CHAPTER-1

RESEARCH DESIGN
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1.1 INTRODUCTION

Value addition or shareholder value addition is one area which is fast catching-up attention of one and all across all industries and companies throughout the world. If we talk of only banks, upto 1980s, regulators were merely focusing on deposit mobilization, branch expansion and market stability; therefore, they implemented a structured regulation approach because of which there was little effective competition in the market and no thrust for productive efficiency and quality of banking services. Since the start of the 1990s, deregulation process was started all around the world which provided liberal entry of new players in the market. Consequently, banks started thinking about improving their business models, which can improve their productive efficiencies, marketing abilities, quality of banking services and so on. In this thrust for becoming more competitive, all banking systems in Europe and US started focusing on shareholder value creation. They changed their business models in which they took special care that each and every business segment should be profitable, efficient and generating returns more than its cost of the company. Not only this, they found that traditional ways (tools) such as Return on Assets (ROA), Return on Net Worth (RONW), etc. are not sufficient enough to measure the performance of company. Therefore, a lot of new performance metrics such as EVA, MVA and SVA,
etc which were developed to measure the economic value and net returns to shareholders, attracted quick attention of bankers. A peculiar feather of these new tools of performance measurement is that they are aligned with the market value (returns) generated on the stock markets so that internal performance of the company can be matched with the external (stock market based) performance. Over a period of time, these tools become popular among all banks and became part of their core banking strategy creating value across all customer segments.

Now, the question is; can Indian public sector banks also make shift of focus towards shareholder value creation? When foreign banks can do, why not Indian banks? What is the present level of value creation and how this can be improved? What change in business model is required and how it can be implemented? To answer these entire questions the present study is undertaken.

1.2 BACKGROUND OF SHAREHOLDER VALUE CREATION

The capitalist firm being one of the prime economic institutions of a modern economy, analysis of its performance assumes immense significance. Analysis of the determinants of firm performance is of utmost importance to all stakeholders of a firm, especially to its common equity investors. It was the famous economist Alfred Marshall in 1890, who first spoke about the notion of economic profit, in terms of the real profit that a company makes when it covers, besides the various operating costs, the cost of its invested
capital (Kyriazism and Anastassis, 2007). It is clear that under the Shareholder Value Creation (SVC) approach performance measurement gains a new meaning in contrast with the traditional approach which is merely based on the simple notions of accounting profits and the relevant ratios derived from them, such as the Return on Equity (ROE) and the Return on Assets (ROA) (Kyriazism and Anastassis, 2007). The difference is that the traditional performance measurement benchmarks do not consider the cost of invested capital (equity and debt) in order to generate the profits made by a company. Thus, under the traditional approach two companies that have the same ROE would be considered as equally successful, whereas under the SVC approach the same conclusion could not be reached if these two firms had a different cost of capital, in other words if their economic profit or residual income was different (Kyriazism and Anastassis, 2007). The modern day finance experts have started stressing on the Wealth Maximization principle for the owners of the companies i.e. the Shareholders. The measure that concentrates on maximizing wealth is Shareholder Value Creation.

1.3 MEANING OF SHAREHOLDER VALUE CREATION

Shareholder Value Creation is creating value for the real owners of the company - the Shareholders. To put it simply the returns generated by the company over and above the cost of capital is Shareholder Value. Some companies can therefore, be value creators (return higher than the cost capital) and also some can be value destroyers (return lower than the cost of capital). The concept of Shareholder Value Creation was first introduced in
United State of America. This has resulted in a stronger US economy and better business environment (Tsujii, 2006).

The background of this clearer focus on the maximization of corporate value as a central goal of management in USA is:

- Activation of buying and selling of management rights such as by M&A,
- Popularization of stocks for individual investors, and
- Bankruptcy in pension plans (Tsujii, 2006).

The creation of shareholder value leads not only to the more effective management of those corporations, but also to increases in labor productivity, job opportunities, and real per capita GDP (Copeland et al. 2000).

1.4 SIGNIFICANCE OF THE STUDY

The study will be useful to the Indian Banking Industry especially for public sector banks which is undergoing a rapid metamorphosis. Their role of a traditional banker has been replaced with financial services provider for the clients. The proposed study will serve as a useful guide to sensitize bankers for remaining competitive in the industry. The concerned banks can better understand the gimmicks of value creation and enhanced competitiveness accordingly; they can take measures to improve their level of competitiveness in future.
The Study is also useful to all stakeholders’ viz. customers, employees, Shareholders. Etc as any improvement in value creation of banks is going to benefit them in one way or other.

The study will serve as a milestone to the policy-makers in the Government and to the Reserve Banks of India so that the Indian Banking Industry may be directed towards a better pace with the 21\textsuperscript{st} century and times ahead.

The study will also be beneficial to future research scholars for making further studies in the same context of economic value added, market value added and shareholder value added/value creation of the Indian Banking Industry.

Further, the study will serve the society at large in terms of better services offered by Indian Banks, shareholders’ wealth maximization and overall prosperity of the nation.

1.5 REVIEW OF LITERATURE:

At the commencement of any research, it is necessary to have the idea about the research which was done previously. Generally literature survey is to be considered as the collection of the information from other sources. A literature review is a critical and in depth evaluation of previous research. It is a summary and synopsis of a particular area of research. A good literature review expands upon the reason behind selecting a particular research
question. The literature review is not a chronological catalogue of all other sources but an evaluation, integrating the previous research and also explaining how it integrates into the proposed research program. It is not a collection of quotes and paraphrasing from other sources. A good literature review should also have some evaluation of the quality and findings of the research.

Shareholder value is currently one of the most widely studied areas in finance. Since the 1990s, creating sustainable shareholder value has gain strong interests among both, academics as well as practitioners and is considered as a valid strategic objective for firms (including banks) owing to the fact that business has become more competitive and this new environment requires a new approach to keep both stakeholders and shareholders satisfied. Although the concept of shareholder value is not a new concept, yet the problem lies in measuring shareholder value as there is no consensus as to which is the best method for gauging the value that firms create for their shareholders. As once noted in The Economist (1997:61), ‘Inevitably the measures are also a big business for consultants. Stern Stewart, the New York firm that developed Economic Value Added (EVA) and Market Value Added (MVA), is the leader of the pack. But in recent years, it has faced competition from the Boston Consulting Group (BCG), Braxton Associates, McKinsey and others, many consultancies produce league tables of value added and go to increasingly absurd lengths to protect their particular brand’.
Here, in this study researcher has focused on research dealing with value relevance of the modern financial performance measurement tools i.e. EVA, MVA and SVA over traditional performance measures.

*Stern (1990)* observed that EVA as a performance measure captures the true economic profit of an organization. EVA-based financial management and incentive compensation scheme gives manager better quality information and superior motivation to make decisions that will create the maximum shareholders’ wealth in an organization. EVA is a performance measure which is most closely linked to the creation of shareholders’ wealth over a period of time. The financial management and the incentive compensation system based on EVA give the manager superior information and higher motivation. Accordingly EVA should be made the focal point for financial reporting, planning, and decision-making. The executives of an organization should look out for appropriate techniques that will guard them against any future attacks by corporate marauders. The best way of maximizing shareholder return is to offer incentives to managers for making decisions that boost long-term value. A major step is to provide cash bonus or stock option arrangements with incentives to that create built-in share value. The objective is to motivate the managers to look beyond short-term measures of economic performance by essentially turning managers into owners. The managers may be guided by EVA and pursue such objectives that improve operating profits.

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investing more capital. Managers can be remunerated a proportion of both the total EVA and the positive change in EVA.

Stewart (1991)\(^2\) was the first person who studied the relationship between EVA and shareholder wealth with market data of 618 U.S companies and presented the results in his book “The quest for value”. He stated that EVA and MVA correspond with each other quite well among selected U.S companies. The study provided the first empirical evidence of EVA’s potential as a proxy for MVA and reported a R\(^2\) of 0.97 between changes in EVA and changes in MVA for 25 groupings of firms over the period 1987-88. Only the relationship between negative EVA and negative MVA did not hold very well. According to Stewart it was because the potential of liquidation, recovery, recapitalization, or takeover used to set a floor on a company’s market value. The study found that MVA and EVA corresponded to each other best when changes in EVA and MVA were studied and not the absolute levels. Moreover, changes in EVA and MVA were not affected so much by accounting distortions and inflation than the absolute values. Further, Stern, Stewart, and Chew (1995) concluded that changes in EVA over a five-year period explained 50\% of the change in MVA over the same period.

Stern (1993)\(^3\) argued that the key operating measure of corporate performance is not popular accounting measures such as earnings, earnings growth, dividends, dividend growth, ROE, or even cash flow, but in fact EVA. The

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\(^3\) Stern J 1993, Value and People Management Corporate Finance July 35-37.
changes in the market value of a selected group of companies (specifically their MVAs) have been shown to have a relatively low correlation with the above accounting measures. His research showed that the r-square for the relationship between MVA and various independent variables ranged from 9% for turnover growth to 25% for ROE rates. By comparison, the r-square for EVA relative to MVA was 50%. MI the results were based on averages and they are set out in Table 2.1.

