

# Recent Trends in the Growth of Financial Sector in India through Financial Engineering

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## **ABSTRACT**

*Volatility in the capital market is growing very fast and because of huge revolution in the commercial money, bank and investment funds, the imperative need for financial innovations to balance risk and returns cannot be neglected. Today the financial institutions are changing their long-established product mix with more multiple and newly designed financial products and services. This practice has given birth to a new area in finance which is called financial engineering. Innovation in the existing product line by financial institutions can be brought through financial engineering in order to remain significant and sustainable in the market to win large market share. This is advantageous to all nationalized banks, commercial banks, corporative banks, insurance companies and other financial institutions in India.*

*The main aim of this paper is to examine the role of financial engineering in the growth of the financial market. This in effect emphasizes the relationship between financial engineering, financial market and growth of the financial market. The present paper also researches various financial innovations through financial engineering in the field of Indian banking, insurance, capital market and mutual funds sector. The paper has tried to find out the recent trends in the growth of Indian Financial Market. In the concluding section, paper discusses the way forward in the field of financial innovations to remain sustainable in the financial market.*

**Keywords:** *Product Innovation, Financial Engineering, Capital Markets, Hedging, Risk.*

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## **INTRODUCTION**

### **1. Indian Financial Sector**

India has a diversified financial sector undergoing rapid expansion, both in terms of strong growth of existing financial services firms and new entities entering the market. The sector comprises commercial banks, insurance companies, non-banking financial companies, co-operatives, pension funds, mutual funds and other smaller financial entities. The banking regulator has allowed new entities such as payments banks to be created recently thereby adding to the types of entities operating in the sector. However, the financial sector in India is predominantly a banking sector with

commercial banks accounting for more than 64 per cent of the total assets held by the financial system.

The Government of India has introduced several reforms to liberalise, regulate and enhance this industry. The Government and Reserve Bank of India (RBI) have taken various measures to facilitate easy access to finance for Micro, Small and Medium Enterprises (MSMEs). These measures include launching Credit Guarantee Fund Scheme for Micro and Small Enterprises, issuing guideline to banks regarding collateral requirements and setting up a Micro Units Development and Refinance Agency (MUDRA). With a combined push by both government and private sector, India is undoubtedly one of the world's most vibrant capital markets. India has scored a perfect 10 in protecting shareholders' rights on the back of reforms implemented by Securities and Exchange Board of India (SEBI).

### **1.1 Market Size**

The Mutual Fund (MF) industry in India has seen rapid growth in Assets Under Management (AUM). Total AUM of the industry stood at Rs 24.03 trillion (US\$ 342.01 billion) between April-November 2018. At the same time the number of Mutual fund (MF) equity portfolios reached a high of 74.6 million as of June 2018. Another crucial component of India's financial industry is the insurance industry. The insurance industry has been expanding at a fast pace. The total first year premium of life insurance companies reached Rs 193,866.23 crore (US\$ 30.10 billion) during FY18.

Along with the secondary market, the market for Initial Public Offers (IPOs) has also witnessed rapid expansion. The total amount of Initial Public Offerings (IPO) increased to US\$ 1.2 billion raised from 37 between April – June 2018.

Over the past few years India has witnessed a huge increase in Mergers and Acquisition (M&A) activity. India's leading bourse Bombay Stock Exchange (BSE) will set up a joint venture with Ebix Inc to build a robust insurance distribution network in the country through a new distribution exchange platform.

In the present deregulated market with the extreme competition, financial institutions are always acquainting new products and services to gain the market share. To make new client base and to hold the current clients, they continuously add new features and/or benefits in the existing products. It doesn't imply that conventional, off-the-shelf instruments cannot accomplish the desired outcomes. But from the investors' point of view, they desire more benefits attached to the product while investing in the same.

Financial engineering is the life blood of financial innovation. It is the process that seeks to adapt existing financial instruments and processes and develop the new ones so as to enable financial market participants to cope more effectively with the changing world in which we live. To exist and survive in the present market of finance every financial company needs to rehearse development in the financial products and services which is not possible without financial engineering.

## **2. Objectives**

The main aim of this paper is to examine the role of financial engineering in the growth of the financial market. This in effect emphasizes the relationship between financial engineering, financial market and growth of the financial market. The present paper also researches various financial innovations through financial engineering in the field of Indian banking, insurance, capital market and mutual funds sector. The paper has tried to find out the recent trends in the growth of Indian Financial Market. In the concluding section, paper discusses the way forward in the field of financial innovations to remain sustainable in the financial market.

