CHAPTER II  
Literature Review Chapter

2.1. Introduction

Financial reports designed to help outsiders to draw a fair picture about future performance of concerned firms. The ability to generate future cash flows is a widely accepted proxy for firm’s future performance in the most of valuation techniques. For this reason, the Financial Accounting Standards Board (FASB) and also the International Accounting Standard Committee (IASC) are indicated that:

“The primary objective of accounting data is to “…provide information to help present and potential investors, creditors and others assess the amounts, timing and uncertainty of prospective net cash inflows to the related enterprise (FASB 1978, paragraph 37).”

“…Information about economic resources controlled by the enterprise and its capacity in the past to modify these resources is useful in predicting the ability of the enterprise to generate cash and cash equivalents in the future (IASC 1995, p. 44-45).”

From early, professionals spread out debatable questions, that is, Which type of reporting base is better to fulfill the concerned aim? Accrual base or cash base? Moreover, aggregated earnings or cash flows alone? In this debate, FASB has supported the (aggregated) earnings. It has demonstrated that, earnings (i.e., operating cash flows and accounting accruals) are more predictive of future cash flows than cash flows alone.

“Information about enterprise earnings based on accrual accounting generally provides a better indication of an enterprise’s present and continuing ability to
generate favorable cash flows than information limited to the financial effect of cash receipts and payments.” (FASB 1978, page 5).

FASB assertion was not the finished line for this fundamental debate. This assertion motivated a new line of research which has designed to proof or rejects the FASB (1978) view.

During the 1980s, researchers expressed a renewed interest in information about cash flows. One aspect of that interest focused on the assertion of the Financial Accounting Standards Board (FASB 1978), this assertion was questioned, both directly and indirectly, in research that compared the predictive ability of accrual-based information to that of cash flow information in three different settings:

(1) Bankruptcy prediction,

(2) Predicting security returns, and

(3) Predicting operating cash flows.

Research in the first two settings indirectly addressed the FASB assertion, while research in the third setting (Predicting operating cash flows) examined it directly. The bankruptcy studies primarily address the question as to whether net income or operating cash flow is a better predictor of bankruptcy. The focus of the securities market studies is whether net income or operating cash flow is a better predictor of security prices or returns. Finally, the cash flow prediction studies ask whether net income (aggregated earnings) alone, operating cash flow alone or a combination of operating cash flow and accrual components of earnings is a better predictor of future operating cash flow.

As Yoder (2007) has noted, a 1999 survey by Institutional Investor found that 51% of chief financial officers reported analysts and institutional investors were placing more emphasis on cash flow analysis than in the prior two years. Firm stakeholders other
than equity investors may also be interested in short-term cash flows. Potential vendors to the firm may be interested in a firm’s ability to pay before entering large contracts. Creditors may be interested in a firm’s short-term cash flows in making lending or debt restructuring decisions. Employees and prospective employees may be interested in whether the firm can meet its payroll obligations.

According to importance of cash flows prediction for varieties of firms stakeholders in different aspects of their decision making process, and as no study address this matter in Indian context; I selected this topic for current research study. This study is in the line of third setting; predicting operating cash flows (as explain above) which addressed the FASB assertion directly with five hypotheses as bellow:

1. (Past) earnings have significant predictive power in estimating future cash flows of Selected Indian Companies listed on Bombay stock exchange.
2. (Past) cash flows have significant predictive power in estimating future cash flows of Selected Indian Companies listed on Bombay stock exchange.
3. (Past) cash flows and accrual components of earnings have significant predictive power in estimating future cash flows of Selected Indian Companies listed on Bombay stock exchange.
4. Predictions based on three different models do not suggest the same directions of future cash flows.
5. Ratios calculated based on past cash flows are significant predictors of future cash flows of Selected Indian Companies listed on Bombay stock exchange.

Prior studies have led to conflicting results. Some research has concluded that the predictive ability of earnings outperforms that of cash flows in forecasting future cash flows, for example, the studies of Greenberg, Johnson & Ramesh (1986 in USA), Murdoch and Krause (1989 in USA), and Kim and Kross (2005 in USA).
In contrast, some findings showed conflicting results in which cash flows are the better predictor of future cash flows, such as the studies of Bowen, Burstahler and Daley (1986 in USA), Arnold and et al (1991 in UK), Percy and Stokes (1992 in Australia), Finger (1994 in USA), Seng (1997 in New Zealand), Black (1998 in USA), Quirin and et al (1999 in US), Hadi (2005 in USA & Kuwait); Chotkunakitti (2005 in Thailand); Zhao and et al (2006 in Australia), Farshadfar and et al (2008 in Australia), Lorek and Willinger (2009 in USA). However the study by McBeth (1993 in USA) rejected both conclusions and claimed that neither earnings nor cash flows are a good predictor of future cash flows.

In addition to single variable testing, some researchers have focused on multiple variables, such as the components of earnings including cash flow and accrual accounting data. They concluded that each accrual component reflected different information relating to future cash flows, for example, the studies of Supriyadi (1998 in Indonesia); Barth, Cram & Nelson (2001 in USA); Stammerjohan and Nassiripour (2000/2001); Al-Attar and Hussain (2004 in UK); Yoder (2007 in USA); Hollister and et al (2008 in USA); In contrast of them Lev and et al (2005 in USA) base their forecasts on cross-sectional estimations using annual data. They predict finite measures of cash flows up to three years ahead, and conclude that accruals do not improve upon current cash flow in predicting future cash flows.

Moreover, most research has focused narrowly on operating cash flow, earnings and accrual components of earnings. Those previous studies (except Chotkunakitti 2005 in Thailand) have ignored the potential of other cash flow variables, particularly cash flow ratios.

In overall out of the studies which reviewed in review literature chapter, three of them have supported the FASB assertion; eleven studies have rejected the FASB assertion,
and rest of them neither support the FASB view nor support the opposite view and most of this group suggested that models which use disaggregated earnings, cash flows and accrual components of earnings (third model of the current study which build based on third hypothesis) will produce accurate estimate of future cash flows. Review of literature indicated that prior studies did not concern about some questions such as whether predictive ability of the variables are the same across the different industries, and also whether predictive ability of the variables are different in the indexed companies (small-cap, mid-cap,….) in compare with no indexed companies. Moreover no study focused on different predictive accuracy measures to compare their capabilities to test of hypothesizes, and prior studies did not concern about cyclical manners of models as tools or clue to show turning points of industries or economic conditions

2.2. Sources of Literature

As a literature review is an account of what has been published on a topic by accredited scholars and researchers to convey what knowledge and ideas have been established on a topic, with reference to their strengths and weaknesses. In this study has tried to gather the recent and most relevant articles and materials about the selected topic; predicting future cash flows.

The research center of Sinhgad Institute of Management, University of Pune (the research place of this study) has prepared the facilities through the EBSCO host database to access to most popular electronic publication and journals, therefore access to most relevant papers became easier for researcher to complete an acceptable and comprehensive literature review on the topic of study. Besides of the EBSCO database the SSRN e-Library database and popular search engines like the Google,
Yahoo, and Ask.com and university’s library frequently surfed to prepare the materials for fulfill the objectives of this chapter. As result the following popular publication and Journals are some sample which used in preparing the review literature:


As the earlier explanation researchers were questioned the assertion of the Financial Accounting Standards Board (FASB 1978), both directly and indirectly, in research that compared the predictive ability of accrual-based information to that of cash flow information in three different settings: Bankruptcy prediction, Predicting security returns, and Predicting operating cash flows, therefore there are different researches on these three settings. But only the studies which directly addressed the FASB assertion (predicting operating cash flows setting strategy) that used operating cash flows as dependent variable in their prediction models described and criticized in the next section and avoid to bring other studies which used proxies like security returns and prices for operating cash flows in their models. This chapter will continue with following sections as bellow:

In section 2.3, discussed accounting standards included an overview, accounting standards-setting in India, cash flow statement, objective of AS 3, benefits of cash flow information. The literature related to the research topic is reviewed in section 2.4. Section 2.5 gave a summary on prior reviewed literature. Section 2.6, based on
prior works developed a research frame to contribute and extend the available body of knowledge in the field of predicting operating cash flows which included, research problem, research questions, research objectives, research hypothesis and models. Finally, the conclusion of the chapter is provided in Section 2.7.

2.3. Accounting Standards

2.3.1. Overview

Accounting Standards are used as one of the main compulsory regulatory mechanisms for preparation of general-purpose financial reports and subsequent audit of the same, in almost all countries of the world. Accounting standards are concerned with the system of measurement and disclosure rules for preparation and presentation of financials statements.

Accounting standards are devised to furnish useful information to different users of the financial statements, to such as shareholders, creditors, lenders, management, investors, suppliers, competitors, researchers, regulatory bodies and society at large and so on. In fact, such statements are designed and prescribed so as to improve & benchmark the quality of financial reporting.

The International Accounting Committee (IASC), now International Accounting Standards Board (IASB) was formed on 29th June 1973, by the recognized professional accounting bodies in Canada, Australia, France, Japan, Germany, Mexico, Netherlands, United Kingdom and the United States of America, with its secretariat and head quarters in London.

National standard setting bodies like Financial Accounting Standards Boards (FASB) of USA, Accounting Standards Boards (ASB) of UK, and Indian Accounting Standards (IAS) in India generally frame accounting standards in the line of IASC after due consideration of the local laws and conditions.
In India the Accounting Standards Board (ASB) was constituted by the Institute of Chartered Accountants of India (ICAI) on 21st April 1977 with the function of formulating accounting standards.