Table-2.1

MVA vs. other financial performance measure

<table>
<thead>
<tr>
<th>Financial Performance Measure</th>
<th>R-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVA</td>
<td>50%</td>
</tr>
<tr>
<td>ROE</td>
<td>25%</td>
</tr>
<tr>
<td>Cash Flow Growth</td>
<td>22%</td>
</tr>
<tr>
<td>EPS Growth</td>
<td>18%</td>
</tr>
<tr>
<td>Asset Growth</td>
<td>18%</td>
</tr>
<tr>
<td>Dividend Growth</td>
<td>16%</td>
</tr>
<tr>
<td>Turnover Growth</td>
<td>09%</td>
</tr>
</tbody>
</table>

Source: Stern (1993)

Tully (1993)\(^4\) has confirmed that is no tricky situation about the technique through which the EVA can be augmented. It is a basic measure of return on capital and there are three ways to increase it: Earn more profit without using more capital, Use less capital, and Invest capital in high return projects.

Jain (1994)\(^5\) has argued the value added statements has certain advantages like comparison of performance, productivity measurement, resource


allocation and incentive schemes for employees. The value added approach shows how the corporate quiche has been alienated among various contributions of value.

Stewart (1994)\(^6\) has expended that EVA is a powerful new management tool that has gained worldwide recognition as the standard tool of corporate performance. EVA presents an integrated framework of financial management and executive’s compensation. The adoption of EVA system by more and more companies throughout the world clearly depicts that it provides an integrated decision-making framework, can reform energies and redirect resources to create sustainable value for companies, customers, employees, shareholders and for management.

Ochsner (1995)\(^7\) says companies that use shareholder value growth alone as a measurement for executive performance pay leave less-skilled management dependent on luck. Economic value added measures, with some modification and in varying forms, can serve as leading indicators of company performance. Thus, investors will use them to giveagements a compass to steer by. A company that adopts economic value added (EVA) is likely to need a substantial education program for managers. It also may elect to state EVA in terms of operating profits and use of capital. This puts EVA in the role of a target-setting mechanism, which assures that EVA figures will be


available to the board of directors and, if necessary, major shareholders for tracking and comparison purposes.

Lehn and Makhija (1996)⁸ affirm that EVA and Market Value Added (MVA) are increasingly being eyed as alternative measures of business performance and strategic development. Despite the attention, however, the empirical research has been devoted to these two metrics. To provide clarifications on the subject, a study, which examines the effectiveness of EVA and MVA as measures of performance, as signals of strategic development was conducted. They were found to be 114 European Journal of Economics, Finance and Administrative Sciences - Issue 42 (2011) significantly correlated with stock price performance and inversely related to turnover. Firms having greater focus in their business activities had higher MVA than less focused counterparts.

Kramer and Pushner (1997)⁹ empirically test the strength of the relationship between EVA and market value added. The results do not fully support the arguments of EVA proponents that it is the best internal measure of corporate success in adding value to shareholder investments. On the contrary, the market seems more focused on “profit” than EVA. Their results (which applicable to the SS1000) reveal shareholders can align management’s wealth

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enrichment more closely to their own, at least in the short-term, by tying compensation to profits rather than EVA.

Padgett (1996)\textsuperscript{10} comments on a study conducted by Stern Stewart & Company of top 100 US banks. The results of the study showed a dissatisfactory situation because maximum banks reported negative EVA.

Dodd and Chen (1996)\textsuperscript{11} found that “the association of EVA with stock return is not as strong as suggested in anecdotal EVA stories”.

Milunovich and Tsuei (1996)\textsuperscript{12} investigated the correlation between frequently used financial measures (including EVA) and the MVA of companies in the US computer technology industry (so-called ‘server-vendors’) for the period from 1990 to 1995. The results of the study are set out in Table 2.2.

Table 2.2
Correlation of different performance measures with MVA in the US computer technology industry

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>R-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVA</td>
<td>42%</td>
</tr>
<tr>
<td>EPS Growth</td>
<td>34%</td>
</tr>
<tr>
<td>ROE</td>
<td>29%</td>
</tr>
<tr>
<td>Free Cash Growth</td>
<td>25%</td>
</tr>
<tr>
<td>FCF</td>
<td>18%</td>
</tr>
</tbody>
</table>

Source: Milunovich and Tsuei (1996)

O’Byrne (1996)\(^{13}\) from Stern Stewart & Co used capitalized EVA as independent variable in a regression where market value divided by invested capital is the dependent variable. Using the nine-years data (covering the period 1985-1993) for the 6,551 company valuation years (sample based on the 1993 Stern Stewart Performance 1000), the study found that the level of EVA explained about 31% of the variance in market value, whereas the level of net operating profit after taxes explained only 17%. When looking at changes in EVA and market value O’Byrne found that changes in EVA explained 55% of variations in changes in market value. Changes in NOPAT explained only 33%. The research also showed that five-year changes in EVA explained 55% of the variation in five-year changes in market value, and ten-year changes in EVA explained 74% of the variation in ten-year changes. In contrast, the NOPAT model explained only 24% of the five-year changes, and 64% of the ten-year changes, in market value. Thus this study evidenced that EVA, unlike NOPAT or other earnings measures like net income or earnings per share, is systematically linked to market value. It does provide a better predictor of market value than other measures of operating performance.

Uyemura et al. (1996)\(^{14}\) used a sample of the 100 largest US banks for the ten-year period from 1986 to 1995 to calculate EVA and to test the correlation with EVA, as well as four other accounting measures, namely net

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income(amount), EPS, ROE and ROA. The results of their regression analysis are set out in Table 2.3.

**Table-2.3**

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>R-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVA</td>
<td>40%</td>
</tr>
<tr>
<td>ROA</td>
<td>13%</td>
</tr>
<tr>
<td>ROE</td>
<td>10%</td>
</tr>
<tr>
<td>Net Income (Amount)</td>
<td>8%</td>
</tr>
<tr>
<td>EPS</td>
<td>6%</td>
</tr>
</tbody>
</table>

Source: Uyemura et. al. (1996)

The analysis above clearly shows that EVA is the measure that correlates the best by far with shareholder wealth creation. In an alternative approach, where changes in the performance measures were regressed against standardized MVA, the results were not very different. Standardized EVA (EVA divided by capital) again had an r-square of 40%, while for ROA it was 25% for ROE it was 21% for net income it was 3% and for EPS it was 6%.

Blair (1997)\(^{15}\) observed that the EVA has generated much interest in the business community. This financial tool advocates debt finance as evidenced by its basic formula, which uses the weighted cost as the cost of capital, thus becomes cheaper than equity, partly due to the tax deductible interest.

Burkette and Hedley (1997)\(^{16}\) explained that the EVA concept can be used to assess organizational performance known as economic profit; it can be

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applied for profit companies, public sector organizations and non-profit organizations. EVA is being used by these entities in a variety of ways, including as a management communication base, as a measure of corporate and divisional performance, to tighten management, shareholder interests and to emphasize the long-term benefits of industrial research and employee training.

Mayfield (1997)\textsuperscript{17} has sarcastically established that the shareholder value can be increased by investing in all those projects which give a positive NPV and by discounting all those products and projects whose return on capital is less than the cost of capital. The major task is to encourage the managers to create long-term value. The traditional accounting techniques are familiar with concept of residual value. When this concept is used in economic value measurement as a means of evaluating business performance it involves some important modification in traditional accounting concepts. EVA as a measure of financial performance provides an excellent tool for strategy planning, investment appraisal, pricing decisions and a basis for incentive compensation.

Rajeshwar (1997)\textsuperscript{18} offered in his study that EVA can also be used as a device for shareholders’ communication and manager incentive system, apart from measuring the financial performance of organization. Demand for EVA

\textsuperscript{17} Mayfield, John, “Economic Value Management”, Management Accounting, Sep 1997, pp.32-33.
among the corporate world has spurred competition among financial consultants, who help in computing EVA of business organizations.

**Tully (1997)** brought to book EVA as a method for understanding as to what is happening to the financial performance of an organization. The paper presents the method for calculating EVA and also shows some pictorial presentations of EVA’s of several companies. It has been concluded that EVA can be a better financial performance evaluation measure than traditional measures.

**Stephens and Bartunek (1997)** examined Economic Value Added (EVA). They illustrated that EVA can bring great value to a company by focusing the entire organization on activities that produce results valued by shareholders. With a well-grounded understanding of EVA, the financial organization is uniquely capable of providing counsel that will ensure successful implementation of this new measure.

**Dillon and Owers (1997)** place EVA in its context with other financial metrics. The debate regarding the relative merits of EVA and other metrics is outlined, but they don’t take a position on this sometimes vociferous debate. They have summarized emerging evidence on the relative use of EVA and other metrics. Their study concludes with an analytical investigation of the

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relationship between EVA and NPV (Net Present Value). The analysis suggests that there may be a somewhat more complex relationship between EVA and NPV than is sometimes assumed. Without taking a position, this Paper sought to take a balanced view of the issues.

Banerjee (1997)\textsuperscript{22} has conducted an empirical research to find the superiority of EVA over other traditional financial performance measures. Ten industries have been chosen and each industry is represented by four/five companies. ROI and EVA have been calculated for sample companies and comparison of both has been undertaken, showing the superiority of EVA over ROI. Indian companies are gradually recognizing the importance of EVA. Some of such companies are Ranbaxy Laboratories, Samtel India Ltd. and Infosys Technologies Ltd.

Uyemura (1997)\textsuperscript{23} observed that over the last 20 years, bankers have toiled with a variety of risk management and profit concepts, such as matched-maturity funds transfer pricing, duration analysis and activity based costing accounting. Today, the interest has developed in Value-at-Risk (VAR) capital allocations and risk adjusted return on capital. Such tools are important to understand and implement when analyzing specific transitions; however, a top down approach be the best choice for portfolios or lines of business. The article describes a ‘top-down’ approach to risk management, easily


understood and simpler to implement and lower in cost than traditional approaches by using economic value added (EVA) concept.

