MANAGEMENT ACCOUNTING PRACTICES AND ORGANISATIONAL PERFORMANCE: A STUDY OF ENVIRONMENTAL AND ORGANISATIONAL ANTECEDENTS AS PERCEIVED BY FINANCE AND ACCOUNTING MANAGERS IN THE MANUFACTURING SECTOR IN INDIA

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Certificate

*This is to certify that the thesis titled, "**Management Accounting Practices and Organisational Performance: A Study of Environmental and Organisational Antecedents as Perceived by Finance and Accounting Managers in the Manufacturing Sector in India**" submitted to Cochin University of Science and Technology, Kochi, for the award of the degree of Doctor of Philosophy under the Faculty of Social Sciences, is a record of bonafide research done by Mr. K. Sreekumar under my supervision and guidance in School of Management Studies, Cochin University of Science and Technology. This work has not been part of any work submitted for the award of any degree, diploma or any other title or recognition by any institution. All the relevant corrections and modifications suggested by the audience during the pre-synopsis seminar and recommended by the Doctoral Committee have been incorporated in the thesis.*

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Date: 17/08/2015

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Declaration

*I, K. Sreekumar, hereby declare that the thesis titled "**Management Accounting Practices and Organisational Performance: A Study of Environmental and Organisational Antecedents as Perceived by Finance and Accounting Managers in the Manufacturing Sector in India**", submitted to Cochin University of Science and Technology under the Faculty of Social Sciences is the record of the original research done by me under the supervision and guidance of Dr. K.B Pavithran., former Professor & Director, School of Management Studies, Cochin University of Science and Technology. I further declare that no part of the thesis has been submitted elsewhere for the award of any degree, diploma or any other title or recognition.*

Kochi-22 **K. Sreekumar**

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K. Sreekumar

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List of Abbreviations

ABC	-	Activity Based Costing
AICPA	-	American Institute of Certified Public Accountants
ABM	-	Activity Based Management
ANOVA	-	Analysis of variance
APC	-	Average Path Co-efficient
APM	-	Administered Price Mechanism
ARS	-	Average R- Squared
AVE	-	Average variance extracted
AVIF	-	Average Variance Inflation Factor
BPM	-	Business Performance Measurement
BSC	-	Balanced Score Card
CAP	-	Customer Account Profitability
CE	-	Competitive Environment
CFA	-	Confirmatory factor analysis
CFI	-	Comparative Fit Index
CIMA (UK)	-	Chartered Institute of Management Accountants, United Kingdom
COQ	-	Cost of Quality
CAP	-	Customer Account Profitability
CBSEM	-	Covariance Based Structural Equation Modeling
CCP	-	Cost-Constraint-Profit
CMA	-	Cost and Management Accountant
CMA	-	Certified Management Accountant
CPI	-	Continuous Process Improvement
CPA	-	Customer Profitability Analysis
CR	-	Critical Ratio
CVP	-	Cost-Volume-Profit
EFA	-	Exploratory Factor Analysis
EVA	-	Economic Value Added
F&A	-	Finance and Accounting

FICO	-	Financial Accounting and Controlling
GAAP	-	Generally Accepted Accounting Principles
GDP	-	Gross Domestic Product
GSCA	-	Generalised Structured Component Analysis
IA&AS	-	Indian Audit and Accounts Service
ICAS	-	Indian Cost Accounting Service
ICAI	-	Institute of Chartered Accountants of India
ICAI (CMA)	-	Institute of Cost Accountants of India
ICT	-	Information and Communications Technology
IFAC	-	International Federation of Accountants
IMA (USA)	-	Institute of Management Accountants, United States of America
IT	-	Information Technology
JIT	-	Just-in-time
JMVN	-	Joint Multi Variate Normal
KMO	-	Kaiser -Meyer- Olkin
KPI	-	Key Performance Indicator
LCC	-	Life Cycle Cost
LV	-	Latent Variable
MAAW	-	Management and Accounting Web
MACS	-	Management Accounting Control Systems
MAI	-	Management Accounting Information
MAP	-	Management Accounting Practices
MAS	-	Management Accounting Systems
MBA	-	Master of Business Administration
MCA	-	Ministry of Corporate Affairs
MCS	-	Management Control Systems
MLE	-	Maximum Likelihood Estimation
MT	-	Manufacturing Technology
NFI	-	Normated Fit Index
NOPAT	-	Net Operating Profit after Tax