Accounting Standards are formulated with a view to harmonize different accounting policies and practices in use in a country. The objective of Accounting Standards is, therefore, to reduce the accounting alternatives in the preparation of financial statements within the bounds of rationality, thereby ensuring comparability of financial statements of different enterprises with a view to provide meaningful information to various users of financial statements to enable them to make informed economic decisions.

2.3.2. Accounting Standards-setting in India

The Institute of Chartered Accountants of India (ICAI) being a member body of the then IASC, constituted the Accounting Standards Board (ASB) on 21st April, 1977, with a view to harmonize the diverse accounting policies and practices in use in India. After the avowed adoption of liberalization and globalization as the corner stones of Indian economic policies in early ‘90s, the Accounting Standards have increasingly assumed importance. So far, 29 Indian Accounting Standards on the following subjects have been issued by the Institute:

Accounting Standards (ASs) and other documents issued by ICAI of Chartered Accountants of India

1. Number of Indian Accounting Standards issued (excluding AS 8 which is withdrawn pursuant to AS 26 becoming mandatory) 28
2. IAS/IFRS not relevant in the Indian context 2
3. Guidance Note issued by the ICAI1 1
4. Number of Accounting Standards under preparation 8

Total 39

1 As per ICAI instruction letter no. 4 of 2007.
2. 3.3. AS 3: Cash flow statement

Accounting Standard (AS) 3, ‘Cash Flow Statements’, issued by the Council of the Institute of Chartered Accountants of India, comes into effect in respect of accounting periods commencing on or after 1-4-1997. This Standard supersedes Accounting Standard (AS) 3, ‘Changes in Financial Position’, issued in June 1981. This Standard is mandatory in nature in respect of accounting periods commencing on or after 1-4-2004 for the enterprises which fall in any one or more of the following categories, at any time during the accounting period

(i) Enterprises whose equity or debt securities are listed whether in India or outside India., (ii) Enterprises which are in the process of listing their equity or debt securities as evidenced by the board of directors’ resolution in this regard, (iii) Banks including co-operative banks, (iv) Financial institutions, (v) Enterprises carrying on insurance business, (vi) All commercial, industrial and business reporting enterprises, whose turnover for the immediately preceding accounting period on the basis of audited financial statements exceeds Rs. 50 crore turnover does not include ‘other income’, (vii) All commercial, industrial and business reporting enterprises having borrowings, including public deposits, in excess of Rs.10 crore at any time during the accounting period, (viii) Holding and subsidiary enterprises of any one of the above at any time during the accounting period.

The enterprises which do not fall in any of the above categories are encouraged, but are not required, to apply this Standard.

2. 3.3.1. Objectives of AS 3:

Information about the cash flows of an enterprise is useful in providing users of financial statements with a basis to assess the ability of the enterprise to generate cash and cash equivalents and the needs of the enterprise to utilize those cash flows. The
economic decisions that are taken by users require an evaluation of the ability of an enterprise to generate cash and cash equivalents and the timing and certainty of their generation.

The Statement deals with the provision of information about the historical changes in cash and cash equivalents of an enterprise by means of a cash flow statement which classifies cash flows during the period from operating, investing and financing activities.

2. 3.3.2. Benefits of Cash Flow Information:

A cash flow statement, when used in conjunction with the other financial statements, provides information that enables users to evaluate the changes in net assets of an enterprise, its financial structure (including its liquidity and solvency) and its ability to affect the amounts and timing of cash flows in order to adapt to changing circumstances and opportunities. Cash flow information is useful in assessing the ability of the enterprise to generate cash and cash equivalents and enables users to develop models to assess and compare the present value of the future cash flows of different enterprises. It also enhances the comparability of the reporting of operating performance by different enterprises because it eliminates the effects of using different accounting treatments for the same transactions and events.

Historical cash flow information is often used as an indicator of the amount, timing and certainty of future cash flows. It is also useful in checking the accuracy of past assessments of future cash flows and in examining the relationship between profitability and net cash flow and the impact of changing prices.
2. 3.3.3. Reporting Cash Flows from Operating Activities:

An enterprise should report cash flows from operating activities using either:

(a) The direct method, whereby major classes of gross cash receipts and gross cash payments are disclosed; or

(b) the indirect method, whereby net profit or loss is adjusted for the effects of transactions of a non-cash nature, any deferrals or accruals of past or future operating cash receipts or payments, and items of income or expense associated with investing or financing cash flows.

2.4. Review of available and most relevant literature

As a literature review is an account of what has been published on a topic by accredited scholars and researchers to convey what knowledge and ideas have been established on a topic, with reference to their strengths and weaknesses. In this study has tried to gather the recent and most relevant articles and materials about the selected topic; predicting future cash flows.

This section covered the most relevant studies which have done during 1986 to 2008. There were different researches on research topic, but only the studies that directly addressed the FASB assertion (predicting operating cash flows setting strategy) which used operating cash flows as dependent variable in their prediction models described and criticized in this section and avoid to bring other studies which used proxies like security returns and prices for operating cash flows in their models.

This section included twenty four most relevant studies which have done in the United States of America (15 studies), Australia (3 studies), United Kingdom (2 studies), New Zealand, Kuwait, Indonesia, and Thailand.
The studies sorted chronologically based on their years of publication. In the case of availability of more than one study in a year the studies in that year sorted alphabetically.

2.4.1. Bowen, Burstahler and Daley (1986 in USA),

They examined the relationship between earnings and various CF measures. Additionally, they compared the predictive ability between cash flow variables and earnings to forecast future cash flow. They focused on the differences among various definitions of CF as follows.

1. The traditional CF measure (NIDPR) calculated by adding back depreciation and amortization (DPR) to net income before extraordinary items and discontinued operations (NIBEI), that is: NIDPR = NIBEI + DPR

2. Working capital from operations (WCFO), the second traditional CF measure, calculated by adjusting earnings to remove the effects of gains and losses on asset sales, gains and losses on investments accounted for by the equity method, amortization of bond premiums or discounts, and deferred taxes.

WCFO = NIDPR + adjustments for other element of NIBEI not affecting working capital

3. Cash flow from operations (CFO) calculated by adjusting WCFO by changes in no cash current assets and current liabilities (excluding change in cash, notes payable and the current portion of long term debt)

4. Cash flow after investment, before financing (CFAI) which equal CFO plus proceeds from the sale of property, plant and equipment and investment, minus amount of capital expenditures during the period, and new investment.

5. Change in cash (CC) during the period.
They obtained data from financial statements of 324 firms on Compustat for the period 1971-1981. Their results showed that accrual earnings have a high correlation with traditional measures (NIDPR and WCFO) of CF, but low correlation with alternative measures (CFO, CFAI and CC). Their findings do not clearly confirm that earnings are a better signal for predicting future cash flows than CF variables.

This study was one of the early attempts in 1980s; that researchers expressed a renewed interest in information about cash flows. This study had been undertaken before FASB and ISAC issued the standard of reporting cash flow statements which operating cash flow was measured as net income adjusted by non-cash items and change in current assets and current liabilities items and change in current assets and current liabilities. As actual cash flow data based on statement of cash flows were not available in that time and they used surrogate estimates, thus their results could not be exact grouped as evidence to reject the FASB assertion, but at least they proven the way for further studies in this field as the cash flows data from cash flows statement become more available. They examined predictive ability of models only with $R^2$ in an in-sample comparison method thus their study from this angle had not a strong methodology to follow by scholars in this line of study. In overall it could be say, besides of their methodological ignorance, this work is an initial study on an important issue which highlighted the need for doing more studies on cash flows prediction which all firm’s stakeholders demand for it which improve their ability to make optimum financial decisions. Also this work related to two first hypothesis of current study but it is not similar to it in many ways, as the current study used the most recent method for comparing predictive ability of accounting data to predict future cash flows, and avoid the most weaknesses of prior studies in this field.
2.4.2. Greenberg, Johnson & Ramesh (1986 in USA)

They provided evidence supporting FASB’s statement regarding the importance of earnings. They tested empirically whether current earnings or current cash flows are the better predictor of future cash flow. A sample of 157 industrial companies selected from the Compustat database for the period 1963-1982 was employed in their study. The operating cash flow variable used in this study was approximated by indirectly adjusting earnings for non-cash items and changes in current assets and current liabilities (excluding the current portion of long-term debt). They used ordinary least-squares regression. Not only models of one year’s data but also multi-year data, including two and three years, were examined. They reported that current earnings have the ability to predict future cash flows better than current cash flows for each lag period of one to five years and for each multi-lagged period of two or three years.

As this study conducted in same period which Bowen and et al (1986) had done, the actual cash flow data based on statement of cash flows were not available similar to them they used surrogate estimates, therefore their results also could not be exact grouped as evidence to support the FASB assertion. This work had the same weaknesses as explained about the Bowen and et al (1986) study. Also this work related to two first hypothesis of current study but it is not similar to it in many ways, as the current study used the most recent method for comparing predictive ability of accounting data to predict future cash flows, and avoid the most weaknesses of prior studies in this field.
2.4.3. Espahaodi (1988 in USA)

He aimed to identify the important predictors of cash flow by considering 29 accounting measures, comprised of 23 absolute accounting balances, four financial ratios and two dummy variables. A regression model was used to establish the relationship between cash flows and change in the explanatory variables. All independent variables were lagged by one period. A sample of 114 companies in four industries for five years’ data (1973-1978) was employed in the analysis. Accounting data were obtained from the annual Industrial Compustat data file. It was found that 21 variables were important in the cash flow prediction; however none of the signs of the coefficients for any variable were statistically significant.