Villiers (1997)\textsuperscript{24} studied the extent to which EVA is distorted by inflation, and found that it cannot be used for estimating actual profitability under inflationary condition. The paper developed an adjusted EVA (AEVA) calculation procedure which provided a better estimate of actual profitability under inflation. The study suggested that AEVA should be used instead of EVA for financial decision-making under inflation. Moreover, AEVA also provides an alternative to inflation accounting, and can be used under inflation to estimate actual profitability from conventional historical cost accounts.

Brabazon and Sweeney (1998)\textsuperscript{25}, survey 153 companies in the US and Canada. They indicate that one quarter of the respondents were using EVA to measure performance and compensate managers. In their idea one of the major selling points of EVA is that a strong correlation exists between it and the share price of the organization. However, like the majority of financial performance measures, EVA is inherently backward looking as it looks at the value added in a past accounting period and thus measures the success of past strategic decisions and investments.


\textsuperscript{25} Tony Brabazon, Breda Sweeney, “Economic value added-really adding something new?”, Institute of Chartered Accountants In Ireland, Accountancy Ireland, Vol 30, No 3, Jun 1998.
Ethiraj (1998)\textsuperscript{26} derived that in Indian market many companies are using capital inefficiently and thus destroying value. The tool to measure capital efficacy and economic value is economic value added. Taking EVA as a tool of financial performance HLL and ITC stand at the top of the list. Also important is the relation between EVA and total operating capital employed. This would show how much value the company has generated in relation to the assets it has deployed. It is argued that stock price move up as a company adopts EVA as an internal performance criterion.

Saxena (1998)\textsuperscript{27} elucidated that there is no one method of measuring financial performance that is totally perfect. Thus a measure should be such that satisfies shareholders’ expectations and is also being committed by top management. EVA is a measure that should be used by top management to evaluate investment center managers, because it considers goal congruence between shareholders and managers.

Epstein and Young (1998)\textsuperscript{28} describe how EVA and its use can aid corporate environmental managers in promoting more proactive environmental investments, and in funding capital investments on environmental improvement, waste reduction, and pollution control in their companies. They believe that the use of EVA and other shareholder value measures can also improve general capital investment decisions by integrating environmental

\textsuperscript{26} Ethiraj, Govindraj, “The EVA feather in the market cap”, The Economic Times, 21Sep 1998, p.1 45]
factors that affect the long-term interests of the corporation into the managerial decision-making process.

**Biddle, Bowen and Wallace (1998)** believe that economic value added combines some truth with some chaff. They present recent empirical evidence that helps to sort the points out. Independent examination suggests that some of claims regarding EVA are overstated. While evidence confirms that managers respond to EVA incentives, and there is no evidence to support claims that EVA is more closely associated with equity returns or firm values than net income. They have discussed possible reasons in their article.

**Mäkeläinen (1998)** attempted to clarify the concept of EVA especially from the viewpoint of business unit controlling. The objective of the study was twofold. Firstly, the study described the theory and characteristics of EVA. This provided the framework to discuss the main objective: How companies should use EVA considering both its favorable and unfavorable features? In this context, the study also offered some recommendations of how EVA should be used as a management tool. The study tried to bring together the relevant theoretical issues and controlling practice. The topics discussed in the study were found to be essential and current in the case-group as well as in many other companies implementing EVA-approach in their organizations.

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Banerjee and Jain (1999)\textsuperscript{31} studied the relationship between shareholder wealth and certain financial variables such as Earning per Share, Adjusted Return on Net worth, Capital Productivity, Labor productivity, EVA and Market Value Added by using multiple linear regression models. A statistical analysis of the Drugs and Pharmaceutical industry during the period 1990-91 through 1997-98 revealed that EVA was the most significant variable in every year except for 1991-92 and 1997-98. However it is to be noted that this was undisclosed information. If companies were to disclose this information fully, there could be a direct link between share prices and EVA.

Hall and Brummer (1999)\textsuperscript{32} determined empirically which performance measures of a company correlate the best with its external performance measure as represented by MVA of the corporation. Based on a sample of 135 industrial companies listed on the Johannesburg Stock Exchange, an empirical analysis was conducted for 11 years time-period. The results showed that the highest consistent positive correlation coefficient obtained was between MVA and EVA with inflation adjustments to data. The very same pattern was obtained with discounted EVA. Slightly lower positive correlations were found between MVA and the other performance measures like ROA, ROE, EPS and DPS. These correlation coefficients were found to be higher when data with inflation adjustments were utilized.


Moore (1999) developed a model that examined the relationship between firm strategy in terms of EVA, Customer Satisfaction (CS) and firm performance in terms of MVA. The combined data tracked the satisfaction scores of 95 publicly traded companies from 1994 to 1998. The data regarding MVA and EVA was collected from Stern Stewart & Company’s performance 1000 database. The construct chosen to measure firm level customer satisfaction was American Customer Satisfaction Index (ACSI). Using a cross-sectional regression framework, the study found a positive and significant relationship between CS, EVA and MVA. It depicted that Interaction Effect of EVA and CS provide incremental information about the nature of MVA. Moreover, by using a matrix approach, the study identified four groups i.e. integrated leaders, Cost advantaged, Differential advantaged and Competitive parity firms. It was hypothesized that the differential advantage based on high levels of ACSI would provide a larger benefit to MVA than the cost advantage based on EVA. The cost advantaged group was the second highest performer indicating that the market may be rewarding economic efficiency over long-term customer satisfaction building.

Thenmozhie (1999) explained the concept of EVA and compared it with some other traditional measures of corporate performance viz ROI, EPS, RONW, ROE, ROCE etc. Examining a sample of 28 companies from BSE

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Sensex, the study covered a period of three years ranging from 1996 to 1999. The study used the coefficient of determination to demonstrate that the traditional measures do not reflect the real value of the shareholders, and thus EVA has to be taken into account to measure the value of shareholder’s wealth. For this purpose, the study at first described the concept of EVA in the Indian scenario with specific reference to companies like NIIT, Hindustan Lever and ITC. The study also referred to some of the shortcomings of the EVA concept and identified EVA to be a better measure of corporate performance as compared to the traditional measures.

Yook (1999)\textsuperscript{35} stated that as Stern Stewart & Co. claims that they use broad and specific adjustments to correct financial and accounting distortions, the algorithms are complex and costly both in terms of their data requirements and computational effort. Academic researchers and practitioners need an accurate approximation method using readily available data. For this purpose, the study illustrated one way to measure EVA using Compustat PC Plus (the software to compute EVA as per the methodology that Stewart has defined). It revealed a high correlation between author’s estimate (through the use of Compustat PC Plus) and Stern Stewart & Co.’s estimate and indicated that EVA can safely be approximated in that way (correlation between author’s and Stern Stewart’s estimates for EVA, capital and NOPAT was found to be 0.76, 0.92 and 0.93 respectively). The author clarified that a caveat for EVA calculations is the accuracy with which cost of capital can be estimated.

Although the same theoretical framework to estimate the WACC is being followed yet the diverse approaches to estimate each component can lead to very different capital costs for the same company.

Young (1999)\textsuperscript{36} discussed why European managers turned towards the use of Economic Value Added as a performance metric in corporate decision making. The study explained the use of EVA by companies and the problems that typically arise in its implementation. It used the accounts of Rhone-Poulenc, a French chemical and pharmaceutical company, to demonstrate the calculation and interpretation of EVA numbers.

Banerjee (2000)\textsuperscript{37} discussed that market value of a company is deemed to be predicted well with stream of future expected EVAs and not only with current year EVA. Using a sample size of 200 Indian companies across 14 industries for 5 years period (1993-94 to 1997-98), this study examined whether the market value of a firm is best predicted by Expected EVAs. The basic model tested in the study was: Market Value = a + b1 * COV + b2 *FGV Where COV = Current Operational Value = Invested Capital at the end of the first year (1993-94) + Capitalized value of current (1993-94) EVA. FGV = Future Growth Value = Present value of Incremental EVAs for the period 1994-95 till 1997-98 + Present value of Residual Value. The regression results showed that COV and FGV significantly explain the Market Value of the sample


companies. However, the Market Value of most of the firms in the sample reflected more of COV and less of FGV (as the coefficient of FGV was lower than that of COV). It also implied that the sample firms had less market implied growth potential.

**Bhattacharya and Phani (2000)** explained the concept of Economic Value Added (EVA) that is gaining popularity in India. The paper examined whether EVA is a superior performance measure both for corporate reporting and for internal governance. It relied on empirical studies in U.S.A. and other advanced economies. It concluded that though EVA does not provide additional information to investors, it could be adapted as a corporate philosophy for motivating and educating employees to differentiate between value creating and value destructing activities. This would lead to direct all efforts in creating shareholder value. Finally, the study also explained the dangerous trend of reporting EVA casually that might mislead investors.

