Chapter 1
Introduction
This chapter introduces the concept of performance evaluation of an organization/s and its importance in the context of globalization of business environment. It proposes research questions for the multi-dimensional performance evaluation in an Indian corporate organization. It also presents an overview of the thesis and chapter-wise coverage.

1.1 Introduction
In today’s globalized business environment, businesses are venturing beyond national boundaries in the pursuit of business opportunities. As a result, the trade and business between different countries has become the order of the day. With these developments, economies across the world are becoming more dependent on each other in terms of raw material, human and financial resources etc. Factors like, removal of trade barriers, technology advancement, removal of capital controls, deregulation and improvement in shipping technology are affecting this globalization (Eccles, 1992).

With globalization in place, competition in business world has changed and has become more stringent. The business manager has to keep a close track of multiple factors, either internal or external that affect his/her business. Also, the business manager needs to evaluate the performance of his/her business based on multiple conflicting criteria in order to make an informed decision. As a result, the importance of performance management has increased. Business managers today, require a multi-dimensional performance measurement system that will structure a complex problem well and incorporate multiple criteria explicitly to facilitate better decision making process. This system should help the business manager to monitor and diagnose operational as well as financial performance of his/her business on a continuous basis.

1.2 The Need
Corporate organizations are now-a-days targeting a multifaceted growth (Eccles, 1992). Measuring and evaluating the present status of an organization, considering various dimensions including the financial, operational, economical, and supply chain that are tangible and intangible is a challenge. For this reason, there is a need of comprehensive performance measurement system. Good performance is essential for an organization to sustain and excel in this competitive world. The traditional performance measures which have been used in the past and worked well then may not work well in the modern era of business.
According to Drucker (1990), the traditional measures are not adequate for business evaluation. The traditional measures fail to meet new business needs because they are lagging indicators (Eccles et al., 1992). Improvement in performance is the key to growth and this can be achieved partially through its measurement.

The narrowest conception of business performance based on the use of simple outcome-based financial indicators, are assumed to reflect the fulfillment of only the economic goals of the firm as stated by Venkatraman and Vasudevan (1986). Usually, business executives use the traditional financial accounting measures such as return-on-investment, return-on-sales, earnings per share etc. for monitoring their businesses. However, this may lead to misleading signals for continuous improvement and innovation-activities (Kaplan and Norton, 1992). It is also seen that in today’s modern business world, managers have recognized that new strategies and competitive realities demand new measurement systems (Venkatraman and Vasudevan, 1986). During past few years, academicians and practicing managers have developed and demonstrated various performance measures, which are best obsolete and more often harmful (Curtis, 1985; Johnson and Kaplan, 1987). This suggests the fact that the traditional financial measures are not timeless and comprehensive as the results these measures produce do not take into account market share, productivity, employee attitudes, public responsibility, and the balance between short and long term goals. Moreover, they are computed only at the end of a financial period. Many practitioners believe that income-based financial figures are better at measuring the consequences of a decision rather than predicting performance (Eccles, 1991). In many situations, it is observed that financial ratios fail to address effectively the potential of the company, as they only offer insight to the business’s present situation. For instance, if the company is about to merge and acquire large amounts of capital, the ratio may not reveal these new changes. It is also argued that the other measures like debt are insufficient to provide complete performance evaluation and hence attention to customer satisfaction which measures the quality of customer service is a next logical step in the development of quality measurement (Eccles, 1991).

Thus, a broader conceptualization of business performance is the need of the hour which would include emphasis on indicators of operational performance i.e., financial as well as non-financial. Under this framework, it is necessary to treat measures such as new product introduction, product quality, marketing effectiveness, manufacturing value added, and other measures of
technological efficiency within the domain of business performance. Similarly, market-share position, widely believed to be a determinant of profitability (Buzzell, Gale, and Sultan, 1975) would be a meaningful indicator of performance within this perspective. Management theory and practice have long established a link between effective performance measures and effective management (Drucker, 1995). The effectiveness of any given performance measure depends on how it will be used. Performance measure used as a management tool needs to be broadened to include input and process measures.

