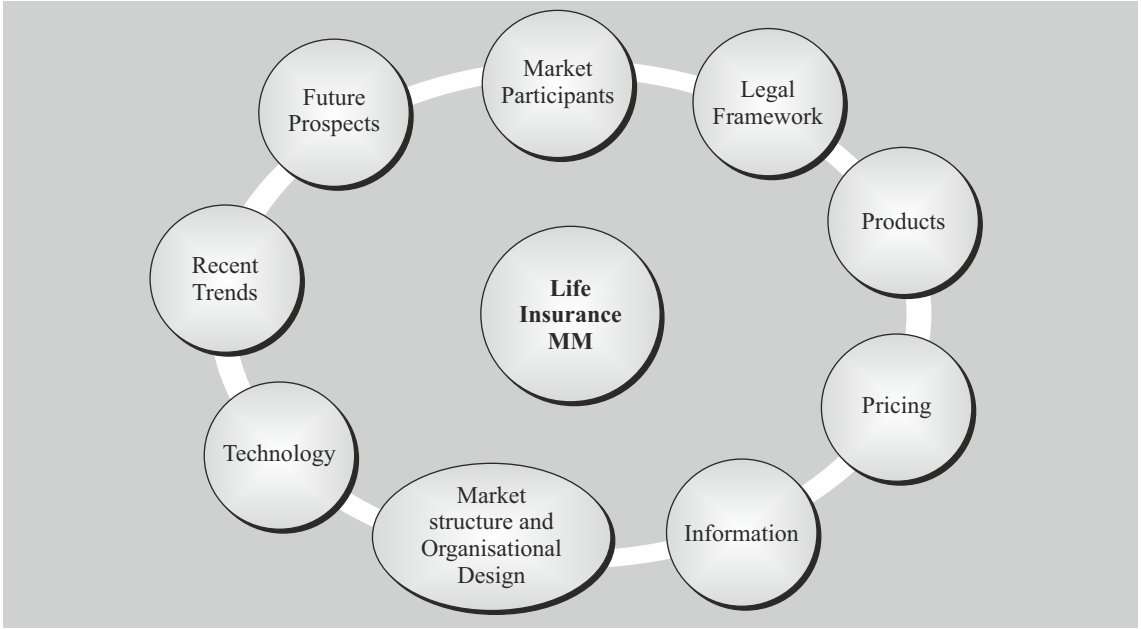
Life insurance products are financial products but they are not like securities. Securities are financial assets that are purchased by investors to have good returns on their investments and these are sold when there is the desired appreciation in their value. But life insurance is not bought as a pure investment. The main purpose of buying life insurance is protection against the uncertainty of sudden death. The process of buying and selling, the role of brokers, investors, information, etc., is not the same for securities markets and life insurance markets. So, we cannot explain the working of the life insurance markets with the market microstructure of the securities markets. Our objective, therefore, is to explain the functioning of the Indian life insurance market by studying the market microstructure relevant to this particular market. In order to do so, the methodology adopted to suit our study would be to identify the various components of MM of life insurance. The role of these components and their interplay will be examined at length in order to understand the peculiarities of this market.

5.0 Life Insurance Market Microstructure

There are some common issues in the market microstructure which are applicable to all types of products. On the basis of this understanding, we can identify the issues involved in the microstructure of life insurance markets.

In the case of life insurance, in contrast, the insurer promises to protect the insured for a price, which in this case is the premium. There are various types of policies (products) offered by the life insurance companies with different features and durations catering to the different protection needs of the insured. These policies are sold through the authorized intermediaries of the insurers (insurance companies). These intermediaries may be individual agents, corporate agents that include banks and other types of corporate agents or brokers. The business of life insurance is also regulated by laws pertaining to the life insurance sector. These have undergone manifold revisions and changes since its inception in 1912. Life insurance policies are complex financial products and their prices are fixed through actuarial valuation, taking into account various factors like the mortality rates. So, it is difficult for the insured to understand the price fixation process. It is also interesting to note the organization of the market structure,the operation ofthe life insurance market and how these influence the transaction costs and in turn the price determination process. On the basis of this discussion, we can identify the components in the market micro structure of life insurance markets (See Figure 1).

Figure 1:Components of Life Insurance MM



(Source: Author's Own)

The components of MM of life insurance policies are discussed in the following sub-sections.

5.1 Market Participants

The first company that sold policies to Indians with fair value (without additional high premium) was the Bombay Mutual Life Assurance Society which started its business in 1871. For the next hundred years, both life and non-life insurance catered to the needs of the rich living in large metropolitan areas. According to Palande et al. (2009), The Government of India decided to nationalize the life insurance sector in 1956 in order to curb the high number of failures, to attain economies of scale and to penetrate into the rural sector.

In order to materialize the above-mentioned objectives, the life insurance industry was nationalized in 1956 with the setting up of the single life insurer, i.e. the Life Insurance Corporation (LIC) of India. The GIC (General Insurance Corporation) was designated as the national Reinsurer for both life and general insurance companies. In line with the financial sector reforms, the Malhotra Committee was constituted in 1993 to suggest reforms for the insurance sector. It recommended the privatization of the Insurance Industry to make it more competitive which was finally effected in 1999, and, the year 2000 saw the entry of private players into the insurance market arena. The Insurance Regulatory and Development Authority (IRDA, called IRDAI after 2014) was also set up in 1999 to promote the orderly growth of the market and to protect the interests of the buyers. So, in the order of hierarchy, we have the following market participants:

1. IRDAI
2. Life Insurance Companies
3. Life insurance intermediaries
4. Buyers

5.1.1 IRDAI

The IRDAI is the market regulator set up in 1999. Its role is to promote the orderly growth of the market and to protect the interests of the policyholders. It frames the guidelines and rules regarding the conduct of all the major players in the market– companies, intermediaries, web-aggregators and so on. It also runs educational campaigns to spread awareness about life insurance and makes provisions/rules for quick and satisfactory redressal of policyholders' grievances.