**Business Today-Stern Stewart EVA Study (2000)** presented insights on shareholder value creation from India’s wealth club and ranked top 500 companies on the basis of their wealth created over a period of two years i.e. for 1998 and 1999. It claimed that although companies seemed to perform efficiently as reflected through various numerical indicators like sales, total market value, average market capitalization and the aggregate MVA yet the

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aggregate EVA decreased by 14.15% from Rs. -30,962.67 crore in 1997-98 to Rs. -35,342.82 crore in 1998-99. The study revealed that a mere 71 companies in the BT-500 listing boasted a positive EVA in 1998-99, with Hindustan Lever Ltd. (now, Hindustan Unilever Ltd.) at the top with Rs. 290.64 crore EVA created. Moreover, among 71 companies, 52 had EVA less than Rs. 10 crore. It claimed that even after capitalizing expenditure targeting future (and not charging to current returns only), just about 1 out of every 7 companies managed to generate returns in excess of their cost of capital: the other 6 in effect, eroded the shareholder value. Analyzing from MVA perspective, almost 1 out of 2 companies managed to generate incremental MVA from 1997-98 to 1998-99. Here it is worth mentioning that out of the aggregate of Rs. 70,007 crore generated as incremental MVA by the 500 companies, Rs. 33,947 crore came from an increase in total capital employed. Even more significantly, a substantial chunk of this incremental MVA came from the sudden boom in the scrips of Infotech, Pharma and FMCG companies, which while indicative of the growth-potential of these sectors, did not, magnify the abilities of these companies to add shareholder value. Thus, providing the examples of various positive EVA companies, the study suggested that, Indian companies need to focus on growth and financial jurisprudence simultaneously in three ways. First, they need to explore emerging sources of finance that can lower their overall cost of capital. Second, they need to focus on ROCE i.e. current year’s ROCE should never be less than previous year’s
ROCE. Third, they must understand that there is much higher need for value addition than mere generation of post tax profits.

Ho et al. (2000)\textsuperscript{40} contributed to the current debate between earnings and EVA by attempting to show empirically that EVA is a better predictor of firm performance in certain circumstances. They argued that the internet sector provided an appropriate research setting given its relatively high marketing, advertising and R \& D expenses, which will result in the divergence between earnings and EVA measurements. Suspecting that some of the expenses that should have been capitalized in the balance sheet prompted them to hypothesize that EVA can better reflect the underlying market activity and the performance of the firms. In addition to the main regression test, two further tests on firm type effects and EVA response coefficient also proved EVA to be a better measure over other earning based measures.

Parasuraman (2000)\textsuperscript{41} identified the EVA position of India’s 14 major public sector banks, 7 new private sector banks, 5 old private sector banks and 2 foreign banks. Among the strength indicators; deposit, return on assets, interest income as a percentage of total assets and EVA were considered. The study concluded that EVA is an important measure to judge a bank’s performance in view of the current scenario of banks. EVA was found to have a high degree of correlation with ROA but not with any of the other measures.


It highlighted the fact that banks realize the importance of measuring EVA separately even if they do well in other fields. Some of the banks, which had higher net profit and otherwise ranked high, were actually having a negative EVA. The study anticipated that EVA will soon displace other measures of bank performance.

**Thampy and Beheli (2001)** studied the economic profits of commercial banks in the public and private sectors during 1990’s. It also moves the benchmark of performance of banks from accounting profits to economic profits and shareholder wealth creation. The study has been restricted to 12 commercial banks consisting of 4 public and 8 private sector banks. The period covered under the study is three years starting from 1995-96 to 1997-98. Beta has been calculated on the basis of daily stock price data with Bombay Stock Exchange BSE 200 Index returns during January 1, 1997 to March 31, 1998 as the proxy for the market returns. The study shows that the performance of the Indian banks as measured by EVA is not very satisfactory. The results of the study reveal that the commercial banks under consideration have not created any positive EVA due to: (a) banks could be overcapitalized and (b) returns are very poor from banking business. It also suggests that bank should improve and strengthen their credit assessment technique and monitoring mechanism to bring down the non-performing assets so as to improve the earning capacity.

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Swain et al. (2002)\textsuperscript{43} found that labor productivity and capital productivity are positively associated with MVA. The study also reveals that EVA is positively associated with MVA in most of the companies. Along with EVA, some other variables like Net Operating Profit after Tax (NOPAT) and sales equally explain the MVA of many companies in pharmaceutical industry.

Kramer and Peters (2002)\textsuperscript{44} described that Economic Value Added and Net Operating Profit after Taxes (NOPAT) differed only by the charge for capital. Economic theory has stated that changes in market value should be more highly correlated with EVA, however, many studies had concluded otherwise. Therefore, the study tried to explore whether markets were inefficient or there was some error being made when calculating the charge for capital. This study examined Stern Stewart 1000 database for a period ranging from 1978 to 1996. The study reflected the problems relating to using a CAPM-based model for calculating the cost of equity component. It found that the CAPM underestimates the cost of capital for high-risk firms and overestimates it for low risk firms.

Machuga et al. (2002)\textsuperscript{45} explored the relationship between EVA and EPS directly. They examined the association between EVA and future earnings and how analysts incorporated EVA into their forecasts of earnings. Their


The premise was that if EVA was a predictor of future EPS and analysts were excluding EVA from their prediction models, then the absence of EVA could explain part of the analysts' forecast error. In general, they found that information about EVA used to add incremental value to a prediction model of EPS, and thus could explain analysts' forecast errors. But the authors also noted that the relationship was reversed when the previous year’s earnings were not positive. In other words, the study concluded that EVA can be useful for predicting EPS in profitable firms, but the nature of the relationship is less precise and must be reversed for predicting EPS for firms losing money in the previous year.

Mangala and Joura (2002) supported Stern’s belief that EVA is the most important driver influencing the market value of share. So, if the company improves EVA by increasing its return on capital employed and lowering its cost of capital, its market value will increase. In this study, EVA of 15 companies among five industries (Fast moving consumer goods, Information Technology, Pharma, Automobile and Textile) was computed for a period of 4 years ranging from 1996-97 to 1999-2000. The results obtained by using regression analysis confirm Stern’s hypothesis and conclude that the company’s Current Operational Value (COV) is more significant in contributing to a change in market value of shares in Indian context.

**Ooi and Liow (2002)**

examined the implications of the corporation’s quest for value and the adoption of a new economic performance metric (EVA) on real estate corporate strategies. The rate of return, weighted average cost of capital and economic profit of Singapore’s 19 real estate companies were computed for eight-year study period ranging from 1992 to 1999. Overall, the results suggested that most of the property companies failed to generate enough periodic income to cover their cost of capital. Hence, the companies appeared to be destroying rather than creating corporate wealth. The discussion also highlighted some reasons why Economic Value Added (EVA) tends to understate the true economic performance of real estate, both as an investment and as a business unit.

**Grant (2003)**

explained in his book the conceptual, empirical, and practical role of EVA in determining the enterprise value of the firm and its outstanding stock. The book shed light on the empirical role of EVA in the cross section of U.S. companies and industries, along with the economy-wide influence of this economic profit metric. The book explained the application of economic profit principles in valuing companies and industries. In this context, the book showed how to; (1) estimate EVA with basic and advanced accounting adjustments, (2) capitalize economic profit to determine a company’s net present value (NPV), and (3) use published financial reports to estimate a company’s future EVA, and in turn, its current market value added.

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The book applied quantitative techniques like linear and nonlinear regression that can be used by investors to find the most attractive companies and industries in the capital market. Finally it concluded that EVA is a “top-down” approach of looking at the firm’s real profitability. Moreover, it does so in a way that is intrinsically related to the firm’s net present value.

**Weaver and Weston (2003)** identified four alternative performance metrics used in value based management (VBM) and compared the strengths and limitations of each performance measure. These were (1) Intrinsic Value Analysis (IVA), the Discounted Cash Flow (DCF) methodology, (2) Returns to Shareholder (RTS, capital gains plus dividends) measured over appropriate time horizons, (3) Economic Profit (also called Economic Value Added) taken from the DCF free cash flow valuation and (4) The relationship between the market value of the firm’s financial instruments and the book value of the firm’s operating assets can be expressed equivalently as market value added (MVA), the q ratio, and the market-to-book ratio. The study used data for Hershey Foods Corporation to quantify the comparisons and relationships. It tested the relationships of alternative financial accounting performance metrics with that of market metrics on a historical basis as well as on a prospective basis. The study found that the alternative financial performance metrics – discounted cash flow valuation, returns to shareholders, economic profit, the market to book ratio [equivalently, the q ratio and market value added (MVA)] were highly correlated. Moreover, the standard financial ratio

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analysis as expressed in the DuPont formulation was also significantly related to market performance metrics and in the implementation of VBM. In implementation, each approach to value based management (VBM) was found to get started with strategic planning processes, tied performance to incentive compensation, required top management involvement, as well as information and training programs for employees.

Prasuna (2004)\textsuperscript{50} analyzed the performance of Indian banks by adopting the CAMEL Model. The performance of 65 banks was studied for the period 2003-04. The author concluded that the competition was tough and consumers benefited from it. Better services quality, innovative products, better bargains are all greeting the Indian customers. The coming fiscal will prove to be a transition phase of Indian banks, as they will have to align their strategic focus to increasing interest rates.

Bhatnagar et al. (2004)\textsuperscript{51} investigated the efficacy and appropriateness of EVA as a method of measuring profitability of a concern as compared to some traditional methods of measuring profitability like ROCE, NPV and EPS etc. The study was based on an analysis of data pertaining to 56 companies for 10 years ranging from 1988-89 to 1997-98. The year wise composite regression exercise indicated EVA to be the single variable, which was significantly related to MVA. The result proved beyond doubt that EVA is the most significant measure of corporate financial performance.


Feltham et al. (2004)\textsuperscript{52}, examined updated EVA data with an objective to determine whether the results in Biddle et al. (1997) continued to hold. The study used the same statistical and econometric methods as applied by Biddle et al., but examined different set of companies, different time periods and different markets to assess the value relevance of EVA with respect to other measures. The results being inconsistent with the findings of Biddle et al. showed that EVA had greater power than earnings in explaining market adjusted stock returns. In other words EVA and residual income outperformed earnings and cash flow from operations.