## **3. Financial Engineering: A Buzz Word in Finance Services Sector**

Financial engineering has become a most discussed topic in financial sector nowadays. Due to the massive change it has brought about in every aspect of financial markets. There are many opportunities which seem to be within grasp of financial institutions with the application of financial engineering. In wider term, financial engineering is the amalgamation of computer science, statistics, economics and applied mathematics to devise tools, techniques, and models to address issues of finance. It is more commonly known as quantitative analysis and has been used by all types of financial institutions for decades. The scope of financial engineering is often assumed to be limited to innovation of financial products or services but its application goes much beyond in making core processes of financial institutions and financial markets more accurate, efficient and profitable; and distribution of financial products and services more cost effective to provide broader access of funds to issuers and opportunities to investors while mitigating risk and creating a robust financial system.

## **4. Review of Literature**

Financial engineering is intended to split risk and return components of financial products/instruments and offering the combination which is best suited to Investor's risk-return profile. Jonathan Nwagboso, disclose that banks provide financing for commercial enterprises, basic financial services to broad segment of the population and access to payments systems. It essential to note that some banks are expected to make credits and liquidity available in difficult market conditions and however have strong financial engineering with quality corporate Governance, best practices and high ethical standard in their operations. Capital Market on the other hand, is a market for longer term funds and securities whose tenure extends beyond one year. It is the prime motor that drives any economy on its path to growth and development because it is responsible for long-term-growth capital formation.

Osuoha studied that financial engineering products and derivatives are product of financial development and that factors underlying financial development have been identified by Andrianaivo and Yartey in their study, according to Osuoha ,informed that using a panel of 53 countries for the

period 1990- 2006, they examined the impact of income level, macroeconomic stability, financial liberalization and institutional quality on both banking sector and the stock market development.

As per Ernest Simeon Odior and Fadiya Bamidele Banuso, to ensure adequate delivery and robust financial institutions of these interplays for sustainable market growth and accelerated economic development, financial engineering enunciate policy direction that encourage innovation, reconstruction with timeliness for desirable market. Financial Engineering improves the effectiveness of monetary policy in managing inflation and driving economic growth. According to Cole, financial engineering provides potential in reducing consumption fluctuations and lower adoption of risk management technology during selected seasons. Financial Engineers are responsible for combining, designing, researching, developing and implementing a range of innovative financial instruments for commercial use.

The work of financial engineers covers a wide variety of sophisticated financial instruments. However, financial engineering has been drifted towards electronic money, which is quite difficult to define because it blends technological and economic characteristics. Humphrey, Pulley and Vesala, analyzed patterns in which the use of cash and other e-payment instruments in most developed countries, including the US fast-track financial market growth. Whilst treating payment instruments as if they were traditional goods, the authors construct measures of the cost of various payment methods in order to study whether differences in cashless instrument usage across countries can be explained by differences in the relative prices of such instruments.

### **5. Relationship between Financial Engineering, Financial Market and Growth of the Financial Market**

Financial system is a business of various institutions, markets, instruments and operators that interact within an economy to provide financial services. The significance of finance and financial system in the drive for economic growth and development is fairly well established and generally accepted. The availability of adequate financial resources and regular acquisition in proper mix of the needed funds from alternative sources for investment purposes are part of derivable benefits from an efficient financial system.

Accordingly, financial engineering says strong financial economic with systemic financial recovery and branded financial market growth. It stirs derivatives and entrench framework for proper financial market system. These services, among others, include resource mobilization and allocation, good corporate governance, laws, financial intermediation and facilitation of foreign exchange transactions to boost international trade.

## 6. The Scope of Financial Engineering in Financial Systems

According to Merton (1992), typically there are six core functions performed by the financial system:

- (i) Facilitating the exchange of goods and services with a payment system,
- (ii) Providing a structure for pooling of funds
- (iii) Providing mechanism for transferring of economic resources through time and across geographic regions and industries,
- (iv) Devising processes to manage uncertainty and control risk,
- (v) Making coordination of decentralized decision-making in various economic sectors more natural by providing price information,
- (vi) Providing means to handle asymmetric-information and incentive problems.

Financial engineering has penetrated all six core functions to provide innovative ways to perform numerous tasks in each function more efficiently. The proliferation of the financial engineering in financial systems stems majorly from the emphasis on risk management by corporate and retail investors looking for significantly reducing the uncertainty of their profitability and sustainability. Marshall (1992:20) has classified the growth drivers of financial engineering into two categories: (i) Environmental, and (ii) Intra-firm.