To address these issues, researchers have come up with a new set of tools called Multi-Criteria Decision Making (MCDM) tools. These tools use numeric techniques to help decision makers choose from a discrete set of decision alternatives. Various decision alternatives are evaluated on the basis of pre-defined criteria and are ranked accordingly.

For performance measures to have meaning and to provide useful information, it is necessary to make comparative evaluations. The evaluation progress may result in achieving given goal/s or target/s, assess trend/s in performance over time, or weigh the performance of one organization against another (Poister, 2003). Benchmarking is one such method which can be used for comparing one's business processes and performance metrics with the best in the industry. Just as quality-related matrices have made the performance measurement revolution more real, so has the development of competitive benchmarking (Eccles, 1991). Dimensions typically measured are quality, time and cost. Benchmarking has proven to be a powerful tool for total quality management and process improvement (Lai et al, 2010). Companies who practice the art of benchmarking are considered to be more proactive, externally focused and close to the markets in which they operate (Calhoun, 2004). Benchmarking is often treated as a continuous process in which organizations continuously seek to improve their practices.

During last three decades, the performance measurement literature has undergone major changes in identifying features and characteristics of performance measures and measurement systems (Calhoun, 2004). According to researchers (Grady, 1991; Clarke, 1995; Manoocheri, 1999 etc.), efficient measure and good measurement system are expected to possess following characteristics:

- The system should be able to produce accurate results (Grady, 1991);
• The system should be based on organizational objectives, critical success factors and customer needs and monitoring both financial and non-financial aspects which in turn speaks about its suitability for decision making (Clarke, 1995, Manoochehri, 1999);

• It must meet the needs of specific situations in relevant manufacturing operations and should be long-term oriented (sustainability), as well as simple to understand and implement (Santori and Anderson, 1987).

1.3 Proposed Research Questions

As indicated earlier, corporate organizations are targeting a multifaceted growth. In order to sustain in the competition, it is highly essential to have a multi-dimensional performance evaluation system in place to monitor the performance of their business unit or Decision Making Unit (DMU). A DMU is an independent business unit. Many a times, in the business decision making process, the Decision Maker (DM) has to evaluate various alternatives which are at her/his disposal and has to come up with the best alternative. For such decision making process, generally, the DM uses MCDM tools. Most of the MCDM tools which are benchmarking tools compare the performance of an alternative with the best among the set of alternatives. Few MCDM tools are non-parametric in nature and do not account for random error. But, there are few tools which are parametric in nature and account for statistical noise. The results obtained using these techniques can be validated by statistical hypothesis testing procedure. In this study, an attempt has been made to develop a multi-dimensional performance evaluation model/s by integrating various benchmarking tools to address these issues.

In order to get insights regarding the current scenario of performance evaluation process of Indian corporate organization and usage of benchmarking and MCDM tools in this process, a pilot study was undertaken in which a survey of more than one hundred organizations from various sectors was conducted. Pilot study is discussed in detail in Chapter 2 along with the review of literature. A literature review further helped comprehend various applications of MCDM tools and their suitability for integrated approaches.

Broad issues discussed in this thesis, based on a survey and relevant literature reviews are indicated as follows:

1. To study the basic algorithm/characteristic of each of the MCDM tools that is used for performance evaluation of a corporate organization.
2. To understand the applicability and suitability of existing MCDM tools in different areas of business operations.
3. To study each MCDM tool in terms of its diagnostic ability using statistical hypothesis testing procedure.
4. To find out lacunas (if any) in the basic algorithm of existing MCDM tool/s.
5. To try and evaluate the possibility of modifying existing algorithm/s.
6. To examine the flexibility of different MCDM tools (in terms of existing algorithm) for possible integrated approaches.
7. After analyzing the lacunas in the standalone MCDM tools, propose an integrated approach using at least two MCDM tools that enable a better performance evaluation practice and enable minimize the impact of the existing lacuna in the stand alone tool.
8. To propose an integrated approach using MCDM tools to recommend the best alternative/DMU whose performance is benchmarked against the best and the worst alternative/DMU in the set of alternatives/DMUs.
9. To propose an integrated approach using MCDM tools to acknowledge stochastic nature of data and to recommend the best alternative/DMU whose average performance is being compared with the best and the worst alternative/DMU in the set of alternatives/DMUs.
10. To propose an integrated approach using MCDM tools to acknowledge stochastic nature of data to recommend the best alternative/DMU whose average performance is being compared with only the best alternative/DMU in the set of alternatives/DMUs and which will also indicate potential areas where further improvement possible.