It could be say that this work, Similar to Bowen and et al (1986), has been tried to examine the varieties of variables for finding suitable variables in line to help the stakeholders in financial markets. Like Bowen and et al (1986) and Greenberg and et al (1986) this study also has carried same weaknesses which explained above, but unlike them he did not suggest any significant variable for predicting future cash flows.

2.4.4. Murdoch and Krause (1989 in USA),

This study builds on Bowen and et al (1986), analyzing the ability of accrual and cash flow measures to predict future cash flows. They addressed three questions:

1. Are current year’s earnings or cash flows from operations a better predictor of future cash flows from operations?

2. Are the current or non-current components of earnings more important in predicting future cash flows from operations?
3. Does using earnings or cash flow data over a long period provide a more accurate forecast than those over a short period for cash flow prediction?”

Their study emphasized the percentage changes in annual cash flow return. Net income, working capital and cash flow from operations were the main variables. Cash flows from operating and working capital were measured by adjusting net income. Data on the Compustat tapes for the years 1966-1985 (20 years) were employed to compute the variables. Companies were selected with respect to size, industry categorization, fiscal year and other factors. In order to control the difference in sizes and changes in purchasing power of the dollar over time, every variable was deflated by the firm’s common equity. Then every independent variable (cash flow return, working capital return and return on equity) was analyzed in the form of percentage changes to forecast percentage changes of cash flow return. The differences between individual predictors are evaluated by the significance of Z statistics in binomial tests.

In terms of their question 1, the Murdoch and Krause (1989) conclusion supported the assertion of FASB that earnings are a better predictor than cash flow from operations. In answer to question two, they found that the current component of earnings included in the measurement of working capital was a better predictor than the non-current component included in measuring earnings. Finally, they concluded that the accuracy prediction of the model can be improved by utilizing a long period of data.

The findings in this study provide a foundation for further studies in the efficacy of using accrual data to forecast operating cash flows. They had used adjusted r-squared to rank predictors to addresses the issue of whether there are overall differences among predictors in their ability to forecast operating cash flows.

This work had gone some steps ahead by control the difference in sizes and deflated variables by the firm’s common equity, but like Bowen and et al (1986) and
Greenberg and et al (1986), this study used cash flows and accounting information were not derived from financial statements, therefore their results could not be exact grouped as evidence for approving or rejecting the FASB assertion.

2.4.5. Arnold and et al (1991 in UK),

Their study focused on entity cash flows, or cash flows to and from long-term lenders and shareholders, based on Lawson's model

\[ \text{Shareholder cash flows} = \text{distributions} - \text{equity receipts, and} \]
\[ \text{Long-term lender cash flows} = \text{interest payments} - \text{borrowings} \]

Based on this model, six variables were defined which represent a sequence of successive adjustments from earnings to entity cash flows. To this they have added one further variable, Bowen et al.'s (1986) CC.

The variables are:

1. NI (net income), after depreciation and current taxation but before long-term interest and dividends
2. WO (working capital flow) = NI + depreciation + / - the change in deferred taxation
3. NQ (net quick flow) = WO + / - stock change
4. CO (cash flow fro operations) = NQ + / - other working capital changes, including debtors and creditors
5. CI (cash flow fro operations and investments) = CO – investments
6. CC (cash change), including short term marketable securities and tax reserve certificates
7. CIC (entity cash flows) = CI – CC = Shareholder and long term lender cash flows.

This study has provided direct evidence on the relationship between earnings, funds flows and cash flows in the UK during the period 1965-84 (sample 171 companies), using tests of association and predictive tests based on a research methodology
applied by Bowen, Burgstahler and Daley (1986) to US data. The results provide UK evidence on the contemporaneous and predictive relationships between measures of earnings, funds flows and cash flows which are generally consistent with the US findings of Bowen et al. and which do not support the view that earnings in the UK are superior to cash flows as predictors of future cash flows.

Like Bowen and et al (1986), this study used cash flows information were not derived from financial statements, therefore their results could not be exact grouped as evidence for approving or rejecting the FASB assertion.

**2.4.6. Percy and Stokes (1992 in Australia),**

They replicated the test of Bowen, Burstahler and Daley (1986) studying two traditional cash flow measures (net income plus depreciation and amortization, and working capital from operations) and a more refined measure (working capital from operations plus additional adjustments for changes in non-cash current assets and current liabilities) and extended their study by analyzing the relationship between cash flows and earnings across industries using Australian data. They employed data from the Australian Graduate School of Management (AGSM) Annual Report File for the year 1974-1985 for 107 companies, a period comparable to that used by Bowen, Burstahler and Daley (1986). For the industry analysis, companies were classified in industry categories using the Australian Stock Exchange Industry grouping. Companies that changed industry grouping were excluded.

The results of their study confirmed the evidence from Bowen, Burstahler and Daley (1986) in that the traditional cash flow measures showed more correlation with accrual income than the more refined cash flow measure. In addition, the correlation between the traditional cash flow measures and the more refined cash flow measure was low. These results were not different across firms.
The results of the test of predicting future cash flow corresponded with Bowen, Burstahler and Daley (1986) in that the traditional cash flow measure provided more accurate predictions than did either earnings or the more refined cash flow measure for either forecasting one or two years ahead. However, the result indicated that the relative predictive abilities differed across industry. These results may have been caused by the limitations on the sample sizes used in the analysis. Like Bowen and et al (1986), this study used cash flows information were not derived from financial statements, therefore their results could not be exact grouped as evidence for approving or rejecting the FASB assertion.

2.4.7. McBeth (1993 in USA)

This study examined the ability of cash flows and earnings to predict future cash flow by using cash flows from operations directly from the statement of cash flow and net income from the income statement. A potential sample of 4,415 companies on COMPACT DISCLOSURE was selected by limiting the sample of the reported cash flow statement in each of the years 1988, 1989, 1990 and those that employed a December 31 year end. There were only three years of data because companies had only been required to disclose a cash flow statement since 1988.

In simple regression analysis, current cash flows from operations were the dependent variable, whereas net income and /or cash flows from operations for last one or two years were the independent variables. In conclusion, McBeth (1993) suggested that neither past net income nor past cash flows from operations provide a better predictor of future cash flows. Results are necessarily tentative since FAS 95 was relatively new and there were only three years of data (i.e., 1988-1990) used in the study. This study used cash flows and accounting information were derived from financial statements. This work had gone one step ahead by using cash flows information from
financial statements. Short time span (1988-1990) is a factor which affected his results that could not be exact grouped as evidence for approving or rejecting the FASB assertion or any other conclusions.

2.4.8. Finger (1994 in USA),

Finger (1994) used a time series model to test firm-specific predictive ability for future cash flow over the entire time period. Annual data for the 50 sample firms spanning the years 1935-1987 was obtained from the Compustat Annual Industrial File from 1968 to 1987 and supplemented with hand-gathered Annual Report information from 1935 to 1967. Cash flows from operations were approximated by adjusting income before extraordinary items for depreciation, deferred taxes, changes in no cash current assets, and changes in current liabilities excluding current maturities of long-term debt. Earnings were represented by net income before extraordinary items.

Finger indicated that earnings used either alone or together with cash flow, were an important predictor of future cash flows. However, the results revealed that current cash flows were a superior predictor of future cash flows compared with current earnings for short-term prediction.

2.4.9. Seng (1997 in New Zealand),

This study examined the predictive ability of earnings and reported cash flow measures (i.e., Cash Flow From Operations [CFFO], Cash Flow From Investing Activities [CFFIA], and Cash Flow From Financing Activities [CFFFA]) to forecast one- and two-period ahead cash flows during the period 1989-92 (The original sample consists of 213 firms. To meet the criteria a final sample of fifty two firms were obtained for the period 1989-91 and forty firms for 1992), using predictive models
based on research methodology applied by Bowen, Burgstahler and Daley (1986). The degree of relationship between earnings and cash flow measures is also examined as a secondary goal of the study.

The results provide evidence that CFFO (CFFIA) is a better predictor of one- and two-period ahead CFFO (CFFIA) than is earnings and CFFFA is a better predictor of two-period ahead CFFFA than is earnings. The results of the correlations show that the traditional cash flow measures (i.e., net income plus depreciation and amortization [NIDPR], and working capital from operations [WCFO]) are highly correlated with earnings suggesting that they both are similar, while the correlations between reported cash flow measures and traditional cash flow measures are low suggesting that the traditional cash flow measures used in prior research are poor proxies for reported cash flow measures which are now provided by the companies' statement of cash flows as required by the New Zealand's Financial Reporting Standard No.10.

Short time span (1989-1992) is a factor which affected the results that could not be exact grouped as evidence for approving or rejecting the FASB assertion or any other conclusions.

2.4.10. Black (1998 in USA),

This study examined the relevance of earnings and cash flows in different life-cycle stages (based on life-cycle classification methods developed by Anthony & Ramesh (1992)) during the period 1977-95 (The sample consists of 37961 firm years). He concluded that earnings are predicted to be more value relevant in mature stages. Cash flows are predicted to be more value relevant in stages characterized by growth and/or uncertainty.

Evidence supports the hypothesis that earnings are more value relevant than operating, investing, or financing cash flows in mature life cycle stages. However, in
the start-up stage investing cash flows are more value relevant than earnings. In growth and decline stages, operating cash flows are more value relevant than earnings.