OD	-	Organisational Design
OLS	-	Ordinary Least Squares
OP	-	Organisational Performance
OS	-	Organisational Strategy
PLC	-	Product Life Cycle
PLS	-	Partial Least Square
REVA	-	Refined Economic Value Added
RMR	-	Root Mean Residual
SRMR	-	Standardised Root Mean Residual
RMSEA	-	Root Mean Square of Approximation
ROI	-	Return on Investment
SCM	-	Strategic Cost Management
SEM	-	Structural Equation Modeling
SG&A	-	Selling, General & Administrative
SMA	-	Strategic Management Accounting
SPSS	-	Statistical Package for Social Sciences
SVA	-	Shareholder Value Analysis
TLI	-	Tucker-Lewis Index
ToC	-	Theory of Constraints
TQM	-	Total Quality Management
ULS	-	Un-weighted Least Squares
USGAO	-	United States Government Accountability Office
VCA	-	Value Chain Analysis

Chapter

1 INTRODUCTION

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1.1 Introduction

All organisations are concerned with using management accounting information to support managers in making rational decisions in order to achieve organisational objectives. Thus management accounting has become an important business support system of an organisation, helping the managers of complex, hierarchical organisations to plan and control their operations in order to achieve the organisation's objectives (Kaplan & Atkinson, 1989). This research aims to identify certain critical factors that can have an impact on Management Accounting Practices (MAP) and how MAP in turn would influence the Organisational Performance (OP), in the Indian context and settings. This study examines the perceptions of the Finance & Accounting (F&A) Managers in the manufacturing sector in India, about the influence of the environmental (competition and manufacturing technology) and organisational (strategy and design) factors on Management Accounting Practices (MAP) and how MAP in turn can contribute to enhance Organisational Performance (OP).

This Chapter focuses on the following segments – the background of the study, significance of the study, definition of management accounting, history of accounting, origin and evolution of management accounting, management accounting systems and institutions in India, management accounting global practices, statement of the problem, objectives of the research study, the scope of research, expected outcome of the study, chapter scheme and conclusions to the chapter.

1.2 Background of the Study

Management accounting has become an important area of research because practitioners and scholars have started to recognise that the information it provides is essential for companies' survival in a competitive environment. Moreover, a very well-structured management accounting system can offer competitive advantages to a company in relation to its competitors (Langfield-Smith, 2006; Scapens, 2006). Studies based on contingency theory highlights the need for organisations to adopt appropriate organisational strategies that would help them to effectively and efficiently adapt to their external (environmental) and internal (organisational) factors to equip them to compete successfully in their business. A key activity in this strategic endeavour is to take decisions most effectively. Effective managerial decisions would enhance organisational profitability (Raaij et al., 2003; Lee & Park, 2006).

Every organisation is located within a particular configuration of contingencies. It is dependent on the dynamics of the market and technological environment in which it operates, scale and multiplicity of its operations and the variety of human resources it employs. To achieve goal congruence, an appropriate design is one which best suits it's contextual and operational contingencies. Many scholars had not only emphasised the critical role of management accounting in managerial decision making from a strategic angle, but also highlighted the need to augment the understanding of the contingency perspective (Tuan Mat, 2010).