5.1.2 Insurers/Life Insurance Companies

The insurer is the person who promises to bear the loss in the eventuality of some future uncertain event happening. The loss may result from a life risk or a non-life risk. If an insurer promises to bear a risk related to the life of a person(s), it is known as life insurance or assurance. If the risk covered is not related to life (like fire, water perils, etc.), then it is known as general insurance. So, a life insurer is the one who promises (Assures) to make good the loss arising out of mortality

risks. The business is usually organized in the form of a company. After the nationalization of the industry in 1956, the LIC was the single life insurer and enjoyed monopoly status till the Liberalization of the market in 1999. At present there are 23 private life insurance companies along with the LIC operating in India. Life insurance companies design the life insurance products and recruit the agents or appoint other intermediaries to sell these products.

5.1.3 Intermediaries

Life insurance companies can either adopt the direct selling channel for distribution or they can sell the products/policies through intermediaries. There are different types of intermediaries who are active in the Indian life insurance market. The IRDAI has framed the rules and guidelines for the smooth functioning of these intermediaries, which vary across different categories of intermediaries. The IRDAI has also fixed the educational qualifications, training requirements, renewal conditions and code of conduct for the intermediaries.

Life insurance companies have various channels through which they can sell life insurance:

1. **Direct Channel** is one where the Personnel sit in the office of the life insurance company and sell the policies; there are no intermediaries involved in the sale.
2. **Agency Channel** involves Agents who sell policies on a commission basis; but they are not the employees of the company. These agents may be of the following types:
   a) **Individual Agents** may be fully or partially involved in the task of selling life insurance. They work on commission basis.
   b) **Corporate Agents** are entities involved in the sale of life insurance products. They may be organizations registered specifically for the purpose of selling life insurance or they may carry out the task of selling life insurance in addition to their other operations. The corporate agents can be further divided into two categories:
      - Banks/Bancassurance are the main form of Corporate Agents who, alongwith their major business of banking, undertake to sell life insurance. There may be various types of business arrangements between banks and life insurance companies regarding the way the banks are to be remunerated.
      - Other Corporate Agents are those entities, other than banks, that may beorganized in the form of limited liability partnerships, cooperative societies, etc.
   c) **Brokers** are different from other intermediaries because they are the only type of intermediaries who are allowed to sell the products/policies of more than one life insurance company. Other intermediaries like individual agents or corporate agents can have an agency contract with only one life insurance company. However, brokers are subject to more stringent capital requirements and they can sell on a large scale. Brokers may also have different forms of organizations like limited liability partnerships (LLPs),

cooperative societies, etc. Currently banks are also allowed to work as brokers. Brokers are allowed to carry out their sales through distance marketing. Distance marketing is defined by the IRDAI as follows:

"It refers to the process of solicitation or sale of insurance products or services where the consumer is physically not present at the point of solicitation or sale or the conclusion of sale, and the process is accomplished through telephone or Short Messaging Service (SMS) or e-mail or Internet or web services."

5.1.3.1 Referral Companies:

Life insurance companies are allowed to outsource data about the prospective buyers from other companies, known as referral companies. According to Insurance Regulatory and Development Authority (Sharing of Database for Distribution of Insurance Products) Regulations, 2010, "Referral arrangement means the arrangement between a referral company and an insurer in terms of an agreement entered into for the purpose of sharing of the database of the customers of the referral company but does not include the soliciting or sale, directly or through an agent, corporate agent or an insurance intermediary including a micro insurance agent of an insurance product."

5.1.3.2 Web Aggregators:

IRDAI, 1999 also provides for another type of entity known as Web Aggregators who can enter into a contract with the life insurance companies after obtaining a license from IRDAI. Web aggregators give information about life insurance products of different companies through their websites. They can also give a comparative analysis of similar products offered by different companies. Their main task is to generate leads for the life insurance company on behalf of which they display the information, but, if allowed under the contract, they may also complete some preliminary formalities. The extent of their involvement in the processing of the transactions is decided by the contract with the concerned life insurance company.

5.1.3.3 Insurance Marketing Firms (IMFs)

According to the IRDAI (2015b) guidelines"An Insurance Marketing Firm" is an entity registered by/with the Authority to solicit or procure insurance products as specified in Regulation 3(a) of these regulations, to undertake insurance service activities as specified in Regulation 3(b) of these regulations and to distribute other financial products as specified in Regulation 3(c) of these regulations by employing individuals licensed to market, distribute and service such other financial products.