2.4.11. Supriyadi (1998 in Indonesia);

Supriyadi studied the ability of accounting information to predict future cash flows of Indonesian firms. Regression analysis was used to construct prediction models. Earnings, cash flows and accounting information were derived from financial statements. The analysis was performed on both specific firm and pooled cross sectional year data. Five prediction models were developed as below:

1. \( \text{CFO}_t = \alpha + \beta_1 \text{CFO}_{t-1} + \beta_2 \text{CFO}_{t-2} + \beta_3 D + \varepsilon_t \)
2. \( \text{CFO}_t = \alpha + \beta_1 \text{EAI}_{t-1} + \beta_2 \text{EAT}_{t-2} + \beta_3 D + \varepsilon_t \)
3. \( \text{CFO}_t = \alpha + \beta_1 \text{CFO}_{t-1} + \beta_2 \text{CFO}_{t-2} + \gamma_1 \text{EAI}_{t-1} + \gamma_2 \text{EAT}_{t-2} + \beta_3 D + \varepsilon_t \)
4. \( \text{CFO}_t = \alpha + \sum_{k=1}^{9} (\beta_k \text{W}_{tk}) + \varepsilon_t \)
5. \( \text{CFO}_t = \text{CFO}_{t-1} \)

where,

\( \text{CFO}_t \) = cash flows from operations,
\( \text{CFO}_t \) = the lagged values of cash flows from operations,
\( \text{EAI}_{t} \) = the lagged values of earnings,
\( t \) = time variable measured semi-annually,
\( D \) = dummy variable, equal to 1 for 1995-1997 and 0, otherwise,
\( \text{W}_{tk} \) = a vector of 8 independent variables of lagged values (t-1 and t-2) for earnings, revenues, current accruals, cash flows from operations and a dummy variable.

The study contained two sets of analysis. First, the 1990-96 period data set consisting of semiannual data from the first semi-annual reporting period of 1990 to the second semi-annual reporting period of 1996 was employed to build the five prediction models, and the regression equation of each prediction model from the regression analysis were then used to predict cash flows from operations for the first semi-annual reporting period of 1997. Second, the 1990-97 period data set from the first semi-annual reporting period of 1990 to the first semi-annual report period of 1997 was
used to build the five models and the regression equations generated from the analysis were employed to predict cash flows from operations for the second semiannual report period of 1997. The predictive ability of each model was measured by mean absolute percentage errors when each model was applied to prediction of cash flows of the first and second semi-annual reporting period of 1997.

The study found that for both firm-specific and pooled cross-sectional levels, the cash flow model (Model 1) outperformed the earnings model (Model 2) and the model containing both earnings and cash flows (Model 3) provided more significant predictive power than the model based only on cash flows (Model 1), earnings (Model 2), or various accounting information (Model 4). However the predictive ability among the models was not significantly different and the predictive errors increased for the prediction of cash flows of the second semi-annual report period of 1997. The researcher explained that this may result from the impact of the Asian economic crisis occurring in the middle of year 1997 on accounting information of Indonesian firms. Moreover this study indicated that regression models outperformed random walk models for predicting future cash flows.

This work related to four first hypothesis of current study. His results supported third model of my study which use disaggregate earnings as variables for predicting future cash flows in Indian context. Unlike Bowen and et al (1986) and Greenberg and et al (1986), this study used cash flows and accounting information were derived from financial statements. This work had gone one step ahead by using cash flows information from financial statements. Short time span (1990-1997) and occurrence of Asian economic crisis in this duration are two factors which affected his results that could not be exact grouped as evidence for approving or rejecting the FASB assertion.
2.4.12. Quirin and et al (1999 in USA),

Quirin et al. (1999) re-examined the relative ability of earnings-based and cash flow-based measures to predict one-year ahead operating cash flows using actual cash flow data from the cash flow statement for an eight-year period. They collected sample observations from the 1997 version of Compustat PC Plus. A firm was selected if it had complete accounting information for all years of the sample period (1988-1996). After the screening procedure, 1,442 firms per year over the 8-year prediction period of 1989-1996 were included in the study. They studied four different predictors of actual cash flows from operations: net income before extraordinary items (NIBEI), net income plus depreciation (NIDPR), working capital from operations (WCFO) and actual cash flow from operations (ACFO). Simple ordinary least squares regression procedures were used in the analysis.

The results of four models for each year from 1989 to 1996 were inconsistent. Actual cash flows from operations were the best predictor of future cash flow in five of the eight years. WCFO was a better predictor than others in 1989 and 1990, whereas NIDPR had the highest predictive power in 1996. NIBEI was not a superior predictor in all eight years. In addition, the result for the pooled sample supported that ACFO was the best predictor for the 1989-1996 time period followed by WCFO, NIDPR and NIBEI respectively. This study concluded that accrual based earnings provided a lower predictive ability than cash flow based predictors.

Prior research has examined the relative ability of various accrual and cash flow measures to predict cash flow operations. This study predicts one-step ahead actual cash flow from operations using 4 predictors (actual cash flow from operations, working capital from operations, net income before extraordinary items and
discontinued operations, and net income plus depreciation and amortization) for the 8-year period.

2.4.13. Barth, Cram & Nelson (2001 in USA);

Barth, Cram and Nelson (2001) extended the DKW model to investigate the role of accruals for predicting future cash flows by disaggregating earnings into cash flow (CF) and the components of accruals – change in accounts receivable (Δ AR), change in accounts payable (Δ AP), change in inventory (Δ INV), depreciation, amortization and other accruals.

They tested the predictive ability of earnings, cash flow and the six-accrual components using regression analysis as in the following equations:

\[
CF_{t+1} = \phi + \sum_{i=0}^{k} \phi_i \cdot EARN_{t+i} + u_{t+1}
\]

\[
CF_{t+1} = \phi + \phi_{CF} \cdot CF_{t+1} + \phi_{\Delta AR} \cdot \Delta AR_{t+1} + \phi_{\Delta INV} \cdot \Delta INV_{t+1} + \phi_{\Delta AP} \cdot \Delta AP_{t+1} + \phi_{DEPR} \cdot DEPR_{t+1} + \phi_{AMORT} \cdot AMORT_{t+1} + \phi_{OTHER} \cdot OTHER_{t+1} - u_{t+1}
\]

Where

- \( CF \) = cash flow from operations
- \( EARN \) = earnings
- \( \Delta AR \) = change in accounts receivable
- \( \Delta AP \) = change in accounts payable
- \( \Delta INV \) = change in inventory
- \( DEPR \) = depreciation
- \( AMORT \) = amortization
- \( OTHER \) = the aggregate of other accruals
- \( i \) = firm
- \( t+1, k \) = year and \( k \) ranges from 0 to 6
- \( \phi \) = coefficient of independent variables in regression

Data used in the analysis was from the Compustat annual industrial and research file between 1987 and 1996. EARN was represented by income before extraordinary items and discontinued operations. CF was net cash flow from operations adjusted for
the accrual portion of extraordinary items and discontinued operations. The accrual components were from the cash flow statements and computed from balance sheet data. Financial service firms were excluded from the analysis.

The results of their research indicated that each accrual component reflects different information relating to future cash flow. They concluded that long-term accruals have a role in predicting future cash flows. Additionally, several past aggregate earnings have incremental descriptive power to aggregate current earnings for predicting future cash flows, whereas disaggregated current earnings have considerably more predictive capacity than several lags of aggregate earnings. Furthermore, they confirmed DKW’s analysis that the superior predictive ability of aggregate earnings relative to cash flows varies with firms’ operating cash cycles. In comparing each model, they indicated that the cash flow and components of accruals specification has the most predictive ability for cash flows up to four years in the future, followed by cash flow and aggregate accruals, cash flow only and multiple lags of aggregate earnings.


They studied the evidence resulting from the research of Barth, Cram and Nelson (2001). The difference between their studies is that Stammerjohan and Nassiripour (2000/2001) presented results from out of sample period versions of the model in the within-sample-period metrics and added two more accrual components of earnings, changes in taxes payable (_TXP), and deferred tax expense (TXDI). The increment content of deferred tax expense in predicting future cash flows was proven by Cheung, Krishnan and Min (1997).

The study employed data of firms listed on the June 1999 Compustat during 1988 to 1997. Firms were included in the sample if they met the requirements. In the pool sample, they needed to have a complete time series of information during 1988 and
1997 and also meet other criteria including having total assets more than $1 million, no involvement in merger and acquisition activities, reporting income before extraordinary items or discontinued operations and reporting a cash flow statement. The final pooled sample had 944 firms. For the cross-sectional model, the number of firms in three-year samples and five-year samples were between 1,887 and 3,603 firms.

Stammerjohan and Nassiripour’s research (2000/2001) results were consistent with Barth, Cram and Nelson (2001). That is, prior cash flows are a better predictor of future cash flow than prior earnings. The components-of-earnings model, including both cash flows and total accruals, provide better prediction of future cash flows than does the model based only on prior earnings. However, their study does not precisely prove that the two components of the model have better predictive power than models based only on prior cash flows as found by Barth, Cram, and Nelson (2001).

2.4.15. Al-Attar and Hussain (2004 in UK);

This study examined the ability of current accounting data to explain future cash flows for UK firms, as disclosed under FRS1 (1991). They follow the more direct approach used in several recent US studies, in which actual future cash flow data are examined. Specifically, their methodology is a development of the OLS regression framework employed by Barth et al. (2001). They provided a replication of their main OLS analysis, and then extended this to deal with fixed effects and time trends in the levels of cash flow data. Their study found that the desegregations of earnings into cash flows and accruals generates superior explanatory power with regard to future cash flows.
2.4.16. Chotkunakitti (2005 in Thailand);

He investigated the ability of accrual and cash flows accounting data to predict future cash flows of Thai listed companies.

Three regression models are constructed namely earnings, cash flows, accrual components and cash flows models. In addition, cash flow ratios are investigated to predict future cash flows by using a stepwise regression. Data used in this study is collected from the financial statements of non-financial companies listed on the Stock Exchange of Thailand from 1994 to 2002.