This study examines the perceptions of the finance and accounting managers in the manufacturing business enterprises in India about the influence of the environmental and organisational factors on Management Accounting Practices (MAP) and how MAP in turn can contribute to enhance Organisational Performance (OP) in a globalised environment. Globalisation has drastically changed the business environment of organisations operating in developing countries with increase in uncertainty and intensified industry competition which led to their use of advanced manufacturing technology. Globalisation has replaced the Cold War system with the integration of capital, technology, and information across national borders – uniting Brazilian peasants, Indonesian entrepreneurs, Chinese villagers and Silicon Valley technocrats in a single global village. This new system of globalisation – in which walls between countries, markets and disciplines are increasingly being blown away- constitutes a fundamentally new state of affairs (Friedman, 2000). Globalisation is a process whereby multinational enterprises may enter developing countries (Balachandran, 2007). Thanks to globalisation, every country that can provide the best value for money in a product or a service in the global bazar can improve not just the lives of its own people but also of many nations whose people use those products and services (Murthy, 2009). According to Kassim et al. (2003), globalisation brings in innovative technologies and makes a developing country open to greater competition. These unprecedented changes may not only affect the choice of Management Accounting Practices (MAP) in an organisation but also influence the decisions to reconsider its design and strategies to match with the changing environment. This argument is supported by Burns & Scapens (2000) and Shields (1997), who had suggested that external environment would influence organisations, which in turn would influence the choice of MAP for better organisational performance.

As enterprises strive to achieve a better fit with its environment, and to be more successful, sustaining and improving current performance will become critical. However, very limited research has taken place into how competitive environment and manufacturing technologies have influenced organisational strategy and organisational design and how all these four factors have influenced management accounting practices in developing countries. Most of the empirical evidences in this area originate from research in developed countries (Baines & Langfield-Smith, 2003; Burns et al., 1999; Chenhall & Euske, 2007; DeLisi, 1990; Innes &Mitchell, 1990; Libby & Waterhouse, 1996; Lucas & Baroudi, 1994; Smith et al., 2005).

A salient feature of current business environment is that customer demands are fast evolving (Cadez & Guilding, 2008a). For business sustainability in such circumstances, organisations must accept market orientation. Organisations that respond to the competitive environment will create value for customers profitably (Roslender & Hart, 2003; Opute, 2009), harvest competitive advantage (Perera et al., 1997), and achieve superior financial performance (Slater & Narver, 1994). Therefore the advocates of Management Accounting Practices

(MAP) contend that for a customer oriented focus, strategically customised Management Accounting Practices (MAP) are essential. According to Langfield-Smith (2008, p.209), "to survive, a firm must continue to offer the cheapest way for consumers to obtain the desired bundle of attributes". Therefore, organisations must align their Management Accounting Practices (MAP) towards this target (Bromwich, 1990).

Cost and Management Accounting is often referred to by other names such as, Managerial Accounting (Garrison,1976), Cost Management (Hansen & Mowen, 2013; Kishore, 2005), Management Accounting and Control Systems (Macintosh & Quattrone, 2010), Management Control Systems (Anthony & Govindarajan, 2012; Chenhall,2003),Strategic Cost Management (Shank & Govindarajan,1993), Strategic Management Accounting (Simmonds,1982), Management Accounting Information System (Rushinek and Rushinek,1985), Management Accounting Techniques (Adler et al.,2000) and Management Accounting Practices (Langfield-Smith,2003; Tuan Mat,2010; Ojra,2014). The term Management Accounting Practices (MAP) is used in this study.

1.3 Significance of the Study

Changes in the Competitive Environment (CE) are causing innovative changes in manufacturing technology which require changes in the Organisational Strategy (OS) and Organisational Design (OD) to respond to the Competitive Environment (CE) through changes in Management Accounting Practices (MAP) which will lead to enhanced Organisational Performance (OP). Therefore sensing the future becomes essential to compete in the present. Hypercompetitive businesses are increasingly requiring the need for more rapid and sophisticated information and data analysis. This challenges management accounting’s role in effectively supporting the management decision making process. The emerging area of business analytics can potentially extend the domain of management accounting to the comprehension of business dynamics and provide more solid inputs for managing its performance. Since the mid-eighties of the last century, management accounting has continuously evolved by expanding its scope and control objects. As a consequence of an increased and more aggressive competition, management accounting has indeed broadened its domain from conventional financial reporting and control task to an essential complement for the strategic decision making process (IMA, 2008). Specifically, management accounting has extended its focus to the identification of the drivers of financial performance, both internal and external to business. New and revolutionary non-financial metrics and approaches were added to the set of management accounting tools, with results that are still under investigation among theory and practice (Silvi et al., 2008).