5.1.3.4 Other Intermediaries

A recent development in life insurance market is the design of special products to be marketed

through special channels of distribution in order to enhance financial inclusion. These products and channels of distribution are:

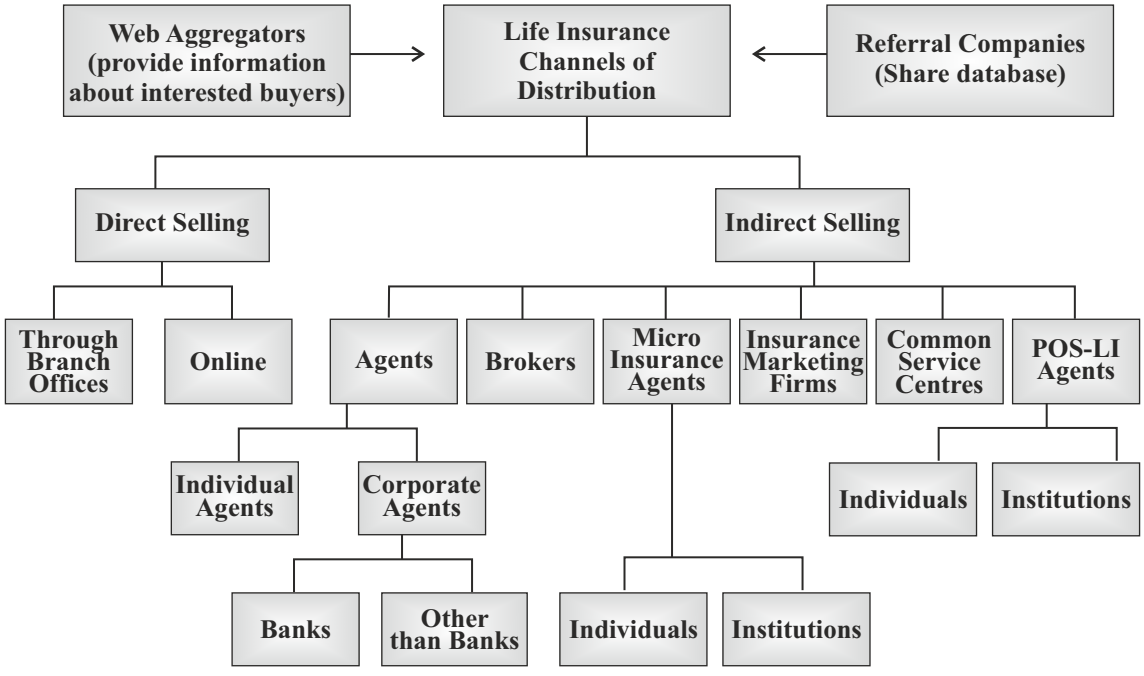
- Micro-insurance Agents (MI Agents)who sell only micro insurance (lower sum-assured) products.
- Point of Sales Life Insurance Agents (POS-LI Agents)whoare trained to sellonly the basic life insurance products.

Common Service Centres (CSCs):

According to IRDAI (2015c), "CSC" means the "Common Service Centre" established under National e-Governance Plan by M/s CSC e-Governance Services India Limited. "Solicitation" for the purpose of these regulations is defined as the approach to a prospect by a RAP (Rural Authorized Person) with a view to enabling the prospect to purchase an insurance policy, and includes providing assistance in case the prospect decides to purchase an insurance policy.

Figure 2 shows the summary of the channels of distribution, discussed above, in the Indian life insurance market.

Figure 2: Channels of Distribution in Indian Life Insurance Market



(Source: Author's Own)

5.1.4 Buyers

A life insurance contract is signed between the insurer (insurance company) and the buyer (insured). The person who is insured under this contract may be the buyer himself or any other person in whom the buyer has an 'insurable interest' like a husband can buy a policy wherein the wife's life is insured. So, here the husband is the buyer but the insured is the wife. If the person purchases the policy to get his own life insured, then the buyer and the insured are the same entity. The insured is the person (in the case of life insurance contract), who receives the promise to be paid the sum assured either to himself, in case he survives the term of insurance, or to the nominee (nominated by him), in case of his death.

Financial literacy amongst Indian buyers is low, which makes them vulnerable to exploitation by the companies and intermediaries. This has been highlighted time and again by various surveys.

According to Kumar(2013), "In terms of overall financial literacy, India is at the bottom with 59 index points among 16 countries in the Asia-pacific region, according to the annual MasterCard's index for financial literacy. The index is based on a survey conducted between April-May 2013 with 7,756 respondents aged 18-64 years."

According to the "Survey on Financial Literacy",involving 3000 respondents, conducted by IIM, Ahmedabad(2012),in order to understand the financial literacy levels of three important demographic groups (i) young working adults, (ii) retired individuals and (iii) students in India, it was found that the awareness of financial products is generally low. The financial knowledge among Indians appears to be low by global standards.

Unless and until buyers have complete information, they cannot be expected to take an informed decision. Their own cognitive limitations and the limited availability of information further restrict their ability to process whatever information is available.

5.2 Legal/Regulatory Framework

As discussed in the previous section, Insurance Regulatory and Development Act, 1999, is the law that governs the functioning of Indian life insurance market. The IRDAI is the market regulator and it provides detailed guidelines to be followed by the insurance companies and all the life insurance intermediaries. Before offering a product/policy to the public, a life insurance company has to seek the approval from the IRDAI.

In order to ensure that the insurance products offered by the insurers are of value to the policyholder and that the pricing is appropriate and fair for the insurer and the insured, the IRDAI insists on the requirements of filing of insurance products under File & Use guidelines before insurers are allowed to sell any life/general insurance product in the Indian market. As per the File & Use guidelines, the insurer needs to justify the rates, terms and conditions of insurance policy to be offered while filing the product with IRDAI. The insurer is not permitted to offer any product for sale until the IRDAI confirms in writing that it has no further queries in respect of a particular product.

The IRDAI maintains a separate Consumer Education Website wherein it discloses the list of products that have received clearance under the File and Use guidelines.

5.3 Products

Life insurance products are not as simple as financial assets like shares. Life insurance products can be classified into different categories on the basis of time, premium payment term, risk, number of people insured and the potential return component. Other than the traditional whole-life and endowment products, more and more products are being designed by the companies keeping in view the changing socio-economic needs of buyers. These are the term insurance plans, money back plans, retirement plans, unit-linked insurance plans and the child plans. Hybrid products that combine the features of more than one type of insurance are also gaining popularity. So, insurance companies try to differentiate their products by designing more hybrid products like special insurance plans for women, with the core features remaining the same.