Firer (2004)\textsuperscript{53} studied the relative and incremental information content of value added and earnings in South Africa and found that the value added concept dominates earnings in terms of the relative information content, while earnings dominate value added in terms of the incremental information content. For the purpose of this study, a total of 127 companies in year 2000, 128 companies in 2001 and 125 companies in the year 2002 from Johannesburg Securities Exchange were included in the sample. The results showed that value added information can supply some of the explanatory power of company performance, which was previously the sole domain of earnings. The results argued for the disclosure of the underlying data needed to compute value added variables. The cost of reporting this type of data was


relatively immaterial given the availability of the data resulting from the disclosure requirements of the South African reporting environment. This disclosure of value added information might constitute a definite improvement over the South African reporting system and could also contribute to the harmonization between business and labor.

Hall and Geyser (2004) examined the use of Economic Value Added (EVA) as a performance measure by South African agricultural co-operatives to determine whether value has been created for members. The study provided a detailed explanation of EVA and the methodology to compute EVA components. Further, the study computed EVAs of all the South African co-operatives and analyzed it over a time span of four years i.e. from 1998 to 2001. It was evident from the data that, over the four-year period under review, the WACC declined consistently (this was due to declining interest rates throughout the period, as well as to increased use of cheaper debt in the capital structure). Whilst this was a positive factor in the value creation process, it was virtually nullified by the fact that the rate of return declined, which resulted in a negative spread. In addition, more capital was committed to the enterprises. This could be observed as a recipe for value destruction which occurred in the majority of the cases. The study also indicated fruit and vegetable sector as a single constant value creator. The study insisted that in order to create value, the rate of return on invested capital must be greater than the cost of capital.

Liebenberg (2004)\textsuperscript{55} calculated EVA for South African agricultural co-operatives to determine whether their existed a correlation between EVA performances over the years under review and between the individual groups of co-operatives. The results revealed no correlation either between the EVA values over the period or between the individual groups of co-operatives. It means that EVA performance of co-operatives was not influenced by external factors, but was dependent upon the effective management and decision-making within the agricultural co-operatives. The study also calculated EVA values for all the groups of co-operatives under changing beta values to look at the sensitivity of EVA. As a result, most negative EVA values stayed negative and positive EVA values stayed positive after recalculating EVA. Hence, EVA was not found to be sensitive to the changing betas.

Malik (2004)\textsuperscript{56} examined empirically the nature of relationships between EVA- the new trendier value-based performance measure and some traditional performance measures such as Earning per Share (EPS), Return on Net Worth (RONW) and Return On Capital Employed (ROCE) to develop an understanding that how the traditional performance measures are comparable to EVA. For this purpose, a sample of 50 companies with different asset sizes but having a uniform accounting year was selected and the relevant data was


collected for a period of 5 years ranging from 1998-99 to 2002-03. Correlating the traditional measures with EVA using Pearson’s coefficient of correlation (r), it was found that the relationship was very low with EPS and high with RONW and ROCE. The coefficient of determination (R2) indicated that EPS explained EVA only up to the extent of 14%, RONW up to the extent of 61% and ROCE up to the extent of 69%. The study indicated that these traditional measures do not reflect the real value of shareholder’s wealth and thus EVA has to be measured to have an idea about shareholder value.

Mampane (2004)\(^57\) pioneered that EVA should take the commanding role, while the traditional measures can provide additional information. The study examined the applicability of EVA as a measurement tool of value creation by taking a sample of South African milk producers. Based on the calculations using traditional measures, it was found that only four out of six farms were profitable. Moreover, out of four profitable ones, three farms had low returns. Based on the EVA calculations, only one farm was found to have created value while the rest destroyed it. A comparison showed that EVA gave the clearest results, while the results from traditional measures were misleading in case of three farms. So, the study suggested the use of EVA along with the traditional performance measures for better reflection of firms, financial performance.

Misra and Kanwal (2004)\textsuperscript{58} observed that market valuation of securities listed on the Indian Stock Exchanges is more aligned to the intrinsic value today than it has been in the past. Basic thrust of the study is to establish the supremacy of EVA as a measure of financial performance over the traditional measures. The hypothesis of this study is that among nine chosen independent variables, EVA is the single most significant explanatory variable in explaining the variation in the Market Value Added and it finds a better reflection in the market value of the share as compared to the traditional measures of financial performance. The above hypothesis is tested on the time series data of BSE-100 companies. The period of the study is 5 years i.e. from 1998-99 to 2002-03. Cross sectional analysis of the sample firms has been done for the period of study using Regression Analysis. The results show EVA (%) as the most significant determinant of MVA followed by ROTA. Hence, it concludes that relative measures of financial performance find a better reflection in the market value of shares.

Singh and Garg (2004)\textsuperscript{59} empirically examined the appearance of EVA as a concept, among the Indian corporate (Inc.) both industry wise and sector wise. For this purpose, a sample of 50 companies was chosen on the basis of their market capitalization, regular attendance in BSE Dollex and on the basis of multi-stage random sampling with industry wise stratification. It covered a period of 5 years ranging from 1998 to 2002. The study explored that one-

\textsuperscript{58} Misra, A. and Kanwal (2004), “Linkages between Economic Value Added and Share Prices: An Empirical Study of Indian Corporate Sector”, received through e-mail from authors.

third of the sample companies generated negative EVA throughout the period and another one-third generated positive EVA but it had been less than Rs. 50 crores. About 20% of the companies added value between 50 crores to 500 crores. Further, EVA based ranking of different industries put personal care, refineries, fertilizer industry at top 5. Sector wise EVA based rankings depicted that public sector had reported negative aggregate EVA in four out of five years. Moreover, different statistics had also been computed for understanding the central tendency and dispersion of EVA, NOPAT and WACC of sample companies. The study concluded that, the companies who are performing well would be benefited a lot by winning the market sentiments and others would learn to value the stakeholders by making some addition in their financial interest in the corporate world. Finally, the study suggested that as in India, only a few companies are using EVA internally as a performance gauge, the competent authorities should issue wide ranging guiding principles for EVA computations and its practices in financial reporting. It would certainly make the Indian companies internationally competitive.

**Anderson et al. (2005)** observed that the significance of the difference between EVA® and residual income (RI) is dependent upon the impact of the accounting adjustments. If the accounting adjustments are not significant, EVA® converges to residual income and the argument that EVA® is a superior metric to explain corporate wealth creation relative to residual

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income or net income does not hold and EVA® may not be a meaningful basis for compensation. This study aimed to determine: (1) whether the suggested adjustments, given the approximately steady state nature of many firms, are even significant, (2) which accounting adjustments are most critical, and (3) what is the impact of accounting adjustments on the residual income or simply after-tax operating income less a charge for the capital employed in the operations. Analyzing a sample of 317 companies from PC-Compustat and the Stern-Stewart 1000 listing for the period of 1988-1997, the study found that the two accounting adjustments (with the largest impact) i.e. R&D and LIFO, accounted for 92 percent of the total change in EVA® due to the five accounting adjustments. Moreover, the study also found instability of EVA adjustments over time, and the lack of statistical significance between adjusted and unadjusted EVAs. Therefore, it provided little justification for corporations to move from GAPP based accounting metrics to a non-GAPP based metric. Further, given the high degree of variability from year to year (i.e. different adjustments are required each year), the use of EVA® as a basis for compensation or as a measure of corporate wealth creation was also found to be limited. Thus, the study concluded with the statement that “Accounting adjustments for EVA are much to do about nothing.”

Ferguson et al. (2005)\(^{61}\) used event study methodology to investigate whether firms adopted Stern Stewart’s EVA system due to poor stock performance (i.e., poor profitability) and whether adopting EVA lead to better stock

performance (i.e., greater profitability). For this purpose, the study examined 65 firms (that became Stern Stewart’s clients between 1983 and 1998) for a period of 121 months i.e. 60 months before adopting EVA and 60 months after adopting EVA ($t = -60, \ldots, 0, \ldots, 60$). The study found no sufficient evidence to conclude that poor stock performance lead firms to adopt EVA or that adopting EVA improved stock performance. Firms that adopted EVA appeared to have above average profitability relative to their peers both before and after the adoption of EVA. Further, there was some evidence that EVA adopters experienced increased profitability relative to their peers who have not adopted it yet.

Kukreja and Giridhar (2005) evaluated the financial performance of 23 selected companies from Indian Pharmaceuticals industry by using various new breed value based performance measures. It found that the companies that perform well on appropriate value based performance metrics are amply awarded by capital markets. Using 115 firm year observations, a correlation study was undertaken to see which metric (out of nine i.e RONW, ROCE, EPS, EVA, Current Operational Value, Future Growth Value, CFROI (%), Free Cash Flow and Residual Cash Flow) was more correlated with Market Value Added. The metrics that were significantly correlated to MVA were Future Growth Value, Current Operational Value, Free Cash Flow and EVA. Here, Future Growth Value which accounted for 71% variation in MVA.

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Medeiros (2005)\textsuperscript{63} reported empirical evidence on the relationship between Economic Value Added and stock returns in Brazilian firms. The sample comprised of 6 Brazilian companies, which had disclosed their EVA for at least a four-year period (1996-1999). The hypothesis that EVA affected stock returns was tested through linear regression, using alternative models. A stock return was taken as the dependent variable and one-year lagged change in EVA to be the independent variable. The study found that stock returns were influenced by the past behavior of EVA.