In these days of high competition, virtually no one in business makes a decision without acquiring the relevant information. The quality of the decisions taken would depend on the quality of the information obtained. Therefore, management accounting would aid quality decision making, if management accounting information is supplied at the right time to the users of the information (Simmonds, 1981). Management accounting and its co-ordination with organisational strategy, is also sometimes known as strategic management accounting or strategic cost management (Cinquini & Tenucci,2009; Carmen & Corina,2009; Shank ,2007; Bromwich, 1990; Bromwich & Bhimani, 1994; Johnson & Kaplan, 1987; Miller & O'Leary, 1994; Roslender, 1996; Kaplan & Norton, 1992, 1996; Roslender & Hart, 2002a, 2002b, 2003; Anderson, 2007; Cadez & Guilding, 2007; Langfield-Smith, 2008).

While the linkages of Organisational Strategy(OS) with Management Accounting Practices (MAP) continues to be of considerable interest to academic accountants, it still suffers from a scarcity of empirical research especially in the developing countries' or Less Developed Countries'(LDCs) context and settings (Woods et al., 2012; Islam & Hu, 2012; Abugalia, 2011; Tuan Mat, 2010; Leftesi, 2008; Alrawi & Thomas, 2007; Joshi, 2001; Anderson & Lanen, 1999). Deeper understanding of management accounting practices, however, is still evolving as both academia and practitioners search for ways and means to understand the impact of Management Accounting Practices (MAP) on Organisational Performance (OP).

The importance of growth in the manufacturing sector for the progress of the economy is a fact known to all. Growth in the real sector has been low in our country comparing to the advanced countries. Rapid changes in business environment happening in India due to orientation towards a market economy and the new government policies provided the scope for enhanced growth and transforming India into a competitive manufacturing hub and an export base. Manufacturing has a special hold on the public imagination and for good reason. The transition from agriculture to manufacturing is still the route to higher productivity and rising living standards for developing economies. In advanced economies, manufactured goods stand as the tangible expression of innovation and competitiveness (McKinsey, 2012).

In most advanced economies in the West, Europe and Asia, the manufacturing sector plays an important role in the economic growth process. Thus an analysis of growth in the manufacturing sector and its role in the growth of the economy is significant. Based on the distinguishing features of market size, access to modern technology for high- tech manufacturing, supply chain logistics and information technology, regulatory and investment environment and infrastructure, the Indian business setting is quite different from the advanced countries like USA, UK, Japan and Australia. Even though much research in the area of Management Accounting Practices (MAP) has been done in these countries, because of the differences mentioned above, empirical evidence obtained from the research in these countries cannot be generalised in the Indian context. Moreover, the fast penetration of information technology in manufacturing industries in India has significantly altered the technological landscape in the country.

An increase in global competition and changes in technology were the two main contingent factors that affected management accounting practices in South Africa (Waweru et al., 2004). Apart from these external organisational factors, previous studies also found that contextual variable factors inside the organisations also have linkages to the Management Accounting Practices (MAP). As suggested by Moores and Yuen (2001), support from strategies and structures are important to ensure consistency in the functioning of an organisation. Thus this study endeavours to contribute to the existing literature of management accounting research predominantly from Indian perspective, India being a rapidly developing country, by explaining how manufacturing business enterprises adopt innovative Management Accounting Practices (MAP) to improve organisational performance. The significance of the study stems from the fact that the case of India would provide an excellent ground to test the selected critical contingency variables in the study, for application of Management Accounting Practices (MAP).

1.4 Definitions of Management Accounting

Management accounting is concerned with the provisions and use of accounting information to managers within organisations, to provide them with the basis in making informed business decisions that would allow them to be better equipped in their management and control functions. Unlike financial accounting information, management accounting information is used within an organisation "typically for decision-making" and is usually confidential and its access available only to a select few.