5.4 Information

As in any other market, information plays a very important role in the life insurance market as well. An efficient life insurance market must be driven by underlying information in the realm of life insurance. The information set which actually drives the market has to be transmitted to the market. There are generally three attributes to the information:

1. Availability

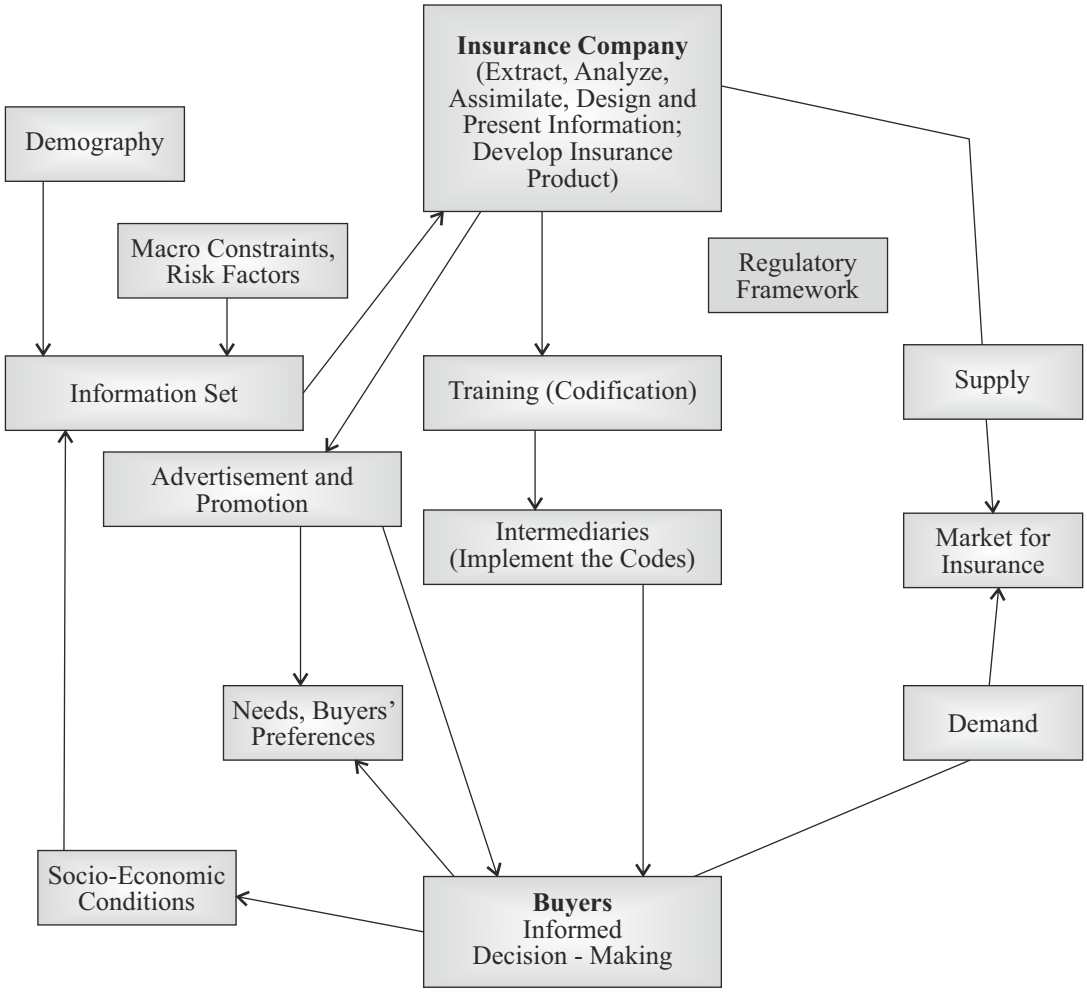
2. Accessibility

3. Uniformity

The very basis of product design is information. Some of the essential ingredients are the life tables, actuarial calculations, expectations of the insured, the socio-economic data, demographic data and so on. All of this is the information set. But this information set has to be made operative.

It is in this sense that the insurance company, the training mechanism and the last link, i.e. intermediaries, form the bridge between the information set and an informed decision by the buyer. It is for the company to extract, analyze and assimilate this information so as to convert it into the product designing process. Hence, much more has to be done by the insurance company other than just analyzing the life tables. The insurance company may have the information set upon which its product design is based.

Figure 3:Market Microstructure (Role of Information)



(Source: Author's Own)

However, there has to be a systematic transference of this information that has been analyzed, assimilated and codified. It has to be transmitted and transparently transported to the last link, i.e. the buyer.

Given the fact that the information set is accessible to all insurance companies, each company evolves a set of products to meet the customers' needs. Each life insurance company is free to design its own products. The product differentiation is based on how this information set is understood, analyzed and used. As against any other market product, which is based only on utility or satisfaction to the consumers, the life insurance market is much more complex, its

products would also be different. The basis of a life insurance market is more vital, essential and complex as well. Figure 3 shows this relationship between the three major players in the market, i.e. buyers, intermediaries and companies and the way information works as a catalyst in the market for life insurance. The information about the needs and preferences of the buyers along with the macro conditions serves as the bases for a life insurance company to design the policies. The legal framework in the form of the IRDAI guidelines determines the designing of life insurance policies. This product information is communicated to the buyers through intermediaries and advertisements. The training provided to intermediaries equips them to efficiently sell the policies. Advertisement stimulates in the mind of the buyer a ground for the intermediaries to approach the buyers and facilitates their job of selling. This helps the buyers in taking an informed decision. Complete information both for the insurer and the buyer is an essential pre-condition for efficient functioning of the insurance market as is depicted in the diagram (see Figure 3).