1.4 Scheme of Chapterization

This thesis is arranged in eight chapters and is described briefly as follows:

**Chapter one** introduces the concept of Performance evaluation of an organization and its importance in the context of globalization of business environment. It also proposes the research problem for the multi-dimensional performance evaluation of an Indian corporate organization. In the end, it provides an overview of the thesis and its Chapter-wise coverage.

**Chapter two** begins by explaining the motivation behind this research work and its application in the real world through the pilot study conducted of Indian corporate organizations. Findings of
Chapter Three discusses the research methodology. It states the objectives and scope of the study and discusses the research design adopted in this study. The research design includes data used for the purpose of the study together with hypotheses and proposed models. Various sources of data including hypothetical and secondary have been explained in detail in this section. In this chapter, the concept behind various proposed integrated models such as Efficiency Ranking Method using DEA and TOPSIS (ERM-DT), Efficiency Ranking Method using SFA and TOPSIS (ERM-ST) and Efficiency Ranking Method using SFA and SDEA (ERM-SSD) is explained in brief. The development and the analysis of these models/methods have been explained in detail in Chapter 4, 5 and 6 respectively. In the end, various statistical tools and computer softwares used for the analysis purpose are explained in detail.

Chapter Four presents a discussion on advantages and disadvantages of tools like, DEA, SDEA and TOPSIS. It explains the need to develop the first integrated model ERM-DT. In further proposes the first integrated model ERM-DT. The proposed model is first illustrated with a hypothetical data set and is later validated by data from PSU banks. The ranks obtained by the proposed model are compared with the conventional models using two different techniques namely; Spearman’s rank test and Mean Squared Deviation (MSD) for their significance.
Chapter five explains various advantages and disadvantages of the parametric tool Stochastic Frontier Analysis. It describes need to develop the second integrated model ERM-ST. Here the model proposed is illustrated with a hypothetical data set and is then validated using data from PSU banks. The ranks obtained by the proposed model are compared with the conventional models using two different techniques namely; Spearman’s rank test and Mean Squared Deviation (MSD) for their significance.

Chapter six proposes the last model in the series namely; ERM-SSD. First, it starts with the discussion on SFA, CRS-DEA and SDEA in terms of their individual advantages and disadvantages. Next, need for the integrated approach is explained followed by the proposed model ERM-SSD. It further illustrates the model with a hypothetical data set and is then validated by data from PSU banks. The ranks obtained by the proposed model are compared with the conventional models using two different techniques namely; Spearman’s rank test and Mean Squared Deviation (MSD) for their significance.

Chapter seven compares the three models proposed in this study, in terms of the basic ranking scheme that each model provides while evaluating the performance of a business organization. For this purpose, all the proposed models are applied to a common hypothetical data set and then to the data from banking sector and from the cement sector. For banking sector, data from PSU banks listed on NSE and operating in India is considered. For cement sector, data from 15 cement companies listed on NSE and operating in India is considered. The three proposed efficiency ranking models are compared using Spearman’s rank test and MSD for the agreement or disagreement between the ranks assigned by these approaches.

Chapter eight is the final chapter of the thesis. The chapter summarizes the major findings of the work and their salient features. It draws important conclusions of the methodologies so derived and their applicability in the business world for the purpose of decision making. It further discusses the managerial implications of the new methodology so developed for its advantages and disadvantages. This chapter also discusses the limitations of the proposed methodology. In the end, the chapter explores the possible extension of the current study and talks about further scope of the study in detail.

The overview of the Thesis is presented in Figure 1.1.
1.5 Conclusions

This chapter gives an overall view of the thesis. It provides basic concepts of performance evaluation and also explains the need for the performance evaluation for any corporate organization. It further explains the basic characteristics required for an efficient measurement system. Based on this discussion, research questions are proposed. Later, a scheme of various chapters in the thesis is presented.

In order to define aims and objectives for the present study, pilot study of Indian corporate organizations is conducted followed by review of the literature. Both the results of pilot study and the review of literature are presented in the next chapter.