Verma (2005)\textsuperscript{64}, presented Indian banks’ profile to demonstrate a direct correlation between the investment in stakeholder relationships and corporate performance. Many Indian banks seemed to have destroyed shareholder’s wealth over a period of time and only a few had positively contributed to their wealth. With the help of EVA (Economic Value Added) and MVA (Market Value Added) which tell what the institution is doing with investor’s hard earned money, the study examined an appropriate way of evaluating banks’ performance and also found that which Indian banks had been able to create (or destroy) shareholders’ wealth since 1996-1997 to 2000-2001. Further, the increase in correlation between EVA and EV/IC (Enterprise value / Invested Capital) from 0.18 in 1996-97 to 0.56 in 1999-2000 clearly depicted that market has increasingly focused on value creation and rewarded the banks which increased shareholder value.

Zaima et al. (2005) argued that studies which examined the relationship of economic value added (EVA) to market value had not isolated the EVA effect in conjunction with controlling for the economic effect of the market. Since the EVA metric has been viewed as value-added apart from the market, operational managers will benefit from a procedure that separates the market driven versus firm driven (EVA) effects. The study examined the effects of the economy and EVA on Market Value Added by using the Stern Stewart & Co. data for a period of ten years i.e. from 1988 to 1997. The results of Regression Analysis indicated that EVA and Gross Domestic Product (GDP) significantly affect MVA implying that managerial decisions affect MVA after controlling for the systematic economic effect. Furthermore, the MVA-EVA relationship showed a systematic bias between the largest MVA firms and the smallest MVA firms. Finally, the results also provided corporate executives with a method to utilize the MVA-EVA-GDP relationship to determine a reward payout ratio where part of the manager’s bonus is paid out and the rest is “banked forward and held at risk”.

Fiordelisi et al. (2006) analyzed the information content of traditional (Net Income, ROE, ROA, Interest and intermediation margins) and innovative performance indicators (namely, Residual Income and EVA) in the light of creating shareholder value within the banking industry. The study examined both relative and incremental information content focusing on quoted

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European banks between 1996 and 2002. The results of Ordinary-Least Square (OLS) regression model suggested that the Economic Value Added (EVA) measure that accounts for the specifics of banking outperform all other performance measures. In contrast, the standard EVA did not seem to better explain the shareholder value creation than a wide range of simple accounting and other performance measures. These results showed that it is necessary to accurately consider the peculiar nature of capital as well as other accounting adjustments if accurate measures of bank performance are to be used.

Ghambari and Sarlak (2006) explained Economic Value Added (EVA) as an appropriate performance measure which evaluates the manner in which managerial actions affect shareholders’ value. As maximizing shareholders value is fast becoming the new corporate standard in India, this study attempts to compute and review the trend of EVA in India’s 17 automobile companies. The results of Generalized Estimating Equations (GEE) population-averaged model (Panel data analysis) indicates that there is a significant increasing trend in EVA during the period of study and the firms in the automobile industry are moving towards the improvement of their firms value.

Maditinos et al. (2006) explained the concept of Economic Value Added (EVA) in the Greek context and provided an explanation on the utilization of

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both earnings and EVA in the companies listed with ASE (Athens Stock Exchange). The study interpreted results obtained from an analysis carried out on the basis of secondary financial data relating to the period 1995-2001. Since its inception, proponents of EVA provided evidence to establish this method as a superior performance measurement and incentive compensation system and claimed that it is really better to use EVA than traditional accounting performance measures such as earnings, EPS, ROI or ROE. However, studies focused on whether EVA is more highly related with stock returns than other performance measures provided mixed and controversial results. This study employed pooled time-series, cross sectional data of 163 companies listed in the ASE over the period 1995-2001 to examine whether EVA in comparison to earnings per share (EPS) is more strongly associated with stock returns. Both relative and incremental content approaches were tested. The relative information content approach was used to explore whether EVA outperformed EPS, while the incremental information content approach was employed to answer whether EVA added explanatory power to EPS. Relative information content tests revealed that stock returns are more closely associated with EPS than EVA. On the other hand, incremental information content tests provided evidence that EVA adds significant explanatory power to EPS in explaining stock returns.
Dhananjay Sahu, Prashant Kumar & Brijesh Pratap Singh (2007)\(^6\) had undertaken the study on “SVA: The Value Driver and its Traditional Counterparts” had found that the shareholder value did not have the strongest correlation with the market price. The regression analysis was used for the study of variables.

Kumar and Pal (2008)\(^7\) described that measurement of shareholders\(^2\) value in an enterprise forms the core of corporate performance. Companies adopt different methods for measuring the wealth they create for their shareholders. However, the subject matter of the best method still attracts a great deal of discussion among academicians and corporate managers. This paper examined whether the concept of Economic Value Added (EVA) is well understood by corporate managers and compared it with the other traditional financial performance indicators. For the purpose of analysis, this study relied on the information gathered through a primary survey in 18 out of 30 companies included in the BSE Sensex. According to this study, EVA has been ranked as the best indicator of performance, followed by Return on Capital Employed (ROCE), Rate of Return, Profit Margin, and Residual Income. It was also found that while some companies had already adopted the EVA technique to measure the shareholder value, a majority of the companies were aware of it, but yet to adopt this model.


Dhamija (2008) discussed that the mandatory financial position disclosure in annual reports is dictated by the requirements of the Companies Act, 1956, the Listing Agreement and Accounting Standards issued by the Institute of Chartered Accountants of India (ICAI). In addition to these mandatory disclosures, companies are making voluntary disclosures for improved transparency. Economic Value Added (EVA) is fast emerging as an area of voluntary disclosure in the annual reports by companies in India. This study attempts to understand the disclosure practices being followed by Indian companies in reporting EVA. A detailed case analysis of EVA reporting by Hindustan Unilever Limited (HUL) has also been incorporated.

Vishwanath (2009) discussed the implementation of EVA financial management system at Godrej Consumer Products Ltd. (GCPL), a leading FMCG company in India in 2001. Six group companies of Godrej (Godrej Consumer products, Godrej Sara Lee, Godrej Foods, Godrej Industries, Godrej properties and Godrej Agrovet) implemented EVA. This was facilitated by Stern Stewart & Company. GCPL implemented the EVA programme at all non-unionized levels. The program covered 2500 employees. The study explained three elements of EVA program followed by GCPL i.e. a) EVA centers, b) operational practices of EVA drivers which improve EVA results and c) EVA-based incentive program for bonus-eligible

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managers. The steps involved in the EVA implementation at GCPL were (1) EVA of various businesses was measured and the implications of the numbers understood, (2) Targets on EVA improvement were then set over a three year time frame and (3) An exhaustive manual was made about what each function could do to improve the EVA of the business. This was a detailed task involving the consultants, the functional heads and HR department. In addition, this case study also highlighted the motivations, benefits, mechanics, limitations and issues in implementing EVA. The existing literature reveals the research gap as far as answers to certain crucial queries are concerned like to what extent EVA metric is being used by Indian companies and what are the factors that can influence the Indian companies\textsuperscript{73} EVA-disclosure choices. Thus, it addresses the need for a detailed study that specifically explores the EVA usage and reporting practices adopted by Indian companies.

**Popa et al. (2009)**\textsuperscript{73} examine the relationship between EVA and other measures of bank performance such as return on assets (ROA), return on equity (ROE), net banking income and the efficiency ratio, which do not consider the cost of equity capital employed. The results emphasize the advantages of EVA and show that EVA can be an important tool that bankers can use to measure and improve the financial performance of their banks.

Kaur and Narang (2009) attempted to investigate the wealth creating capabilities of India’s most valuable companies on the basis of two value based metrics of financial performance i.e. Economic Value Added (EVA) and Market Value Added (MVA). By computing these two measures for a sample of 104 companies, exactly as per the methodology developed by Stern Stewart & Company, the study identified that more than 50% of the sampled companies representing India’s wealth club undoubtedly destroyed the wealth of its shareholder. It also found that out of 12 years of study period i.e. from 1996-2007; the sample registered negative EVA for eight years consecutively (1996-2003). Thus, the study provided a fact base for the strategic investors, academic researchers, portfolio managers and corporate decision makers to dig below the surface numbers and interpret the economic realities of these big business houses. The study also ranked the sampled companies on the basis of shareholder value generated (or destroyed) by them and explained the possible circumstances when MVA of a company does not follow its EVA. Further, by applying the statistical technique of Regression Analysis, the study examined the relationship between EVA and MVA of the sampled companies and provided sufficient evidence to support Stern and Stewart’s claim that EVA generated by a company is an important determinant influencing the market value of its shares.

Mandeep & Sweety (2009) had undertaken study on “Shareholder value creation in India’s most valuable companies”, found that EVA generated by a company is an important determinant influencing the market value of its shares.

Shurveer S. Bhanwat (2009) had undertaken study on “shareholder value creation in the Indian Banking Industry”. He had taken public and private bank which is listed in BSE for the measurement of shareholder value creation by EVA. He used correlation and Karl Pearson’s coefficient of correlation for the study. He found that Indian Banks do not create any value for the shareholder. He also found that the difference between the mean value of EVA for the public and the private sector banks was not found to be significant.

Ambuj, Gupta (2010), used a sample of the 30 major Indian banks including 19 public sector banks, 5 new private sector banks and 6 old private sector banks which are listed on Bombay stock exchange (BSE). The study was undertaken for the eight-year period from 2001-2008 (8 years) to calculate MVA, EVA and to test the correlation between MVA, EVA and traditional performance measures. It was found in the study that there is strongly correlation between changes in SMVA (Market Value Added divided

by invested capital) and change in SEVA (Economic Value Added divided by invested capital), but there is very weakly correlation between change in SMVA and change in other traditional performance measures. Finally it was found that SEVA predicts change in SMVA much better than other traditional performance measures.