5.5 Pricing

In product markets, the price is fixed through the interaction of demand and supply. However, in the case of life insurance products, the method of price fixation is quite peculiar. Determining the demand for life insurance products is a complex task. According to Chiappori and Salanié (2008), "Modeling the demand for insurance requires understanding various aspects: the nature of the risk, the characterization of the contracts traded, an assessment of the various frictions involved (horizontal differentiation for instance) and the nature of information asymmetries (if any), finally a knowledge of the joint distribution of risk, risk aversion and income in the population of insured". They have further pointed out that in the case of long-term insurance contracts, there is always the risk of attrition, hence the computation of provisions is a difficult task. Also, regulatory norms have to be strictly followed while fixing prices.

5.5.1 Price Discovery

Price fixation in the case of life insurance, therefore, involves factors other than those witnessed in product markets and securities' markets. In the case of securities' issues, there are underwriters who guarantee the minimum subscription; there is a possibility of over or undersubscription; book-building process can be adopted. But in the case of life insurance, all these factors are absent. Price fixation in the case of life insurance products is done by the insurance companies based on three factors: (i) mortality,(ii) interest and(iii) cost, which are added to the pricing of the policy. Actuaries play an important role in fixing the price or the premium of the products.

Gupta (2010, pp. 634-35) has described the pricing procedure for insurance products in detail. According to the him,

$$P = E(S) + k + R$$

Where P is the premium, E(S) represents the mathematical expectation of claims, k denotes the

company's running costs, while R is a risk premium which allows for coverage of the unforeseen deviations in the claims amount to be paid, but still provides the company with "normal" profits, i.e. this standard pricing mechanism relies upon the "law of large numbers." Within a large, diversified and homogeneous underwriting portfolio, the claims' burden should converge towards its expected value.

There is another way of describing the premium. We can say that a premium is 'pure premium plus loading'. Based on actuarial calculations, the pure premium includes the amount needed to cover the expected losses and loss adjustment expenses. Actuaries make use of the mortality tables to calculate the amount of pure premium. Loading refers to the amount that must be added to the pure premium for other expenses, profit margin and contingencies.

There is an attempt on the part of the actuarial/underwriting department to fix the price in such a way that all the costs can be covered and a fair margin is ensured, but due to competitive pressure, life insurance companies may have to sell the products at incentivized prices rather than those arrived at mathematical..Also, it is difficult to apply one standard formula for fixation of prices of different types of life insurance products.

5.5.2 Equilibrium, Price Dispersion and Dynamic Pricing

Rothschild and Stiglitz (1976) mentioned the presence of imperfect information in relation to life insurance markets and showed how it affects the equilibrium. They rejected the viability of single-price equilibrium in insurance markets.

HunSeog (2002)discussed the presence of price dispersion due to low search by buyers owing to their inability to assign proper weights to different factors or imperfect information. Talking about identical firms and diverse buyers, they show the presence of price dispersion under mixed-strategy equilibrium.

So, it is difficult to discuss the equilibrium in relation to life insurance markets due to different types of products, different types of buyers and the complex nature of price-fixation. Moreover, this is outside the scope of this paper as in the case of MM. We are interested more in what goes behind the equilibrium.

Deloitte (2018) has discussed the upcoming concept of dynamic pricing in relation to insurance. As per the report, the advances in technology have made it possible for firms to have accurate data about the type and behaviour of customers, which can help them in price differentiation – charging higher price from high risk buyers and offering discount to low risk buyers. However, this concept is yet to find a practical application in the Indian context.

5.5.3 Life Settlement Markets

There does not exist a secondary market for life insurance products. So, unlike shares they cannot be traded on a stock exchange. However, in some of the developed countries, the possibility of

selling a life insurance policy exists and it is known as life settlement [Fang and Kung (2010, 2012)]. But in the India, there is no possibility of life settlement and if a buyer is not satisfied with the policy, it is either surrendered or the buyer stops paying the remaining premia. This results in lapsation of the policy. Both surrender and lapsation would result in major loss to the buyer.

5.5.4 Role of Intermediaries

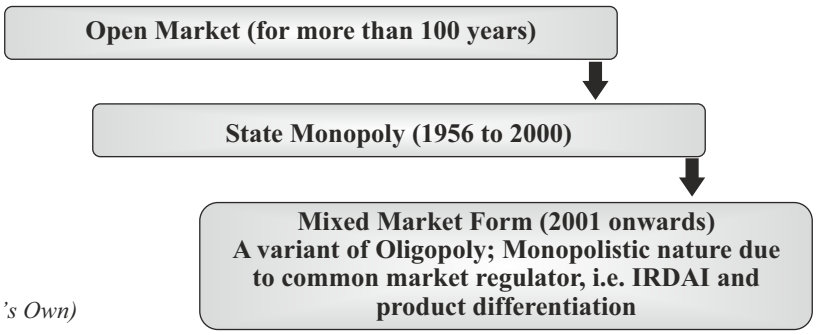
In the case of the Indian life insurance market, buyers and intermediaries have very little say in influencing the pricing of insurance products. However, one interesting aspect is the role of intermediaries, mainly the individual agents, while selling the products they offer a share of their commission to the buyers. Although not prescribed, the actual practice of sharing the commission is to motivate the buyers to purchase the policy.