- (i) **Environmental Factors :** Environmental factors driving financial engineering growth are as follows:
  - (a) **Price instability:** Price instability arises due to the difference between demand and supply of a particular product or service. For example price volatility in share market or commodity market. Price instability can create significant risks for individuals, manufacturing firms and government.
  - (b) **Market Globalization:** Globalization has led to the development of MNCs which have their sourcing, production and consumer bases diversified across countries. Due to this trend, the companies are exposed to a higher risk of fluctuations in interest rates and exchange rates.
  - (c) **Tax Asymmetries:** Difference in the effective tax rate for a company across industries and countries arises due to tax asymmetry. Historically, companies have exploited the tax asymmetry in many ways to become more profitable.
  - (d) **Advances in Financial Theory:** In past few decades, there have been numerous contributions in financial theories by academicians which have resulted in innovative trading instruments and elaborate predictive models for the institutions.
  - (e) **New market development and market linkages:** Technology has enabled trading of financial instruments across the globe at any time. Companies are no more bound to raise

funds or invest capital at unattractive interest rates as innovation has blurred the geographical boundaries for financial markets.

**(f) Regulatory Change and Increased Competition:** Deregulation in financial markets to reduce unnecessary compliance burden has acted as a catalyst for growth. Banks and brokerage houses now carry a broad portfolio of financial products to cater their demanding clients and are heavily competing on price and value-added services offered with these products.

**(g) Transaction and Information cost:** Information and transaction costs have significantly been reduced by exemplary technological solutions which have boosted the trading volumes in financial markets and made them accessible to smaller retail investors and borrowers.

**(ii) Intra-firm Factors :** Intra-firm factors driving the financial engineering growth are as follows:

**(a) Liquidity Needs:** There has always been a need for more liquidity among corporate to convert their asset to cash and put cash to work quickly as and when required. It has led to many innovations in financial markets such as Money Market accounts, Sweep Accounts, Electronic fund transfer, CD market, and Repo market.

**(b) Risk Aversion by managers:** Since ages, risk aversion has been an innate characteristic of corporate managers which has fuelled the innovation of financial products to provide sophisticated investment instruments with minimum or diversified risk.

**(c) Agency cost:** The requirement for mitigation of the agency cost which arises due to the difference in management and shareholder objectives has been a significant factor for innovation in financial instruments such as employee stock options.

## **7. Product Innovation through Financial Engineering**

There are hardly any traditional financial instruments which have not been innovated by financial engineering. The underlying motive of this innovation is the risk and reward trade-off. The financial instruments are increasingly being designed to minimize the uncertainty associated with the investments and maximize the returns. Many customized financial products are available in the market which suits the varying financial requirements of individuals and corporate.

### **(i) Equity and Debt Products**

Mutual funds are the supreme example of financial engineering which has revolutionized the debt and equity market. Mutual funds provide retail investors ability to diversify their funds across industrial sectors at low cost. There are many types of mutual funds available with brokerage houses which focus on particular asset classes, industries, and designed to suit different risk appetites of

investors. Some other financially engineered products in equity are Preference shares, DVR shares, Sweat equity shares, ADRs, GDRs, IDRs, and Warrants. In debt category, some financially engineered products are Index bonds, Convertible bonds, Deep Discount Bonds, Debentures, Floating Rate bonds, Catastrophic bonds, Secured Premium notes, Dual Currency bonds, Foreign bonds, TOCD, ICCDO Fund. On the distribution front, financial engineering has eased the trading process on exchanges with the introduction of sophisticated technologies such as trading terminals.

#### **(ii) Insurance Products**

The insurance industry has witnessed significant financial engineering innovation with insurance policies designed based on the need of the customer such as child education plan, retirement, and pension plan. Insurance policies are also being offered based upon the time frame such as term insurance, whole life insurance. ULIPs are hybrid products which provide dual benefits of insurance and investment to the investor. Insurance companies have also forayed into capital market with insurance backed bonds. Companies are offering products to cover risks from weather, omissions, and environmental disasters. Marriage insurance is an innovation of financial engineering which provides cover for wedding ceremonies against the postponement or cancellation due to certain external factors.