Management accounting is a technique of presenting accounting information to the various levels of management in order to enable it to perform its functions of planning, control and decision making more efficiently. By conveying pertinent accounting data in time and at less cost, the management accounting system assists management in the formulation of policy, efficient execution of the same, control of performance and decision-making (Iyengar, 2000).

According to the Chartered Institute of Management Accountants (CIMA, UK) - Management Accounting is the process of identification, measurement, accumulation, analysis, preparation, interpretation and communication of information used by management to plan, evaluate and control within an entity and to assure appropriate use of and accountability for its resources. Management accounting also comprises the preparation of financial reports for non-management groups such as shareholders, creditors, regulatory agencies and tax authorities. The CIMA (UK) views management accounting as an integral part of management which requires the identification, generation, presentation, interpretation and use of information relevant to:

1. Formulating business strategy;
2. Planning and controlling activities;
3. Decision-making;
4. Efficient utilisation of resources;
5. Performance improvement and value enhancement.

Management accounting combines accounting, finance and management with the leading edge techniques needed to drive successful businesses (cimaglobal.com).

The American Institute of Certified Public Accountants (AICPA) states that management accounting practice extends to the following three areas:

- Strategic Management - advancing the role of the management accountant as a strategic partner in the organisation.
- Performance Management - developing the practice of business decision-making and managing the performance of the organisation.
- Variable costing - contributing to frameworks and practices for identifying, measuring, managing and reporting risks to the achievement of the objectives of the organisation.

Management accounting is concerned with the provisions and use of cost accounting information to managers within organisations, to provide them with the basis to make informed business decisions that will allow them to be better equipped in their management and control functions. From different significance – management accounting information is used within an organisation, typically for decision-making (aicpa.org).

"Management accounting is a profession that involves partnering in management decision making, devising planning and performance management systems, and providing expertise in financial reporting and control to assist management in the formulation and implementation of an organisation's strategy" (imanet.org). This definition explains the relationship of management accounting with the formulation and implementation of organisational strategy in addition to decision making, performance measurement and financial reporting. The basic purpose of accounting information is to help users to make decisions. Management accounting is the branch of accounting that produces information for managers and forms an important integral part of the strategic process within an organisation (imanet.org).

The primary task of management accounting is to redesign the entire accounting system so that it may serve the operational needs of the firm. It provides definite accounting information, past, present or future, which may be used as a basis for management action. Management accounting is management oriented therefore, its study must be preceded by some understanding of what managers do, the information managers need, and the general business environment.

Management accounting systems play a vital role in helping managers of complex, hierarchical organisations to plan and control their operations. A superb management accounting system may not guarantee competitive success, particularly if companies do not have good products, efficient operating processes or effective marketing and sales activities. But an ineffective management accounting system, producing delayed, distorted or too highly aggregated information, can easily undermine the efforts of companies with excellent research and development, production and marketing activities. The challenge is to develop Management Accounting Practices (MAP) that support the basic managerial tasks of organising, planning and controlling operations to achieve excellence throughout the organisation. The management accounting system cannot be viewed as a system designed by accountants for accountants. The 100-year history from 1825 to 1925 provides evidence on the necessity for parallel development of new Management Accounting Practices (MAP) to support the company's innovations in production, marketing and organisational design. Management accounting has shifted from being the historical scorekeeper to providing information vital for operational and strategic decisions and for motivating and evaluating organisational performance (Kaplan & Norton, 2004).

1.5 History of Accounting

The history of accounting throws light on economic and business history generally, and may help us in better prediction of what is on the horizon as the pace of global business evolution escalates (Botes, 2005). In addition to providing detailed knowledge of accounting and commercial practice, further review of early accounting texts can offer insight into the level of theoretical awareness at the time of their publication (Lloyd, 2002).

The Statements of the Association of Chartered Certified Accountants and Lloyd highlights the importance of learning the history of accounting so as to understand the development of accounting in future. A discussion on management accounting should start with glimpses of financial accounting as these are closely interdependent (Botes, 2005). The accounting practice was originated many centuries ago and can be summarised with reference to particular events in different parts of the world. The history of accounting profession is fundamentally based on the introduction of the double entry book keeping principle (Botes, 2005). Table 1.1 narrates the most important historic events before and after the introduction of the double entry system. The contents of the Table 1.1 were adopted from Botes (2005) and modified to include the practices in ancient India which were not found in her work.