Thus it is apparent that the pricing of the variegated life insurance products is not simple. It is also not determined like the physical products or securities. So, through the pricing component of MM, we have shown the distinct character of life insurance pricing.

5.6 Market Structure and Organizational Design

After the setting up of the IRDAI, since the year 2000,India has witnessed the entry of private players into the insurance arena. Along with the public sector giant, the LIC, now there are 23 private insurance companies offering insurance products. Now this market can be characterized as a mixed market where there is only one large firm (LIC) and a limited number of competitors. This makes it some kind of oligopolistic form of market. But, the typical oligopolistic models are defined in terms of interdependence and rivalry. In the case of life insurance market, it is not known whether there is any tacit collusion or market sharing. Therefore, we are calling it as a Mixed Market Form. Certainly, it does not exist in either of the pure forms – perfect competition and monopoly. Maybe before the liberalization, it was possible to characterize the market as a state monopoly, but post-liberalization, at the best, it could be called some variant of oligopoly. Figure 4 depicts the current Indian life insurance market structure. It shows how insurance has moved from an open market to a mixed market form.

Figure 4: Life Insurance Market Structure



(Source: Author's Own)

The insurance market has currently assumed a monopolistic character. There is a common set of rules and regulations, which are framed by the market regulator, the IRDAI. Its statutes are tobe strictly followed by all the companies. Also, there is product differentiation by the firms

The organizational design of life insurance companies is not very complicated. All the companies have a Head Office and various branches spread across the country. The Branches are headed by Branch Managers. Some of the branches also have a deputy branch manager. Then there are agency managers who are given the responsibility of searching, recruiting and training the agents. Finally there are the agents who actually sell the products. The bigger life insurance companies have separate managers for different lines of distribution, namely direct sales, bancassurance, agency channel and broker channel.

According to Gupta (2010, pp. 610-11), the following departments are generally found to be functioning in a life insurance company: Actuarial Department, Underwriting Department, Sales and Marketing Department, Accounting Department, Investing and Financing Department, Legal Department and Claims Department as shown in Figure 5.

Figure 5: Departments in a Life Insurance Company

(Source: Author's Own)

5.7 Impact of Technology

Like any other business world over, and India is no exception, technology has impacted the life insurance business to a great extent. The technological innovations like internet, cellular satellite and database communications, data analytics, etc., have made it easier for businesses to conduct transactions transparently, accurately and speedily.

Osta (2017) has given a detailed account of the technological innovations that have affected the demand and supply of life insurance in India. The information regarding demand for various products can be easily gauged from the kind of information that people seek through search engines like Google. The use of internet has also reduced the transaction costs, the time involved in processing of new policies and the settlement of claims. There has been an increase in online and paperless transactions, which also has a positive impact on the environment. Technology offers greater ease in conducting the life insurance business but has also resulted in the increase of frauds committed by unscrupulous sellers and buyers. The IRDAI has been spreading awareness campaigns about fraudsters indulging in such activities but still the occurrence of such aberrations in the form of fake sellers and impersonation by buyers has not been curbed. Data analytics can help in reduction of frauds if the life insurance companies can collaborate willingly, and, mutually share information on real-time basis through the use of technology. The progress in computation technology and data storage has made data analytics more beneficial for life insurance companies in targeting prospective clients, marketing, granular pricing, better underwriting and providing customized services. The buyers, on the other hand, can have ample information about various products available at their fingertips. They can compare the products offered by the various life insurance companies so that they can choose the best products suited to their needs according to their personal preferences and purchasing capacity.

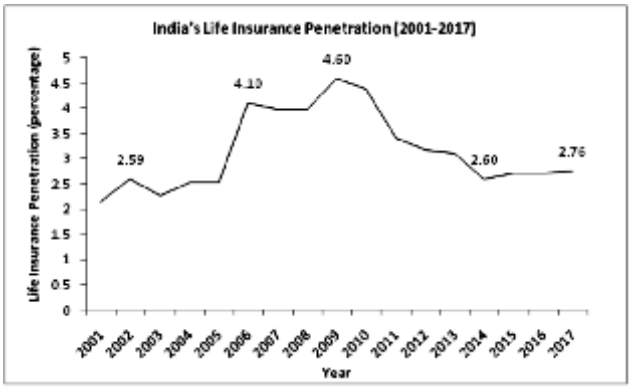
5.8 Recent Trends in Indian Life Insurance Market

We have tried to analyze a few trends of the life insurance market phenomena in terms of:(a) Life insurance penetration; (b) Life insurance density; (c) Growth in the number of new policies sold; (d) Growth in the first-year premium; (e) Growth in the total premium; and (f) Channel-wise growth of new business.

a) Life Insurance Penetration:

Using data from the IRDAI (2015a) and IRDAI (2019) given in the Handbook on Indian Insurance Statistics: 2013-14 and 2017-18 respectively, the life insurance penetration of India is studied and depicted graphically in Figure 6.

Figure 6: Life Insurance Penetration in India

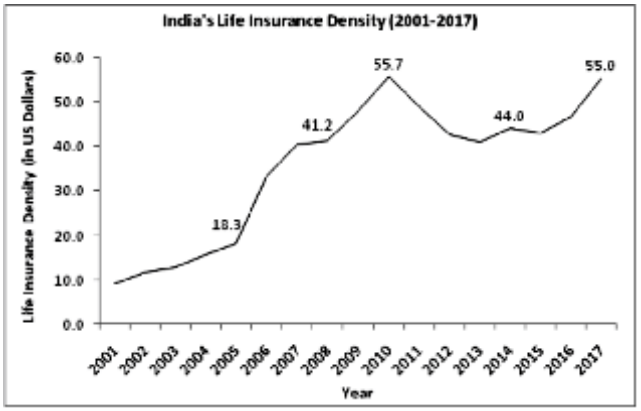


Source: IRDAI Handbook on Indian Insurance Statistics: 2013-14 and 2017-18

As can be seen above, the penetration (life insurance premium considered as a percentage of GDP) does not show a clear trend in the post-liberalization period. After reaching a high of 4.6% in 2010, it started declining and touched a low of 2.6% in 2014. From 2015 onwards, the market has witnessed a slow growth rate, settling at 2.76 % in 2017.