He showed that past earnings, cash flows, cash flow and accrual component of earnings can be used to predict future cash flows of Thai listed companies and cash flows have better predictive power than past earnings. Additionally, the cash flow model and the cash flow and accrual components of earnings model have better predictive power than the earnings model.

The findings of testing the models in an out-of-sample period suggested that the cash flow model is a better predictor of future cash flows than the other models. His results also indicate that cash flow ratios are not a good predictor of future cash flows.

2.4.17. Hadi (2005 in USA & Kuwait);

The sample for this study cover two markets USA and Kuwait, for USA the sample consists of 53 industrial firms that were in existence from 1992-1995 and have complete data set for the required variables. For Kuwaiti sample, All 57 firms listed in Kuwait Stock Exchange (KSE) are selected from 1992-1995.

Three variables are used in this study cash flow from operation (CF), earnings (EPS) and dividends (DIVID). All the variables are on per share basis.
It is found that cash flow exhibits the highest explanatory power, which means the financial analyst might consider using cash flow valuation model for short-term investment for both markets. This study has some limitations regarding the sample, it was small and restricted to the companies that are published in Value Line and Kuwait KSE and that might limit the generalability of the results.

2.4.18. Kim and Kross (2005 in USA)

Kim and Kross (2005) adopt the regression model of Dechow, Kothari, and Watts (1998) and the cross-sectional approach of Barth, Cram, and Nelson (2001) to examine whether the ability of earnings to predict future cash flows has been deteriorating or improving over the past 28 years (sample of 100266 firm-year over the 1973-2000 period). The operating cash flow variable used in this study was as:

\[
\text{CFO} = \text{income before depreciation} - \text{interest expense} + \text{interest revenue} - \text{taxes} - \Delta \text{WC},
\]

Where \(\Delta \text{WC} \) = the changes in receivables (AR), inventory (INV), and other current assets (OCA) minus the changes in accounts payable (AP), taxes payable (TP), other current liabilities (OCL), and deferred taxes (DEFTAX).

They deflated all variables by the average of total assets (Compustat data item #6) between the beginning and the end of the year.

They use annual cross-sectional regression analysis and compare the time-series trend in the explanatory power measured by \(R^2\) (in the context of either current earnings and future cash flows has generally been strengthening over ordinary least squares [OLS] or rank regression). In an initial analysis, they replicated the work of Collins, Maydew, and Weiss (1997), and obtained similar results, such that the relationship between earnings and stock prices has been decreasing over time. Despite the
decreasing relationship between stock prices and earnings, they found an increasing relationship over time between earnings and one-year-ahead operating cash flows. Nevertheless, they were unable to reconcile the increasing ability of current earnings to predict future cash flows with the decreasing ability of current earnings and cash flows to explain prices.

As the use of $R^2$ for comparative analysis when the dependent variable changes from sample to sample is questionable, because it is difficult to interpret a changing $R^2$ if the variance of the dependent variable changes over time, they deflated all variables by total assets because Brown, Lo, and Lys [1999] argue that the results of Collins, Maydew, and Weiss (1997) were influenced by a changing scale over time and advance variance stabilizing deflators to correct the problem.

As they pointed out that a good fit does not imply a good forecast because the models can “over fit” the data, including randomness as part of the generating process. To address this problem they generated “out-of-sample” forecasts. They evaluated the out-of-sample forecasts using Theil’s U statistic calculated as follows:

$$U_t = \sqrt{\frac{\sum (CFO_{t,i+1} - \text{predicted} \ CFO_{t,i+1})^2}{\sum (CFO_{t,i+1})^2}}.$$  

In the earliest (1974–1982) period, they found earnings-based forecasts of one-period-ahead cash flows are significantly better than CFO-based predictions for five of the nine years. In the 1983–1991 periods, they found that earnings-based forecasts of one-period-ahead cash flows are significantly better than CFO-based predictions for eight of the nine years. In the final (1992–2000) sub period, they found that earnings-based predictions are significantly more accurate than CFO-based predictions for all of the nine years. Thus, they found that the power of current earnings to forecast one-period
ahead cash flows is not only significantly increasing over time, but that these forecasts have become increasingly more accurate than forecasts based on current CFO alone. They divided their full sample into three equal groups and define firms as small, medium, or large based on firm size measured by the book value of assets at the end of each year. They then replicate the results on each of the three size-based samples. The results showed a strengthening relationship over time (as measured by R2) between current earnings and future cash flows for all sub samples. The t-statistics on the YEAR trend coefficient for the explanatory power of earnings were 23.44 and 10.61 for small and medium-sized firms and 3.09 for large firms. A robustness check using the percentile rank regression procedure produces very similar results. Thus, they conclude that firm size does not appear to exert a strong influence on the results.

2.4.19. Lev and et al (2005 in USA)

In contrast of Barth, Cram & Nelson (2001); Stammerjohan and Nassiripour (2000/2001); Al-Attar and Hussain (2004); Lev and et al (2005) base their forecasts on cross-sectional estima tions using annual data. They predict finite measures of cash flows up to three years ahead, and conclude that accruals do not improve upon current cash flow in predicting future cash flows.

2.4.20. Zhao and et al (2006 in Australia),

This study investigated which accounting variable has superior predictive ability for future cash flow: current cash flow from operations, or current earnings. The question is examined in an Australian context for the years 1995 to 2005, on a sample of 350 firms. The question is also examined by industry for the same firms. The results indicate that current cash flow from operations has superior predictive ability over current earnings for future cash flow from operations, and also that cash
flow from operations has higher incremental information content than current earnings.

The following three ordinary least squares regression models are estimated:

\[ CF_{t+1} = \alpha_0 + \alpha_1 CF_t + \alpha_2 Earningst + \text{error}_{t+1} \]  \hspace{1cm} (1)

\[ CF_{t+1} = \beta_0 + \beta_1 CF_t + \text{error}_{t+1} \]  \hspace{1cm} (2)

\[ CF_{t+1} = \delta_0 + \delta_1 Earningst + \text{error}_{t+1} \]  \hspace{1cm} (3)

Where:

\( CF_{t+1} \) = one-period-ahead Cash Flow from Operations

\( CF_t \) = current period Cash Flow from Operations

\( Earningst \) = current period earnings before tax and interest (EBIT) less income tax expense and interest expense

Model (1) replicates the empirical model used by Dechow et al. (1998), in which the variance of one-period-ahead cash flow from operations (\( R^2_{\text{cfo,earn}} \)) is explained by both current cash flow from operations and current earnings.

The cash flow model (2) is a random walk model. The measure of explanatory power in Model (1), \( R^2_{\text{cfo,earn}} \), provides a basis for calculating the incremental explanatory power of current cash flow and earnings respectively, by comparing it to \( R^2_{\text{cfo}} \) from the single factor cash flow model (Model (2)), and to \( R^2_{\text{earn}} \) from the single factor earnings model (Model (3)).

The market value of equity is used as an independent continuous variable in Models (4) to (6) to investigate whether firm size significantly influences the predictive abilities of current cash flow from operations and current earnings in Australia. This would be evident in a significant change in the intercept terms in Models (4) to (6) compared to Model (1) to (3).
CF_{t+1} = \alpha_0 + \alpha_1 CF_t + \alpha_2 Earningst + \alpha_3 Ln(MV_t) + errort+1 \quad (4)

CF_{t+1} = \beta_0 + \beta_1 CF_t + \beta_2 Ln(MV_t) + errort+1 \quad (5)

CF_{t+1} = \delta_0 + \delta_1 Earningst + \delta_2 Ln(MV_t) + errort+1 \quad (6)

where:

CF_{t+1} = one-period-ahead Cash Flow from Operations

CF_t = current period Cash Flow from Operations

Earningst = current period earnings before tax and interest (EBIT) less income tax expense and interest expense

Ln(MV_t) = natural logarithm of current period firm market value of equity ($m)

The sample was divided into two portfolios, “large firms” and “small firms”, by splitting the size-ranked portfolio into two at the point closest to the mean market capitalization. By design, each of the two portfolios has close to equal market capitalization (As a consequence of each portfolio having close to equal market capitalization, the number of firms in each portfolio is not equal. For this sample, there are 1436 “small” firm-year observations and 281 ‘large’ firm-year observations).

The “small firms” sample data are used in Models (7) to (9), and the “large firms” sample data are used in Models (10) to (12). Differences between small and large firms would be evident in any significant differences between either the intercepts or the slope coefficients of Models (7) and (10), (8) and (11), and (9) and (12).

Small firms:

CF_{t+1} = \rho_0 + \rho_1 CF_t + \rho_2 Earningst + errort+1 \quad (7)

CF_{t+1} = \omega_0 + \omega_1 CF_t + errort+1 \quad (8)

CF_{t+1} = \eta_0 + \eta_1 Earningst + errort+1 \quad (9)

Large firms:
CFt+1 = ρ0 + ρ1CFt + ρ2Earningst + errort+1  \hspace{1cm} (10)

CFt+1 = ω0 + ω1CFt + errort+1  \hspace{1cm} (11)

CFt+1 = η0 + η1Earningst + errort+1  \hspace{1cm} (12)

where:

CFt+1 = one-period-ahead Cash Flow from Operations

CFt = current period Cash Flow from Operations

Earningst = current period earnings before tax and interest (EBIT) less income tax expense and interest expense

Ln(MVt) = natural logarithm of current period firm market value to equity ($m)

Models (1) to (3) are tested separately for each industry group, and in addition, the interactions between industry dummy variables and earnings are investigated, using Model (13).