Table 1.1: Summary of important historic events before and after the introduction of the double entry accounting system

Year	Period	Event
3500 BC –2000 BC	India	Arthshastra by Chanakya Manusmriti
	Mesopotamia	Code of Hammurabi Price quotes to merchants
3000 BC –1100 AD	Ancient Egypt	Taxes to the king Use of papyrus
	China	Evaluation of efficiency of government programs
	Greece	Introduction of coined money
	Rome	Cash book for household expenses
1130 AD –1485 AD	Medieval England	Feudal system (real estate, and taxes on real estate) "The Domesday Book" " The Great Role of the Exchequer"
1494 AD –1700 AD	The Renaissance	Luca Pacioli's double entry system Littleton's seven factors
1700 AD –1950 AD	Before the First Management Accounting Revolution	No new contributions to double entry accounting Particularly barren period for contributions to management accounting
1950 AD –1980 AD	First Management Accounting Revolution	Direct costing Mathematics
1980 AD –1999 AD	Second Management Accounting Revolution	Measurement Control

***Source:** Botes (2005,p.17)

1.5.1 Major Purposes of Accounting Systems

The accounting system is the principal – and the most credible - quantitative information system in almost every organisation.

This system should provide information for five broad purposes as given in the following Table 1.2. The regulatory aspect against Purpose-5 was modified to include the Indian regulatory agencies.

Table 1.2: Major purposes of accounting systems*

Purpose-1	Formulating overall strategies and long-range plans	This includes new product development and investment in both tangible (equipment) and intangible (brands, patents, or people) assets, and frequently involves special purpose reports.
Purpose-2	Resource allocation decisions such as product and customer emphasis and pricing	This frequently involves reports on the profitability of products or services, brand categories, customers, distribution channels and so on.
Purpose-3	Cost planning and cost control of operations and activities	This involves reports on revenues, costs, assets and liabilities of divisions, plants and other areas of responsibility.
Purpose-4	Performance measurement and evaluation of people	This includes comparisons of actual results with planned results. It can be based on financial or non-financial measures.
Purpose-5	Meeting external regulatory and legal reporting requirements	Regulations and statutes typically prescribe the accounting methods to be followed here. Consider financial reports that are provided to shareholders who are making decisions to buy, hold or sell shares in the company. These reports should follow generally accepted accounting principles as heavily influenced by regulatory bodies such as the Ministry of Corporate Affairs and Security Exchange Board of India.

***Source:** Horngren et al.(2007,p.2)

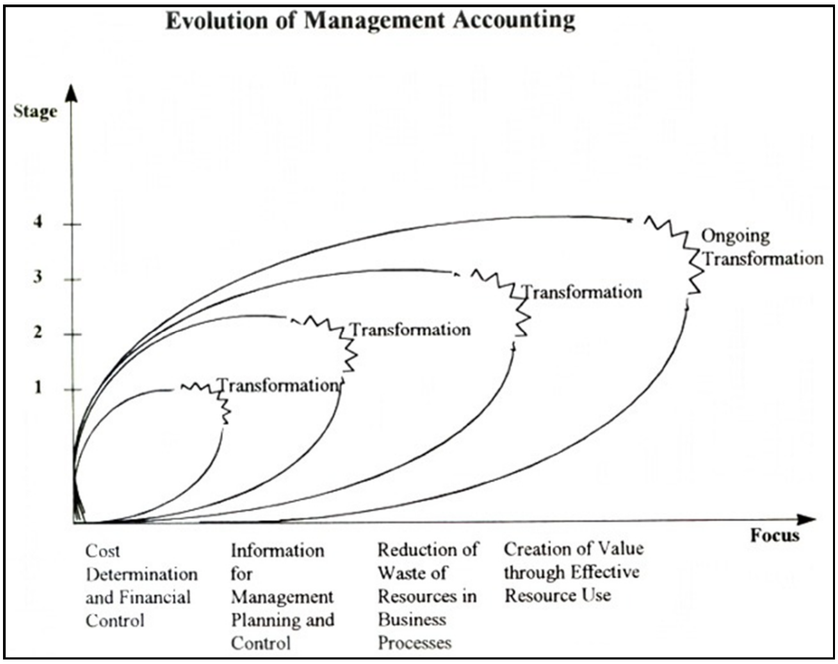
A distinction is often made in practice between management accounting and financial accounting. Management accounting measures and reports financial information as well as other types of information that assist managers in fulfilling the goals of the organisation. It is thus concerned with purposes 1-4 mentioned above. Therefore Management Accounting is quite often known as Cost and Management Accounting as Cost Accounting is a part of Management Accounting. Financial accounting focuses on external reporting that is guided by Generally Accepted Accounting Principles (GAAP). It is thus concerned with purpose 5.