Figure 7 depicts the life insurance density (per capita life insurance) of India from 2001 to 2017.

Figure 7: Life Insurance Density in India



Source: IRDAI Handbook on Indian Insurance Statistics: 2013-14, 2017-18

b) The Life Insurance density showed a rising trend from 2001 to 2010, when it stood at 55.7 US dollar - being highest. Then from 2011 onwards, there was a decline to 41 US dollar in 2013. After slight fluctuations in 2014 and 2015, an upward movement took insurance density to55 US dollar in 2017.

c) Number of New Policies Sold: If we look at the growth in the number of new policies sold, applying the semi-log regression equation shows no significant growth.

$lnNP_t = \beta_1 + \beta_{11} T + \mu_{1t}$

Where $lnNP_t$= log of new policies sold

β_1 = intercept of new policies sold

β_{11} = slope or growth rate of new policies sold

T = time period from 2002 to 2018

μ_{1t} = error term

Table 2 shows the growth rates calculated using Equation 1. There is no significant growth in the number of new policies sold by the LIC from 2002 to 2018. It may be noted that private insurance companies started doing business from the year2002. The data starts from the same year.

However, the number of new policies issued by the private insurance companies has grown at 11% over the same period. This growth is statistically significant. The new policies issued by the industry as a whole have grown at 1%; but this growth is not statistically significant. So, on the whole there is no indication of substantial growth in business in terms of new policies issued.

Table 2: Growth of New Policies Issued (2002-2018)

Category	Growth Rate	p-value	Significance
LIC	0.00	0.93	Not Significant
Private Total	0.11	0.01	Significant
Industry Total	0.01	0.45	Not Significant

Source: IRDAI Handbook on Indian Insurance Statistics 2013-14 and 2017-18
Total Premium = first - year premium + renewal premium

d) Growth of First-Year Premium: First-year premium means the premium collected from the new policies sold. It includes premiums on both types of policies – single premium policies and regular premium policies.

$lnFypt = \beta 1 + \beta 11\ T + \mu 1t \quad 2)$

Where

$lnFyp_t$ = log of first year premium

β_1 = intercept of first year premium

β_{11} = slope or growth rate of first year premium

T = time period from 2001 to 2018

μ_{1t} = error term

The growth rates are calculated using Equation 2 and are summarized in Table 3.

Table 3: Growth of First-Year Premium (2001-2018)

Category	Growth Rate	p-value	Significance
LIC	0.14	0.00	Significant
Pvt. Total	0.35	0.00	Significant
Industry Total	0.16	0.00	Significant

Source: IRDAI Handbook on Indian Insurance Statistics 2013-14 and 2017-18
1st year premium = Regular premium + Single premium

As seen in Table 3, the first-year premium of LIC has risen at a rate of 14%, which is statistically significant. The first-year premium of private companies has also grown at a statistically significant rate of 35%. For the industry as a whole, the first-year premium has grown at a statistically significant rate of 16%.

On similar lines, we can see the growth of the total premium.

e) Growth of Total Premium: Total premium means the sum of the first-year premium and therenewal premium. The growth of total premium is analyzed using Equation 3, which is again the semi-log regression equation.

$lntp_t = \beta_1 + \beta_{11} T + \mu_{1t}$

Where

$lntp_t$ = log of total premium
β_1 = intercept of total premium
$\beta\_(11)$ = slope or growth rate of total premium
T = time period from 2001 to 2018
μ_1t = error term

As shown in Table 4, the total premium of the LIC has grown at a rate of 12%. This growth is statistically significant. The total premium of private companies also grewat 41% over the period 2001 to 2018, which again is statistically significant.

Table 4:Growth in Total Premium (2001-2018)

Category	Growth Rate	p- value	Significance
LIC	0.12	0.00	Significant
Pvt. Total	0.41	0.00	Significant
Industry Total	0.15	0.00	Significant

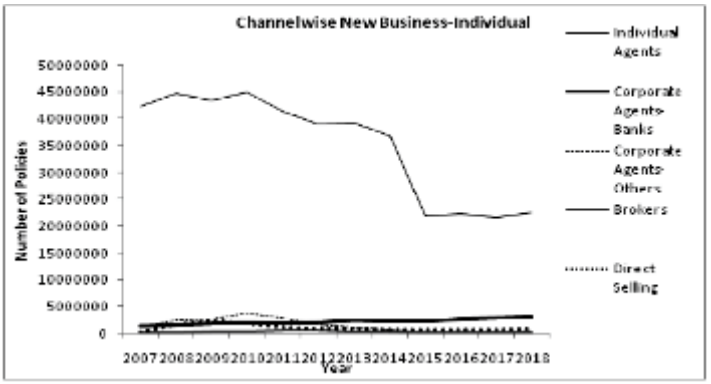
Source: IRDAI Handbook on Indian Insurance Statistics 2013-14 and 2017-18
Total premium = first year premium + renewal premium

The grow that the rate of 15%over the same period in the total premium of the industry as a whole is also statistically significant. The fact that private companies are showing a higher growth rate in all the cases is because of their starting from a small base.