CFt+1 = α0 + α1CFt + α2Earningst + α3EM + α4CD + α5IN + α6CS + α7RE + α8IT +
β1CFt + β2EM + β3CD + β4IN + β5CS + β6RE + δ1Earningst + δ2EM + δ3CD +
δ4IN + δ5CS + δ6RE + δ7IT + errort+1  \hspace{1cm} (13)

Where:

CFt+1 = one-period-ahead Cash Flow from Operations

CFt = current period Cash Flow from Operations

Earningst = current period earnings before tax and interest (EBIT) less income tax expense and interest expense

EM = (Group 1) Energy and Material industries dummy variable (GICS 15; GICS 55)

CD = (Group 3) Consumer Discretionary industry dummy variable (GICS 25)

IN = (Group 2) Industrials industry dummy variable (GICS 20)

CS = (Group 4) Consumer Staples (GICS 30), Health Care (GICS 35) and Utilities industries dummy variable (GICS 55)
RE = (Group 5) Financials industry dummy variable (GICS 40)

IT = (Group 6) Information Technology (GICS 45), and Telecommunication Services industries dummy variable (GICS 50)

The analysis was based on the empirical analysis of Dechow et al. (1998), using pooled Australian data. Consistent with the expectation, the results indicate that current cash flow from operations has superior predictive ability to current earnings for future cash flow from operations, with both current cash flow from operations and current earnings significant at the 1% level, based on pooled estimation. Moreover, cash flow from operations has higher incremental information content than current earnings. When market value of equity is added as a control variable, the results change only slightly.

The period of 1995 to 2005 was regarded as a “boom period” in the Australian economy, particularly in the mining industry. As a consequence, the results presented in this study may differ across the economic cycle.

2.4.21. Yoder (2007 in USA);

The sample consists of firm years from 1989 through 2005 excluding firms in the financial services industry. All data are collected from Compustat. Since year t, t-1, and t-2 cash flow is regressed on year t-1, t-2, and t-3 accruals, respectively, in forecasting year t+1 cash flow, 1993 is the first year for which cash flow is forecasted. This selection process results in a sample of 53,109 firm-years.

This study presented an accrual-based cash flow prediction model based on a random walk in cash flows adjusted for the reversal of current payables and receivables. Results indicated that this simple accrual model predicts future cash flows (out-of-sample) better than models based on current cash flows alone.
This study also provided a more sophisticated accrual model by extending the model of the accrual process developed by Barth, Cram, and Nelson (2001) to include cash flow implications of growth in future sales. This more sophisticated accrual-based prediction model estimated via WLS (while pooling the prior three years of observations) predicts future cash flows better than both the simple accrual reversal model and the cash flow-based models, indicating that the accrual model contains information about future cash flow beyond the simple mechanical reversal of accruals. One explanation is that accruals may contain information regarding future sales. Consistent with this explanation, the paper found that the accrual-based WLS model is superior to the cash flow-based model in capturing the effect of future sales on future cash flows.

To determine whether the improved forecast accuracy is large enough to affect decision-making by financial statement users, the deciles of firms ranked on forecasted cash flow are compared to the deciles of firms ranked on actual future cash flow. The accrual-based model is superior to the cash flow-based model in placing firms into the correct deciles of actual future cash flow.

2.4.22. Farshadfar and et al (2008 in Australia),

This study examined the relative predictive ability of earnings, cash flow from operations as reported in the cash flow statement, and two traditional measures of cash flows (i.e. earnings plus depreciation and amortization expense, and working capital from operations) in forecasting future cash flows for Australian companies. Further, an empirical investigation of the extent to which firm size, as a contextual factor, influences the predictability of earnings and cash flow from operations is presented.
The study’s sample includes 323 companies listed on the Australian Stock Exchange between 1992 and 2004 (3,512 firm-years). They employ the ordinary least squares to estimate their regression models. To evaluate the forecasting performance of the regression models, both within-sample and out-of-sample forecasting tests are employed.

The authors provided evidence that reported cash flow from operations has more power in predicting future cash flows than earnings and traditional cash flow measures. Further, the predictability of both earnings and cash flow from operations significantly increases with firm size. However, the superiority of cash flow from operations to earnings in predicting future cash flows is robust across small, medium and large firms.

The authors' results, in terms of firm size, imply that the users of accounting information should be cautious in assessing the utility of earnings and cash flow measures in forecasting future cash flows as firm size decreases.

2.4.23. Hollister and et al (2008 in USA);

They focused their investigation on nine industrialized countries with well-developed accounting systems. Four of these countries are classified as having common-law legal systems: Australia, Canada, the United Kingdom, and the United States. The remaining five countries have code-law systems: France, Germany, Japan, the Netherlands, and Switzerland. Together these countries account for the vast majority of the world’s market capitalization.

The financial data was obtained from the Global Researcher CD World scope database, dated November 2001. Since prior to 1994 few companies from code-law
countries reported cash flows from operating activities, they selected their sample from the years 1994 through 2000.

They included all firm-years for which there was complete data, except those for firms classified as financial services. For each country, the top and bottom 1% of the scaled net income and the cash flow from operating activities variables were eliminated from the data sets to avoid obtaining results driven by outliers. These procedures yielded 34,069 usable firm-year observations, 29,579 observations (87%) from four common-law countries and 4,490 observations (13%) from five code-law countries.

In order to compare the informativeness of cash flows and accruals from various accounting regimes based on country-specific characteristics, they use a two-stage methodology. The purpose of the first stage is to establish that the disaggregated accruals are, indeed, incrementally informative on a country-by-country basis. In this stage, they follow Barth et al. (2001) by regressing operating cash flows on the previous period’s operating cash flows and then on the previous period’s disaggregated earnings—i.e., operating cash flows and the accrual components of earnings.

They established measures of the near-term cash flow predictive ability for the accounting systems of each of the nine countries by finding the explanatory power of the regression models. They then determine the incremental explanatory power from adding the disaggregated accrual components of earnings to current operating cash flows. Having established that the accruals contain significant information for each individual country, in the second stage they evaluated the differences between the results of these regressions comparatively across accounting regimes and in relevant country groups.
For nine countries, they showed that the components of accrual accounting earnings provide information incremental to that of current cash flows from operations in explaining next year’s cash flows from operations.

They related the usefulness of accounting earnings components for explaining near-term cash flows to certain country characteristics—common/code-law jurisdiction, accrual index, shareholders’ rights, and uncertainty avoidance. They provided evidence that accounting accruals generated by shorter horizon, code-law regimes provide more incremental explanatory power for short-term predictions than those of longer horizon, common-law countries.

They examined international diversity in the accrual process itself and the relative usefulness of disaggregated accruals of different countries for the prediction of one year ahead cash flows, using the model developed by Barth et al. (2001), based on the work of Dechow et al. (1998).

Specifically, they investigated the international variation in the ability of the components of accounting earnings to predict the following year’s cash flow from operating activities for nine industrial countries. They demonstrated that while disaggregated accruals add significant explanatory power to current period cash flows in predicting next period’s cash flows in all cases, they do so to varying degrees, depending on the extent to which accruals are required by the accounting regime and on the common or code-law heritage of the country’s legal system.

Consistent with their hypotheses, they found that for predicting next period’s cash flows, accruals from code-law regimes provide more explanatory power than those
from regimes based in common-law jurisdictions and that it is the non-current accruals that drive this result. Further, they found that this type of incremental informativeness of accruals varies inversely with the level of accruals required by an accounting regime.

They also related the observed international variation in cash flow predictive ability to two other factors: the degree of shareholder protection provided by law and a country’s level of uncertainty avoidance, a fundamental cultural dimension described by Hofstede (1980).

In tests run to further investigate their results, they found that the effects of accounting accruals on cash flows two and three years in the future support their theory that the more accruals relate to expected cash flows in future periods, the less incremental explanatory power they provide for the prediction of near-term cash flows.

They found that accounting accruals in the code-law countries provide less significant incremental explanatory power when the horizon is extended to two years. In the third year, they are not significantly different from the incremental information provided by accounting accruals from common-law regimes. Thus, accounting accruals in code-law countries provide incremental explanatory power for predicting near-term cash flows, but not more distant ones.

**2.4.24. Lorek and Willinger (2009 in USA).**

They investigated the ability of past operating cash flows (Model 1) and past earnings (Model 2) to generate predictions of operating cash flows from 1990 to 2004. They employed actual cash flow numbers reported in accordance with Statement of Financial Accounting Standards (SFAS) No. 95 in their primary analysis rather than using an algorithm to approximate operating cash flows (i.e., Kim and Kross, 2005;
Dechow et al. 1998, among others). They derived out of sample predictions of operating cash flows both cross-sectionally similar to the approach of Kim and Kross (2005) and on a firm-specific time-series basis consistent with Dechow et al. (1998). Their predictive findings suggested:

1. Cash-flow based models (Model 1) provide significantly more accurate predictions of operating cash flows than earnings-based models (Model 2);
2. Time-series models significantly outperform cross-sectional models;
3. Larger firms exhibit significantly more accurate cash-flow predictions than smaller firms;
4. Firms with relatively shorter operating cycles exhibit significantly more accurate cash-flow predictions than firms with longer operating cycles consistent with Dechow (1994);
5. They find no evidence of increased predictive power for either the cash-based or earnings-based prediction models across 1990-2004;
6. They also provided supplementary analyses to assess the impact on predictive performance when descriptive goodness-of-fit criteria are used instead of out-of-sample forecasts to assess predictive performance, and
7. They re-estimate the CFO prediction models using algorithmic CFO data instead of actual data.
2.5. Summary on prior literature

The reviewed literature in previous section summarized from different angles as bellow:

- **Based on their hypothesis and variable which they have used**

Prior studies could be divided in three groups based on how the studies related to the main hypothesis (hypothesis 1, 2, 3, and 5) and comparative hypothesis (forth hypothesis) in the current study. **First group** contains those studies which concern on single variable testing and only addressed first and second hypothesizes of the current study (and compare them) such as the studies of Bowen, Burstahler and Daley (1986 in USA); Greenberg, Johnson & Ramesh (1986 in USA); Espahaodi (1988 in USA); Murdoch and Krause (1989 in USA); Arnold and et al (1991 in UK); Percy and Stokes (1992 in Australia); McBeth (1993 in US); Finger (1994 in USA); Seng (1997 in New Zealand); Black (1998 in USA); Quirin and et al (1999 in USA); Hadi (2005 in USA & Kuwait); Kim and Kross (2005 in USA); Zhao and et al (2006 in Australia); Farshadfar and et al (2008 in Australia), and Lorek and Willinger (2009 in USA).