Each of the purposes stated here may require a different presentation or reporting method. An ideal data base for presentations and reports (sometimes called a data warehouse) must be a detailed one and would cut across business functions. Accountants combine or adjust (slice and dice) these data to answer the questions from particular internal or external users (Horngren et al., 2007).

1.5.2 IFAC Model of Management Accounting Evolution

According to International Federation of Accountants (IFAC), the following Model would help to systematically interpret management accounting evolution, management accounting concepts, development stages and economic factors that formed it (IFAC, 1998).

Figure 1.1 IFAC model of management accounting evolution*



***Source:** IFAC (1998) adopted from Abdel-Kader & Luther (2006,p.4)

Management accounting evolution model includes four fundamental stages as explained in the following paragraphs:

1. Cost determination and financial control, stage until 1950.

Following factors had influence in management accounting methods development: (1) strong economic position of western countries that encouraged international demand, for its products, (2) relatively weak competition, (3) low attention to quality, (4) large-scale production. The attention is directed to determine costs and financial control of processes.

2. Information for management planning and control, from 1950 to 1965.

During this stage, the main purpose was to distinguish management accounting information for planning management processes and controlling them. Decision analysis and responsibility accounting methods were formed. This stage is characterized by manufacturing process and company's internal analysis.

3. Reduction of waste of resources in business processes, from 1965 to 1985.

Global competition was increased due to Japan's economic progress, caused changes in international trade. Aspiration to accommodate new business environment, became main priority for companies. Competition was encouraged by technological advantage in manufacturing processes. Companies started seeking better quality and costs reduction, at the same time.

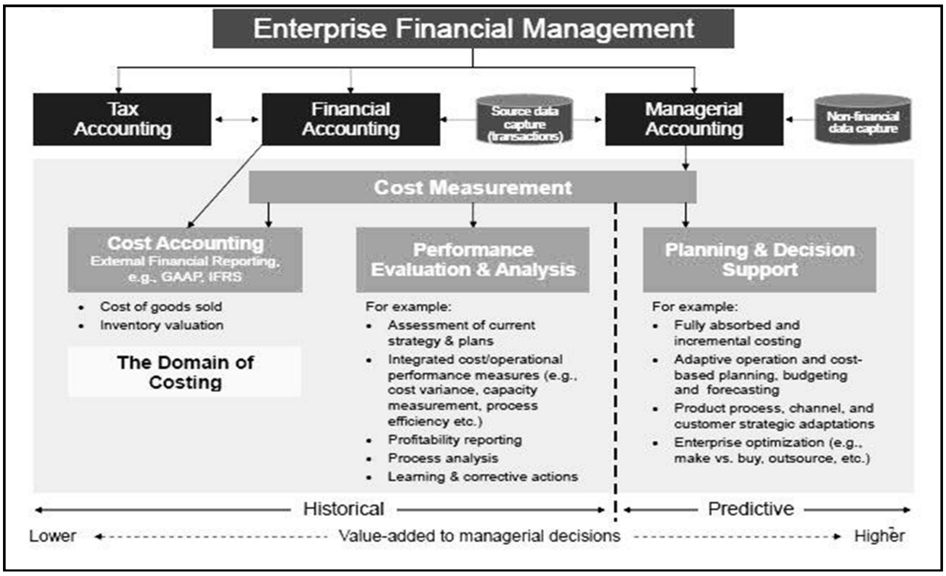
4. Creation of value through effective resource use, from 1985 to 2000

During this stage, companies faced major business uncertainty and technological innovations. Therefore companies started implementing management accounting methods, which assess economic value. IFAC model became a tool, helping to trace and organise management accounting methods by their advancement levels.