SPECIFIC BOOKS ON THE SUBJECT

The survey of the earlier literature consists of three books. Out of these, two books have been written by foreign authors and only one book belongs to Indian authors.

Grant (1997)\textsuperscript{78} use the neoclassical wealth model to show that MVA is equal to the present value of the firm’s expected EVA. Then the author looks at the empirical evidence for large U.S. wealth creator and also financial characteristic of firms that have destroyed wealth. The empirical evidence for powerful wealth creators indicates that the dollar-based MVA and EVA relationship is statistically significant. Knowledge of the MVA and EVA characteristics of wealth wasters is important to corporate managers because it provides some meaningful insight into what not to do when making real investment decisions for the future. By those reviewing the author shows how EVA principles can be used to identify the best companies in the marketplace. Finally he focuses on the benefits of using EVA in a company and an industry analysis and also assessing the underlying strength of the economy.

Young and Stephen (2003)⁷⁹ they have striven to provide a fair and balanced assessment of EVA/VBM implementation, covering failures as well as success. The authors have organized their book in three parts. In part I, they lay out the basic concept of EVA and value based management. In second part they revisit key topics address. The topic of management compensation in both parts, but while the focus of the discussion in part I is mainly strategic and conceptual, part II shows in detail, how an EVA-linked bonus plan actually works. Part II addresses a number of other technical issues as well as, including the cost of capital, accounting adjustments to EVA, and alternative value-based management approaches. In the final part of the book, the authors present their conclusions; including some practical tips on making EVA work.

Pal Singh and Garg (2004)⁸⁰ have compared some selected financial variables like ROCE, EPS, ARNW, MVA, Kp, Lp and NPV with EVA. They observed in almost all cases, the positive relationship has been established between the variables under reference. The different correlation matrix tables have approved that EVA is also giving the results in the same direction for the rationale underlying. During the multiple regression analysis in their study, it became apparent that EVA was the single largest and most consistent variable, which has a decisive role in predicting the MVA. Their study concludes that the relationship between EVA and MVA is statistically significant. EVA as an emerging concept of financial management has strong

underlying standards, regulations and natural appeal. It appears that the concept is fairly clear in the mind of almost all these researchers whose studies have been reviewed above. It also appears that the entire business world is moving towards greater transparency, supporting financial disclosure mechanism and superior corporate governance. In such fast changing business environment, the investor friendly financial performance measure may, perhaps compose this corridor full of spanking new air. This is more so in the emerging international economic order where globally well-known companies are competing for lowest cost of capital and understandably the lower cost of capital may help them in providing some avenues of highest risk-adjusted returns. Many researchers have applied econometric tools for assessing the impact of EVA concept on corporate financial performance. Starting from Stern in 1990 to Ramana in 2004, it may be revealed that Indian researcher started contributing to this field in 1997 with Banerjee “Economic Value Added (EVA): a better performance measure”. In the begging, the researchers wrote on the conceptual aspects of EVA but later some empirical studies have also been accomplished. Ashok Benerjee, Govindraj Ethiraj, M. Thenmozhie, Deepa Mangala, Simpy Joura, Rajeshwar, Bardia and D.V. Ramana are among the leading Indian researchers who have carried out a range of empirical studies on EVA.
1.6 NEED FOR THE STUDY:

The need for the study has arisen due to the following reasons:

- A thorough study of above literature has remained very helpful in gaining quite enrichful learning of the existing literature base in the context of EVA, MVA and SVA. It has been widely stressed in the literature that the performance of any company should be measured through such metric/indices which should have better explanatory power in terms of market value of such companies. However, there are different opinions whether these new tools (EVA, MVA and SVA) are really superior in terms of predicting market value (MVA) or not.

- Researcher also came to know that several studies have been undertaken on measurement of shareholder value creation in manufacturing sector. But very rare studies are undertaken on Shareholder Value Addition in service sector particularly banking sector in Indian context. Hence this research gap is prompted us to take the study on “Value Addition in Public sector Banks in India”- a comparative study.

1.7 OBJECTIVES OF THE STUDY:

The first and foremost objective of the present study is to assess the performance of public sector banks using modern value based performance measures like EVA, MVA and SVA. In this context, it attempts to pursue the following objectives.
The following objectives have been set to carry our study:

1. To know the conceptual frame work of value-based performance measures like EVA, MVA and SVA

2. To evaluate the extent of value creation in Indian public sector banks using different value-based performance measures.

3. To identify the top five banks in terms of EVA, MVA and SVA

4. To compare and contrast EVA with other value-based performance measures such as MVA and SVA.

5. To find out the relationship between EVA and other traditional financial performance measures such as PAT/IC (profit earn per rupee of invested capital), Earning Per Share (EPS), RONW (Return on Net Worth), Return on Assets (ROA) and Return on Capital Employed (ROCE) in Indian public sector banks.

6. To find out which internal performance measure (EVA, PAT/IC, EPS, RONW, ROA and ROCE, etc.) better explains market-based reruns in the external market.

7. To offer policy recommendations to respective PSBs to improve the value-based performance measures (EVA, MVA and SVA) and also to provide suggestions to the investing class.
1.8 TESTING OF HYPOTHESES

In order to achieve above mentioned objectives, the study intends to test the following hypotheses:

**Hypothesis 1**

\[ H_0 = \text{There is no significant correlation between change in EVA and other traditional performance measures (PAT/IC, EPS, RONW, ROA and ROCE) in Indian public sector banks.} \]

\[ H_a = \text{There is a significant correlation between change in EVA and other traditional performance measures (PAT/IC, EPS, RONW, ROA and ROCE) in Indian public sector banks.} \]

**Hypothesis 2**

\[ H_0 = \text{There is no significant correlation between change in MVA and change in EVA, PAT/IC, EPS, RONW, ROA and ROCE in Indian public sector banks.} \]

\[ H_a = \text{There is a significant correlation between change in MVA and change in EVA, PAT/IC, EPS, RONW, ROA and ROCE in Indian public sector banks.} \]

The hypothesis 1 and 2 have been tested through Test of correlation and regression using SPSS and communicated in chapter 5.

As we know EVA, PAT/IC, EPS, RONW, ROA and ROCE are all measures of internal performance evaluation of the company. Now,
there is need to know as to which internal performance measure EVA, PAT/IC, EPS, RONW, ROA and ROCE has better predictive/explanatory ability/power in terms of addition in market value. The internal performance measure whether EVA, PAT/IC, EPS, RONW, ROA and ROCE whichever is superior in terms of its predictive and explanatory power/ability can further be adopted as a valid and reliable measure of internal performance evaluation of the company. To test this, researcher has regressed MVA against EVA, PAT/IC, EPS, RONW, ROA and ROCE using SPSS and researcher could get the Coefficient of determination which explains as to how much variation in market value addition is being explained by these measures. The results have been communicated in chapter 5.

1.9 SELECTION AND COMPUTATION OF VARIABLES

The present research in hand identified a number of key financial variables for the purpose of achieving stated objectives. These variables consist of EVA, MVA, SVA, PAT/IC, EPS, RONW, ROA and ROCE. Computation of these variables was made for period of ten years. A concise explanation of these select variables for banks is categorized between dependent and independent variables, these are outlined as below.

1.9.1 Dependent Variables:

- *Market Value Added (MVA)*: has been taken (calculated) as dependent variable which shows the net increase in market capitalization (given)
of the company over and above its invested capital (calculated by minor adjustments).

- **Standardized Market Value Added (SMVA):** Market Value Added is an absolute measure of addition in market value. In order to take a relative measure of value addition, market value added (calculated) was further divided by invested capital (calculated by minor adjustments) in order to calculate standardized market value added (SMVA). This shows market value addition per rupee of invested capital.

### 1.9.2 Independent Variables

- **Economic Value Added (EVA):** has been taken as independent variable which shows the net addition in value/ economic value of the banking company. This is calculated by deducting the cost of equity (calculated) from net profits (given) of the company.

- **Shareholder Value Added (SVA):** SVA is computed by deducting cost of equity from return on equity multiplied with book value equity.

- **Standardized Economic Value Added (SEVA):** Economic Value Added in itself is an absolute measure of economic value addition. In order to take a relative measure of net economic value addition, economic value added so calculated was further divided by invested capital (calculated by minor adjustments) so as to calculate standardized economic value added (SEVA). This shows economic value addition per rupee of invested capital.
- **Profit After Tax/Invested capital (PAT/IC):** this is Net profit after Interest and Taxes (given) which was further divided by invested capital (calculated by minor adjustments) to get a relative measure of PAT/IC, this shows profit earn per rupee of invested capital.

- **Earnings per share (EPS):** It is generally believed that earning per share have an effect on the share price and consequently on Market value Added (MVA). This is defined as \( \text{EPS} = \frac{\text{profit after Taxes-Dividend on preference Shares}}{\text{Number of outstanding Equity shares}} \times 100 \).

- **Return on Net worth (RONW):** this is again a relative measure of return generated by the company on the net worth of the company. This includes shareholder capital plus all reserves owing to the shareholders. This figure has also been taken from PROWESS for the selected period.

- **Return on assets (ROA):** this is an indicator of how profitable a company is relative to its total assets. ROA gives an idea as to how efficient management is at using its assets to generate earnings. Calculated by dividing a company's annual earnings by its total assets, ROA is displayed as a percentage. This figure has been taken from PROWESS for the selected banks.