**Second group** include those studies which have focused on multiple variables, such as the components of earnings including cash flow and accrual accounting data. They addressed the third hypothesis of the current study as well, such as the studies of Supriyadi (1998 in Indonesia); Barth, Cram & Nelson (2001 in USA); Stammerjohan and Nassiripour (2000/2001); Al-Attar and Hussain (2004 in UK); Chotkunakitti (2005 in Thailand); Lev and et al (2005 in USA); Yoder (2007 in USA), and Hollister and et al (2008 in USA).
Third group address to the study which conducted by Chotkunakitti (2005 in Thailand) that is the only study which addressed the fifth hypothesis of the current study (cash flows ratios).

- Based on from where derived the cash flows from operation variable in their studies

Prior studies could be divided in two groups based on how the studies derived the cash flow from operation variable in their works. First group contains those studies which did not use the cash flows statement for derived the cash flow from operation in their works, such as the studies of Bowen, Burstahler and Daley (1986 in USA); Greenberg, Johnson & Ramesh (1986 in USA); Espahaodi (1988 in USA); Murdoch and Krause (1989 in USA); Arnold and et al (1991 in UK); Percy and Stokes (1992 in Australia); Finger (1994 in USA).

The rest of the reviewed studies have used the cash flows statement for derived the cash flow from operation in their works.

- Based on using different statistical methods

In the reviewed studies, the only work which has done by Finger (1994 in USA) has used firm specific time series for predicting future cash flows. The rest of the reviewed studies have used pooled cross sectional regressions for purpose of predicting future cash flows. None of them specifically concern on industrial wise prediction as it has applied in this current study.

- Based on how comparing predictive accuracy

To check the fit of models to predict accurate future cash flows the prior studies suggested $R^2$ measure. $R^2$ measures the amount to which the model explains or account for the amount of variability in the dependent variable. To find the more
accurate model based on in-sample comparing, $R^2$ is suggested by previous studies. To derive the $R^2$ of models, running the regression technique is required.

In addition to adjusted $R^2$, some studies have employed the analysis of residuals involving the mean absolute percentage error (MAPE) to evaluate the predictive abilities of the prediction models. The mean absolute percentage error (MAPE) generates from the out-of sample period. Moreover, Kim and Kross (2005) have used Theil’s U-statistics for the out-of-sample period as well.

In this current study in context of Indian companies in an out-o-sample testing, like recent works in field of predicting future variables, Voung’s test (Z-statistic) has been used to select the more accurate model.

- **Country wise summary**

From 15 studies in United States of America, three works have supported FASB assertion (among of them the study which conducted by Kim and Kross (2005) had more influence on this field of study) and five works have rejected FASB assertion (the recent one is the study which conducted by Lorek and Willinger (2009 in USA)). However, conclusions of seven studies neither support FASB view nor support opposite view and most of this group suggested that models which use disaggregated earnings (cash flows plus accrual components of earnings) will produce accurate estimate of future cash flows.

All three studies in Australia have rejected FASB assertion. From two studies in United kingdom, one work has rejected FASB assertion and one of them neither support FASB view nor support opposite view but it suggested disaggregated earnings as best predictor of future cash flows.
Two studies which have conducted in New Zealand and Kuwait have rejected FASB assertion. Moreover, two studies which have conducted in Indonesia and Thailand neither support FASB view nor support opposite view but they suggested disaggregated earnings as best predictor of future cash flows.

In overall out of twenty four studies which reviewed in this chapter, three of them have supported FASB assertion; eleven studies have rejected FASB assertion, and rest of them neither support FASB view nor support opposite view and most of this group suggested that models which use disaggregated earnings (cash flows plus accrual components of earnings) will produce accurate estimate of future cash flows.

- **Based on their conclusions related to the current study’s hypotheses**

Prior studies have led to conflicting results. Some research has concluded that the predictive ability of earnings outperforms that of cash flows in forecasting future cash flows, for example, the studies of Greenberg, Johnson & Ramesh (1986 in USA), Murdoch and Krause (1989 in USA), and Kim and Kross (2005 in USA).

In contrast, some findings showed conflicting results in which cash flows are the better predictor of future cash flows, such as the studies of Bowen, Burstahaler and Daley (1986 in USA), Arnold and et al (1991 in UK), Percy and Stokes (1992 in Australia), Finger (1994 in USA), Seng (1997 in New Zealand), Black (1998 in USA), Quirin and et al (1999 in US), Hadi (2005 in USA & Kuwait); Chotkunakitti (2005 in Thailand); Zhao and et al (2006 in Australia), Farshadfar and et al (2008 in Australia),Lorek and Willinger (2009 in USA). However the study by McBeth (1993 in USA) rejected both conclusions and claimed that neither earnings nor cash flows are a good predictor of future cash flows.

In addition to single variable testing, some researchers have focused on multiple variables, such as the components of earnings including cash flow and accrual
accounting data. They concluded that each accrual component reflected different information relating to future cash flows, for example, the studies of Supriyadi (1998 in Indonesia); Barth, Cram & Nelson (2001 in USA); Stammerjohan and Nassiripour (2000/2001 in USA); Al-Attar and Hussain (2004 in UK); Yoder (2007 in USA); Hollister and et al (2008 in USA); In contrast of them Lev and et al (2005 in USA) base their forecasts on cross-sectional estimations using annual data. They predict finite measures of cash flows up to three years ahead, and conclude that accruals do not improve upon current cash flow in predicting future cash flows.

Moreover, most research has focused narrowly on operating cash flow, earnings and accrual components of earnings. Those previous studies (except Chotkunakitti 2005 in Thailand) have ignored the potential of other cash flow variables, particularly cash flow ratios.
2.6. Research frame to contribute the available body of knowledge in the field of predicting operating cash flows.

2.6.1. Research problem

From the 1980s, researchers expressed a renewed interest in information about cash flows. One aspect of that interest focused on the assertion of the Financial Accounting Standards Board (FASB 1978), which pointed out that “Information about enterprise earnings based on accrual accounting generally provides a better indication of an enterprise’s present and continuing ability to generate favorable cash flows than information limited to the financial effect of cash receipts and payments”. This assertion was questioned, both directly and indirectly, in research that compared the predictive ability of accrual-based information to that of cash flow information in three different settings: (1) Bankruptcy prediction, (2) Predicting security returns, and (3) Predicting operating cash flows. Research in the first two settings indirectly addressed the FASB assertion, while research in the third setting (Predicting operating cash flows) examined it directly. The bankruptcy studies primarily address the question as to whether net income or operating cash flow is a better predictor of bankruptcy. The focus of the securities market studies is whether net income or operating cash flow is a better predictor of security prices or returns. Finally, the cash flow prediction studies ask whether net income (aggregated earnings) alone, operating cash flow alone or a combination of operating cash flow and accrual components of earnings is a better predictor of future operating cash flow.

Investors as well as creditors are clearly concerned about a firm’s future cash flows. A primary objective of financial reporting is to provide information to help investors, creditors, and others assess the amount, timing and uncertainty of prospective cash flows. The problem is, however, that prospective cash flows are elusive and difficult
to pinpoint, because the term literally means all prospective flows of cash. A researcher who wants to find a number that represents prospective cash flows other than from the market (i.e., from the security price) encounters many problems.

Prior studies have led to conflicting results. Some research in a single variable testing model has concluded that the predictive ability of earnings outperforms that of cash flows in forecasting future cash flows. In contrast, some findings showed conflicting results in which cash flows are the better predictor of future cash flows. However a study rejected both conclusions and claimed that neither earnings nor cash flows are a good predictor of future cash flows.

In addition to single variable testing, some researchers have focused on multiple variables, such as the components of earnings including cash flow and accrual accounting data. They concluded that each accrual component reflected different information relating to future cash flows. In contrast of them a study concluded that accruals do not improve upon current cash flow in predicting future cash flows.

Moreover, most research has focused narrowly on operating cash flow, earnings and accrual components of earnings. Those previous studies have ignored the potential of other cash flow variables, particularly cash flow ratios.

**2.6.2. Research questions**

1. Are past earnings significant predictors of future cash flows of Selected Indian Companies listed on Bombay stock exchange?

2. Are past cash flows significant predictors of future cash flows of Selected Indian Companies listed on Bombay stock exchange?

3. Are past cash flows and accrual components of earnings significant predictors of future cash flows of Selected Indian Companies listed on Bombay stock exchange?
4. Are three prediction models, earnings, cash flows and cash flows and accrual components of earnings models different in predictive powers?
5. Are past cash flow ratios significant predictors of future cash flows of Selected Indian Companies listed on Bombay stock exchange?