#### **(iii) Banking Products**

Banks are now offering many customized deposits and credit products to customers. They have also innovated their services with the technology providing customers' services such as E-banking, Mobile banking, Electronic fund transfer and online instant loans which as significantly enhanced the customer experience and brought down costs for banks.

#### **(iv) Stock exchanges**

With the increased awareness and increased participation of direct investment in the capital markets, stock exchanges have brought in innovation in terms of technology, processes and introduction of trading of new securities. To overcome the limitations of physical handling of the securities, dematerialization of the securities has been done. With the introduction of the same there was a need to create another financial institution/body, which can take the custody of the securities, facilitate the trading between the parties etc. As a result of these, NSCCL, Depositories, Depository participants and other intermediaries came into existence and which has replaced traditional brokers. Exchanges also started the trading of the new investment tools like ETFs, Gold ETFs, and REITs.



**(v) Derivatives**

Financial engineering has pioneered the derivatives market by instruments such as Futures, Options, and Swaps. Derivates are extensively utilized by corporate for quantifying, allocating, and managing the risk of underlying assets by trading them on exchanges.

**(vi) Adaption in Financial Services Industry**

Many FinTech companies are emerging in India with business models based on financial engineered products and services. One such startup is Gurugram-based Faircent which is a peer-to-peer lending platform that connects lenders with borrowers. It has a feature that automatically matches lender and borrowers based on their requirements and sends proposals to the borrower on behalf of the lender, based on pre-selected lending criteria such as loan tenure, amount, and risk profile. Another Pune based FinTech startup Early Salary is taking the concept of salary advances to the masses. It provides salary advances and instant cash loans and provides a smart risk scoring system. M-swipe has applied financial engineering to provide affordable payment acceptance modes to SMEs. M-swipe is a mobile add-on that allows smart phones, feature phones, and tablets to accept credit card and bank transactions, thus enabling SMEs to provide their customers a wholesome experience. Lending Kart provides easy and fast working capital financing solutions to entrepreneurs and SMEs. The company has developed technology tools based on Big Data analysis, which facilitates lenders to evaluate a borrower's creditworthiness.

**8. Future of Product innovation through financial engineering**

India is today one of the most vibrant global economies, on the back of robust banking and insurance sectors. The relaxation of foreign investment rules has received a positive response from the insurance sector, with many companies announcing plans to increase their stakes in joint ventures with Indian companies. Prevailing severe competition in the liberalized and faster growing financial markets resulted into an introduction of new products and services with the complex features by many financial market players. Sometimes, investors find themselves ill-equipped to cope up with the market to park their savings. Even, on the opposite side, market players cannot get the first mover advantage after introducing the new product or services because after introduction of new products, within a small duration of time, competitors started to copy the features of the product to add the new product in their existing product portfolio. To prevent this, the product patents and copyrights should be made applicable to the financial services institutions, so that that they can get the benefits of their financial engineering research for a longer period and will prevent competitors from offering similar or related financial products and services. Financial instruments, prospectuses, advertising etc. can be copyrightable. Even computer programs used to create, value, exchange, or otherwise to support



financial products can be copyrightable. For this, patents can be used to gain the advantage of differentiation by using the patented computer programs.

### **9. Scope for Financial Engineering for Sustainable Development**

Due to the Liberalized and faster growing financial market, innovation of new products and services has developed a tough market competition. Sometimes the Investors find themselves unprepared to cope up with the market. Every market player is eager to get the first launch advantage and is under the threat of copying of their products' features and adding new product in their existing product mix. A more controlled and better understood form of financial engineering will continue to thrive. The financial institutions should make valid patents and copyrights to overcome the undue competitions, so as to benefits of their financial engineering research for a long time. This will stop competitors from offering parallel or same financial products and services. Investors should continue to demand innovative wealth-management products which better balance their tolerance for risk, expectations for return and needs for liquidity. Efforts are being made to bring the 'best parts' of financial engineering best-practice to bear in the creation of structured hedges which will significantly moderate the operating cost uncertainties and add shareholder value as a result.

### **10. Conclusion**

Financial engineering has revolutionized the financial markets by introducing innovative and customized financial products for individuals and corporate to achieve their specific objectives. Financial engineering has also aided to the innovation of processes and distribution in the financial services industry. Technology has been both source and enabler in this innovation journey. From the development of complex financial models, predictive analytics, design, and distribution of financial products, trading of instruments to providing ultimate customer experience, technology is the key to every aspect of financial engineering. The information technology companies have a major role to play in the sustainable growth of the financial services industry.

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