- **Return on Capital Employed (ROCE):** This is a relative measure of return generated by a company on capital employed of the company. This capital employed includes all types of long-term capital employed
by the company. This figure has been taken from PROWESS for the selected banks.

1.10 COMPUTATION OF ECONOMIC VALUE ADDED:

The concept of Economic Value Added (EVA) helps us to measure the return over and above minimum return (i.e. cost of equity) as expected by investors. This finds the extent of value creation in the enterprise in terms of net value addition beyond payment to shareholders.

Banks and financial institutions have some characteristics that are peculiar to their business. Due to this, the ratios and other measures of performance when applied to banks need to be modified in order to obtain the relevant information. Same is true for calculation of EVA also.

The standard and widely accepted method for calculating EVA is, EVA = NOPAT – (invested capital X WACC). This method is known as ‘entity method’. Another method is equity approach. Thampy and Baheti (2001) followed the method proposed by Tom Copeland, Tim Koller and Jack Murrain in 1996. Parsuraman (2000) also proposes equity approach for valuation of banks. He mentions that the equity approach is more suited to banks compared to the entity approach. In this study researcher has also followed equity approach to compute EVA. In the case of banks, the equity approach is recommended:

The formula for EVA is: EVA=Net Profit after Taxes- (Equity* cost of Equity)
In order to calculate EVA as per equity approach, we need profit after tax, book value of equity and cost of equity. Profit after Tax (PAT) has been taken from Prowess (CMIE database).

As regards to the value of equity (invested capital). It has been calculated from the financial data collected from the PROWESS with minor adjustments. In paid-up equity capital of the banking company, free as well as specific reserves were added while accumulated losses were reduced. However, revaluation reserves were not included as these are not surplus coming out of the routine operations of banks and are not part of equity capital.

Cost of equity has been calculated as per Capital Asset Pricing Model (CAPM). To compute cost of equity, we need risk-free rate, beta coefficient of banks, market risk premium. We have collected risk-free rate (being average auction rate on 364- days Govt. of India treasury bills) from the website of Reserve Bank of India.

As regards to the beta coefficient of banks, beta for each stock has been obtained from prowess, the databases of Centre for Monitoring Indian Economy. And as far as Market risk premium is concerned it has been taken as 9% by some of the leading firms like Hindustan Lever, Infosys etc, for calculating EVA for their firm. As 9% is quite a reasonable premium for upholding market risk. Therefore we have also picked-up as same with the
assumption that investors expect this much as minimum excess return (over risk-free return) by investing in banking stocks.

1.11 COMPUTATION OF MARKET VALUE ADDED:

MVA has been calculated as per the following formula.

\[
\text{Market Value Added (MVA)} = \text{Market Capitalization} - \text{Invested Capital (Book Value of Equity)}
\]

In order to calculate Market Value Added (MVA), we need Market Capitalization and Invested capital (book value of equity).

Market capitalization has been taken from Prowess (CMIE database). As regards to the value of equity (invested capital). It has been calculated from the financial data collected from the PROWESS with minor adjustments. In paid-up equity capital of the banking company, free as well as specific reserves were added while accumulated losses were reduced. However, revaluation reserves were not included as these are not surplus coming out of the routine operations of banks and are not part of equity capital.

1.12 COMPUTATION OF SHAREHOLDER VALUE ADDED:

We have computed SVA as per the following formula:

\[
\text{Shareholder value creation} = (\text{shareholders’ return-Ke}) \times \text{Book value of equity}
\]

Firstly, in order to calculate Shareholder value added (SVA) we need return on equity, cost of equity and book value of equity. SVA is computed by
deducting cost of equity from return on equity multiplied with book value equity. As regards to the value of equity (invested capital). It has been calculated from the financial data collected from the PROWESS with minor adjustments. In paid-up equity capital of the banking company, free as well as specific reserves were added while accumulated losses were reduced. However, revaluation reserves were not included as these are not surplus coming out of the routine operations of banks and are not part of equity capital.

Further, Cost of equity has been calculated as per Capital Asset Pricing Model (CAPM). To compute cost of equity, we need risk-free rate, beta coefficient of banks, market risk premium. We have collected risk-free rate (being average auction rate on 364- days Govt. of India treasury bills) from the website of Reserve Bank of India. As regards to the beta coefficient of banks, beta for each stock has been obtained from prowess, the databases of Centre for Monitoring Indian Economy. And as far as Market risk premium is concerned it has been taken as 9% by some of the leading firms like Hindustan Lever, Infosys etc, for calculating EVA for their firm. As 9% is quite a reasonable premium for upholding market risk. Therefore we have also picked-up as same with the assumption that investors expect this much as minimum excess return (over risk-free return) by investing in banking stocks.

We have computed SVA as per the following formula:
Shareholder value creation = (shareholders’ return-Ke) X Book value of equity
1.13 **SCOPE OF THE STUDY**

The universe of the study is Indian public sector banks. From this, 7 banks were excluded due to non-availability of data. For the purpose of the study a sample of twenty public sector banks have been taken, which are listed on Bombay Stock Exchange. The sample banks are shown in appendix. The reference period for the study is consisting ten years i.e. from 2004-05 to 2013-14.

1.14 **RESEARCH APPROACH:**

In this study, a mix approach involving both quantitative and qualitative methods has been employed. Quantitative methods are used in the form of computation of Economic Value Added and Market Value Added & Shareholder Value Added and their variants Standardized Economic Value Added (SEVA) and Standardized Market Value Added (SMVA), by using statistical techniques such as tests of correlation, regression (using SPSS) to evaluate the results.

1.15 **RESEARCH STRATEGY:**

It is a matter of fact that there are five major research strategies namely experiments, surveys, archival analysis, history and case studies. What strategy to be used in the research is determined by looking at the following conditions?

a) The type of research question posed

b) Degree of focus on contemporary as opposed to historical events;
When the researcher applied this reasoning on research strategy on the research topic, it is found that banks financial data as well as past trends in select banking performance indicators (archival analysis, history, case study) fits as an appropriate strategy and this has eventually been taken up as the research instruments for conducting the study.

1.16 DATA COLLECTION:

The secondary data is taken as input to achieve the objective of the current study. This study covers a period of 10 years starting from 2004-05 and ending 2013-2014 (i.e., 1st April-2004 to 31st March-2014). Initially, the study was conceptualized for 5 years i.e 2009-10 to 2013-14 but later on, it was thought to consider 5 more years i.e. 2004-05 to 2008-09 so as to give the study a contemporary relevance. The secondary data has been collected from prowess, the database of Centre of Monitoring Indian Economy. The financial statements (i.e. income and expenditure statement and the balance sheet) of all the selected banks have been picked-up from the above database. The beta of various banks was taken from prowess. However, risk-free rate (being average auction-rate on 364-days Govt. of India treasury bills) has been taken from the website of Reserve Bank of India.

1.17 TOOLS AND TECHNIQUES ANALYSIS

The data collected was organized, calculated and analyzed with suitable statistical techniques. Such as mean, Standard Deviation, variance, correlation and regression analysis.
1.18 PRESENTATION OF THE STUDY:

The plan of work is presented in the following manner.

Chapter-1: This chapter deals with research design which includes introduction, importance of the study, Review of literature, need for the study, objectives of the study, testing of hypothesis, selection and computation of variables, scope of the study, research approach, research strategy, data collection, tools and techniques used, chapter scheme and limitations of the study.

Chapter-2: This chapter deals with conceptual framework of value based performance measurement tools such as, Economic Value Added (EVA), Market Value Added (MVA) and Shareholder Value Added (SVA).

Chapter-3: This chapter aims to provide a detailed background and profile of select Indian public sector banks.

Chapter-4: This chapter deals with measurement and analysis of value creation by Indian public sector banks through different measures of shareholder value creation such as EVA, MVA and SVA.

Chapter-5: This chapter presents the analysis relating to the relationship between EVA and other traditional financial performance measures under study. It also outlines the relationship between MVA and other traditional financial performance measures.
Chapter-6: This chapter presents the major findings and conclusion emerged from the present study and suggestions offered for the development of Indian Public sector bank so that they can become more efficient.

1.19 LIMITATIONS OF THE STUDY

Though the study brings to the fore interesting findings, It will not be out of place to mention here some of its limitations.

1. The present study is restricted only to a limited period (i.e. 10 years from 1\textsuperscript{st} April 2004 to 31\textsuperscript{st} March 2014) which is not enough for constructing a final opinion about the problem associated with the issue and its management.

2. The financial and banking sector in India is under reform process and fast updating it with the international practices, the affect of which will be observed in due course to time in future which may change the results of any study which might the financial and banking sector in India, too, is under severe strain which may have also affected the study in one way or other.

3. The calculation of EVA-MVA and SVA could be done only for publicly traded banks i.e. those banks which are listed on Bombay Stock Exchange.

4. Impact of inflation is not taken into consideration.

5. There are host number of measures for risk free rate of returns, such as public provident fund (PPF), Treasury bill, Govt. bond yields, Govt.
Securities and Bank rate. But researcher has considered 364 days - Treasury bill as a proxy for risk free rate of return as did in a study conducted by Thempy Ashok and Behati and Parasuraman.

6. Analysis and conclusion are drawn only on the basis of 20 nationalized banks. Hence, the results cannot be generalized and universally applied for all type of banking industry in India.

7. Inferences drawn on performance evaluation of the public sector banks using value-based measures (using EVA, MVA and SVA) are valid only for the study period.