So, on the whole, we find significant growth in the case of first-year premium and in the total premium. But the penetration and density do not reflect the same trend. This shows that there is tremendous potential for grow th.

f) Channel-wise New Business - Individual : Figure 8 shows the way the new business is distributed amongst different channels of distribution. New business includes the first-year premium and a single premium.

Figure 8: Channel-wise New Business – Individual



Source: Data from IRDAI Handbook on Indian Insurance Statistics 2013-14, 2017-18

Taking data from IRDAI Handbook on Indian Insurance Statistics, 2013-14 and 2017-18, it is clear that major portion of the insurance business is routed through individual agents. However, as compared to 2010, there is a drop in the business through individual agents in 2014, and, thereafter, it is almost stagnant till the year 2018. After showing an increase for a few years, direct sales have also declined. The business through banks shows a slight increasing trend. Business through brokers is more or less stagnant and through corporate agents, other than banks, has also declined.

Table 5: Channel-wise Growth Rate (2007-2018)

Channels	*Growth Rate*	*P-value*	*Significance*
Individual Agents	-0.08	0.00	Significant
Corporate Agents: Banks	0.06	0.00	Significant
Corporate Agents- Others	-0.22	0.00	Significant
Brokers	-0.02	0.38	Not Significant
Direct Selling	-0.02	0.74	Not Significant

Source: IRDAI Handbook on Indian Insurance Statistics 2013-14, 2017-18

Table 5 shows the channel-wise growth rates of new businesses (in terms of number of policies), calculated using Equation 4.

$= \beta_I + \beta_{II} T + \mu_{It}$ *(4)*

Where

$lnnbc_t$ = log of individual new business for each channel

β_I = intercept of new business for each channel

β_{II} = slope or growth rate of individual new business for each channel

T = time period from 2007 to 2018

μ_{It} = error term

There is a significant decline of 8% in the new business routed through individual agents and 22% carried out through corporate agents other than banks. There is a significant rise of 6% in the new business through banks. New business through brokers and direct sales shows a decline of 2% each, but it is not statistically significant. Although continuous data is not available regarding some other channels of distribution, like online sales, micro-insurance agents, common-service centers and point of sales, online selling has picked up momentum during the past few years. This is a pointer towards the growing acceptance of technology in life insurance transactions and lesser dependence on intermediaries.

5.9 Future Prospects

Due to the current state of low penetration and density, the Indian life insurance market holds great potential for growth. There is a need to identify the causes of under performance and overcome them. Various authors have given their suggestions to improve the insurance market as highlighted below.

Muley (2017) has emphasized the need to adopt technology as a solution to overcome the problems faced by the Indian life insurance industry. The pressing issues before the life insurance sector are under-penetration, lower density, attrition of agents, low level of engagement leading to lower persistency. According to him, "Innovation in life insurance may come from two sources: firstly, the insurer himself, as an innovator who is constantly on the lookout for and employing better processes, and, secondly from the committed technology players who are dedicated solely to the insurance sector. The potential areas where insurtech innovation could play an effective role include: (i) identification of new markets and customizing of life insurance solutions with the right risk model and appropriate pricing, (ii) offering product features at reasonable prices for their innovations that are related to insurance products per se and having relevance to insurance policy underwriting and management services."

Barik and Kumar(2018) have highlighted the potential for growth of the Indian life insurance market. Through the PESTLE (Political, Economic, Social, Technological, Legal and

Environmental) analysis of the macro-economic environment of life insurance in India, they have identified the major forces acting on the macro-economic environment of life insurance in India in the form of more conducive laws, growing incomes, employment opportunities and technological advancements. The effective management of the macro-economic environment will make life insurance the fastest growing industry.

Govardhan (2018) has suggested certain important measures to improve the performance of life insurance business in India. The market offers tremendous potential for growth as it accounts for less than 1.5% of the world's total insurance premium as India is both under-penetrated and inadequately penetrated. The suggested future areas of growth are health insurance and pension plans. There is also a need to improve persistency in the quality of trainingof professional agents. The financial literacy measures should aim at educating the buyers so that they demand life insurance rather than it being forced upon them.

6.0 Conclusion

By analyzing the life insurance market microstructure, we have tried to bridge the gaps in the existing strands of literature on economic theory, finance theory and insurance literature. Through MM, we have brought out certain peculiarities of the Indian life insurance market. The life insurance products are different from financial assets as the insurance products are not purchased to accumulate capital gains. The primary objective of life insurance is to have protection or financial security in case of unexpected eventualities. The Indian life insurance market has come a complete circle, starting from the open market era, then the nationalization phase and then back to the stage where both public and private sector companies are operating in competition. The products have also seen many changes. Along with the traditional whole life and endowment products, newer plans like ULIPs, Child Plans, etc., are gradually becoming popular amongst the buyers. The functioning of the life insurance companies has been explained touching upon the pricing of policies which again is peculiar. Since Indian buyers in general do not score high on financial literacy, it is tough to expect them to display financial wisdom in relation to life insurance decisions. The recent market trends show that India's life insurance penetration and density are low. Growth rates calculated using semi-log regression equation show that there is a significant growth in new business premium and also in the total premium but not in the new individual policies sold. Also, there is a redistribution of new individual businesses amongst the various channels of distribution with online sales and bancassurance gaining popularity, and, consequently, individual agents are losing their share. So, there is still great scope for improvement which is possible through better macro environment management and other measures as highlighted in various studies discussed in this paper. We can thus conclude that the Indian life insurance market can at the best be described still as an emerging market. A better understanding of the components of its MM will definitely help in framing better policies.

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