| Sno | Name of the Scholar | Name of the Supervisor | Title of the Research Topic | Ph.D. Award |
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| 6. | Mr G.S.S.Bhishma Rao | Prof. R.Venkateswarlu | A Mathematical Modelling Approach to study Efficiency and Productivity of Indian Non-Life Insurance Firms | May 2016 |

# ABSTRACT

The phase of insurance business has been changing across the world and the consequence of these changes can be seen in the present Indian market. The Indian insurance industry has started to experience the potential after the process of reforms were started based on the Malhotra Committee's recommendations which was set up in 1993 with an aim of brining more efficient and competitive insurance system suitable for the Indian market.

The Malhotra Committee strongly felt that reforms are required in order to improve the spread of the insurance and service, this sector should be opened up to competition. These reforms in insurance sector resulted in to liberalization, privatization and globalization of insurance industry in India. These reforms have also brought in new risks like increased competition, not well experienced managers, unknown risk exposure due to different risks. The insurance firms especially public sector non-life insurers have been tested in recent period from different angles - aggressive marketing by new players, online distribution, financial services deregulation, stress due to compliance, competition from other investment avenues and demand of customer engagement & empowerment.

The changing insurance market dynamics has given many opportunities for insurers, but capturing these opportunities requires a well-defined and proactive business activities. The insurers must reassess their day to day business activities like how they handle and engage customers, map their product offerings and services with the customer, better understanding, and work on the drivers of customer satisfaction, loyalty and delight.

The imperative reaction in need is that the non-life insurers must remain competitive by doing better and faster, and by ensuring cost effectiveness with performance.

In this present competitive market, in order to sustain further, the insurance firms have to ensure quality and innovative products at a competitive price. Insurance firms can lower the price of the product by reducing the cost. Their existence depends upon their productivity, efficiency and hence on profitability. All the non-life insurers have to enhance their technology with care in this competitive atmosphere so that it helps in increasing the efficiency, productivity and hence the profitability.

The thesis consists of six chapters. Chapter-1 presents history, overview and growth of Indian insurance industry and global perspective with main emphasis on non-life insurance sector. It also gives the review of the literature on efficiency, productivity and profitability of insurance firms.

Chapter-2 presents the efficiency analysis of Indian non-life insurance firms using Data Envelopment Analysis Model. The theoretical DEA Models have been considered are CCR-DEA and BCC-DEA Models. Two models have been considered for the efficiency analysis. Model 1 used Commission plus Management Expenses and Capital as inputs, whereas Net Premium and Net Investment Income as outputs. Model 2 used Commission plus Management Expenses and Capital as inputs, whereas Net Profit after Tax as output. It includes the estimation and comparison of technical efficiency, pure technical efficiency and scale efficiency of public and private non-life insurance firms in India over the period 2008-2013.

Chapter-3 presents the efficiency ranking of Indian non-life insurance firms using the Super-Efficiency and Cross-Efficiency Data Envelopment Analysis models based on the two models: Model 1 and Model 2 of the Chapter II. It also includes comparison of the ranks given by the Super-Efficiency and Cross-Efficiency Data Envelopment Analysis models.

Chapter-4 presents further exploration of efficiency of Indian non-life insurance firms using the Data Envelopment Window Analysis akin to time series analysis. It includes the further exploration and comparison of technical efficiency between public and private non-life insurance firms in India in the period 2008-2013.

Chapter-5 presents the productivity analysis of Indian non-life insurance firms using Malmquist total factor productivity index. This Malmquist TFP index relies on the efficiencies calculated by the two models: Model 1 and Model 2 of the Chapter II. It includes the estimation and comparison of efficiency change, technological change and total factor productivity index of public and private non-life insurance firms in India over the period 2008-2013.

Chapter-6 presents the profitability analysis and ranking of Indian non-life insurance firms using Grey Relational Analysis (GRA) and Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) based on profitability ratios of non-life insurance. The profitability ratios used in the evaluation are Expense ratio, Operating Ratio, Loss Ratio, Combined Ratio, Underwriting Results Ratio, Investment Income Ratio, Net Earnings Ratio, Net Retention Ratio and ROE. It includes the comparison of the ranks based on the profitability ratios from both GRA and TOPSIS. It also presents the comparative profitability analysis of the public and private non-life insurance firms in India over the period 2008-2013.

Conclusions and suggestions are given at the end of the thesis. Scope for further work is also given in the thesis.

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