2.6.3. Research objectives

1. To Assess the Ability of Past Earnings (aggregated) to predict Future Cash Flows.
2. To Assess the Ability of Past Cash Flows to Predict Future Cash Flows.
3. To Assess the Ability of Past Cash Flows and Accrual Components of earnings (disaggregated) to predict Future Cash Flows.
4. To introduce the industrial wise models (by comparing predictive accuracy of competing models in and out of sample) and potential capabilities of the models which would help the current and potential Investors who want to price the shares based on Estimated Future Cash Flows of Indian companies listed on Bombay Stock Exchange.
5. To Assess the Ability of the Ratios that calculated basis on Past Cash Flows to Predict Future Cash Flows.

2.6.4. Research hypothesis and their related models

This study is in the line of third setting strategy (predicting operating cash flows) which addresses the FASB assertion directly, and based on the questions and objectives of the study, first it has tried to test of three hypothesis in context of Indian industries as bellow:

1. (Past) earnings have significant predictive power in estimating future cash flows of Selected Indian Companies listed on Bombay stock exchange.
### Table 2.1: Models for first hypothesis

<table>
<thead>
<tr>
<th>HYPO</th>
<th>Models</th>
<th>Regression equation</th>
<th>Type of regression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Earnings models</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>One-year lag</td>
<td>$\text{CFO}_{t} = \alpha_0 + \beta_1 \text{EARN}<em>n,</em>{t-1} + \epsilon$</td>
<td>Simple</td>
</tr>
<tr>
<td></td>
<td>Two-year lags</td>
<td>$\text{CFO}_{t} = \alpha_0 + \beta_1 \text{EARN}<em>n,</em>{t-1} + \beta_2 \text{EARN}<em>n,</em>{t-2} + \epsilon$</td>
<td>Multiple</td>
</tr>
<tr>
<td>#1</td>
<td>Three-year lags</td>
<td>$\text{CFO}_{t} = \alpha_0 + \beta_1 \text{EARN}<em>n,</em>{t-1} + \beta_2 \text{EARN}<em>n,</em>{t-2} + \beta_3 \text{EARN}<em>n,</em>{t-3} + \epsilon$</td>
<td>Multiple</td>
</tr>
</tbody>
</table>

2. (Past) cash flows have significant predictive power in estimating future cash flows of Selected Indian Companies listed on Bombay stock exchange.

### Table 2.2: Models for second hypothesis

<table>
<thead>
<tr>
<th>HYPO</th>
<th>Models</th>
<th>Regression equation</th>
<th>Type of regression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cash flows models</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>One-year lag</td>
<td>$\text{CFO}<em>{t} = \alpha_0 + \beta_1 \text{CFO}</em>{t-1} + \epsilon$</td>
<td>Simple</td>
</tr>
<tr>
<td></td>
<td>Two-year lags</td>
<td>$\text{CFO}<em>{t} = \alpha_0 + \beta_1 \text{CFO}</em>{t-1} + \beta_2 \text{CFO}_{t-2} + \epsilon$</td>
<td>Multiple</td>
</tr>
<tr>
<td>#2</td>
<td>Three-year lags</td>
<td>$\text{CFO}<em>{t} = \alpha_0 + \beta_1 \text{CFO}</em>{t-1} + \beta_2 \text{CFO}<em>{t-2} + \beta_3 \text{CFO}</em>{t-3} + \epsilon$</td>
<td>Multiple</td>
</tr>
</tbody>
</table>
3. (Past) cash flows and accrual components of earnings have significant predictive power in estimating future cash flows of Selected Indian Companies listed on Bombay stock exchange.

Table 2.3: Models for third hypothesis

<table>
<thead>
<tr>
<th>HYPO</th>
<th>Models</th>
<th>Regression equation</th>
<th>Type of regression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mixed models</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One-year</td>
<td>( \text{CFO}<em>{it} = \alpha_0 + \beta_1 \text{CFO}</em>{i,t-1} + \beta_2 \text{ACC}_{i,t-1} + \epsilon )</td>
<td>Simple</td>
</tr>
<tr>
<td></td>
<td>Two-year</td>
<td>( \text{CFO}<em>{it} = \alpha_0 + \beta_1 \text{CFO}</em>{i,t-1} + \beta_2 \text{ACC}<em>{i,t-1} + \beta_3 \text{CFO}</em>{i,t-2} + \beta_4 \text{ACC}_{i,t-2} + \epsilon )</td>
<td>Multiple</td>
</tr>
<tr>
<td># 3</td>
<td>Three-year</td>
<td>( \text{CFO}<em>{it} = \alpha_0 + \beta_1 \text{CFO}</em>{i,t-1} + \beta_2 \text{ACC}<em>{i,t-1} + \beta_3 \text{CFO}</em>{i,t-2} + \beta_4 \text{ACC}<em>{i,t-2} + \beta_5 \text{CFO}</em>{i,t-3} + \beta_6 \text{ACC}_{i,t-3} + \epsilon )</td>
<td>Multiple</td>
</tr>
</tbody>
</table>

Based on Indian sample, test of these three hypothesis help to show whether the mentioned variables have power to predict future cash flow or not.

The forth hypothesis has formulated as bellow to contribute with prior studies to evaluate FASB assertion.

4. Predictions based on three different models do not suggest the same directions of future cash flows.

Test of the forth hypothesis helps to select the more powerful model among the three models (which built based on first three hypothesis). It helps to demonstrate the finding and evaluating FASB assertion in Indian context.
To check more variables, based on primary review of literatures, This study like Chotkunakitti (2005 in Thailand) added the fifth hypothesis as bellow to check whether other accounting variables have power to predict the future cash flow or not.

5. Ratios calculated based on past cash flows are significant predictors of future cash flows of Selected Indian Companies listed on Bombay stock exchange.

Table 2.4: Models for fifth hypothesis

<table>
<thead>
<tr>
<th>HYPO</th>
<th>Models</th>
<th>Regression equation</th>
<th>Type of regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5</td>
<td>One-year lag</td>
<td>( \text{CFO}<em>{n,t} = \alpha_0 + \beta_1 \sum</em>{i=1}^{10} \text{CFR}_{t-1} + \varepsilon )</td>
<td>stepwise procedure</td>
</tr>
</tbody>
</table>

The fifth hypothesis formulated to know among selected cash flow ratios which ratio has more power to predict future cash flows.

2.6.5. Explanation of the models

Based on the research hypotheses, the study focuses on five major variables: future cash flow, earnings, cash flows, accrual components of earnings and cash flow ratios. Future cash flows are investigated as the dependent or criterion variable caused by independent variables.

Independent or explanatory variables are earnings, cash flows, accrual components of earnings and cash flow ratios. The independent variables are expected to provide predictive power to predict a dependent variable in the prediction model.

Future cash flows of firms are defined as net cash flows from operations (CFO) reported in cash flow statements for the year \( t \), represented by the symbol of CFO \( t \).
under the indirect method form and reported by adjusting earnings for non-cash items and for changes in current assets and current liabilities.

Earnings of firms are defined as net income before extraordinary items and discontinued operations reported on income statements for year t-i symbolized by EARNt-i.

Cash flow is defined as net cash flows from operations reported on the cash flow statements for year t-i, denoted by CFOt-i. The following models are constructed to develop the research issues. These models will consider relationships between concepts and be used to guide data collection.
2.7. Conclusions on Review Literature Chapter

As Kim and et al (2007) pointed out the theoretical foundation for cash flows prediction tests is weak. Investors as well as creditors are clearly concerned about a firm’s future cash flows, and this is reflected in the concept of statement of the Financial Accounting Standard Board that a primary objective of financial reporting is to provide information to help investors, creditors, and others assess the amount, timing and uncertainty of prospective cash flows. The problem is, however, that prospective cash flows are elusive and difficult to pinpoint, because the term literally means all prospective flows of cash. A researcher who wants to find a number that represents prospective cash flows other than from the market (i.e., from the security price) encounters many problems. For simplicity, most existing studies of cash flows prediction concentrate on a small number of immediate future year’s cash flows. It has been accepted as a practical approach in the literature.

FASB (1978) asserted that enterprise earnings based on accrual accounting generally provides a better indication of an enterprise’s present and continuing ability to generate favorable cash flows than information limited to cash flows alone.

From 1980s the scholars in developed and developing countries addressed the FASB assertion by a direct research strategy setting. They have used single as well as multiple models for showing association between the cash flows from operation data of each year and the aggregated earnings (earnings alone), the cash flows from operation (alone), and combination of flows from operation and components of earnings previous years. These attempts have led to conflicting results. Review of the available researches which have done from 1986 till 2009 showed that in overall out of twenty four studies, three of them have supported FASB assertion; eleven studies have rejected it, and rest of them neither support FASB view nor support opposite
view and most of this group suggested that models which use disaggregated earnings (cash flows plus accrual components of earnings) will produce accurate estimate of future cash flows.

These studies carried some issues in case of deriving cash flows from operation in their models, how comparing predictive accuracy of their models, their time span and sample size.

From this review of literature could find that prior studies did not concern about some questions such as whether predictive ability of the variables are the same across the different industries, and also whether predictive ability of the variables are different in the indexed companies (small-cap, mid-cap,…) in compare with no indexed companies. Moreover no study focused on different predictive accuracy measures to compare their capabilities to test of hypothesis, and prior studies did not concern about cyclical manners of models as tools or clue to show turning points of industries or economic conditions.

As no research has been undertaken on cash flows prediction in India, this current study intended to replicate the previous studies in order to fill gaps from previous research, by using cash flow information directly from cash flow statements and aim to address unanswered questions as explained above.

The next Chapter develops methodology to build and test models of cash flow prediction for companies listed on the Bombay Stock Exchanges.