1.5.3 Evaluating and Improving Costing in Organisations

The International Federation of Accountants (IFAC) definition of enterprise financial management embraces three broad areas: cost accounting; performance evaluation and analysis; planning and decision support. Managerial accounting is associated with higher value and more of predictive information as shown in the Figure 1.2 below. It also indicates the futuristic or predictive nature of management accounting.

Figure 1.2 Evaluating and improving costing in organisations *

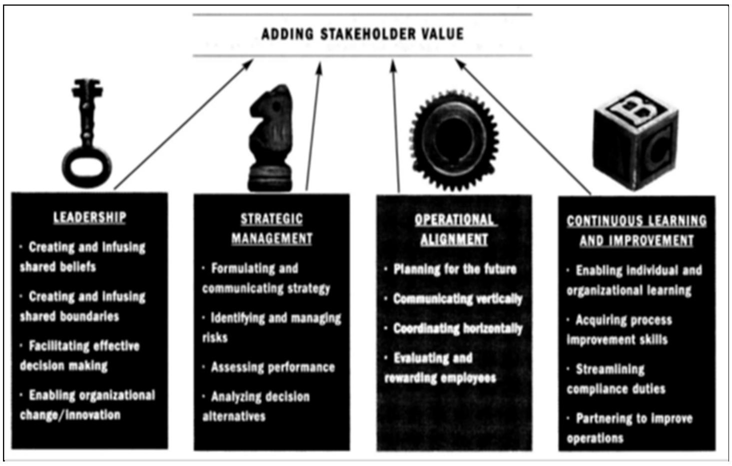


***Source:** IFAC (2009,p.7)

1.5.4 Four Pillars of Management Accounting Framework

The management accounting framework of Peter C Brewer (2008) as shown in the Figure 1.3 summarises that the ultimate responsibility of management accountants is adding shareholder value. The framework also depicts how management accountants add shareholder value – by providing leadership, by supporting a company's strategic management efforts, by creating operational alignment throughout an organisation and by facilitating continuous learning and improvement.

Figure 1.3 Four pillars of managegement accounting framework*



***Source:** Brewer (2008,p.28)

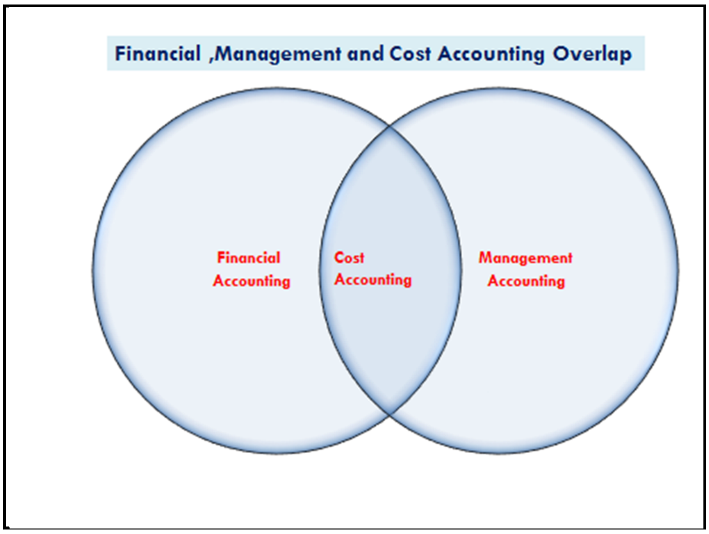
Management Accounting is first and foremost about managing internal operations to optimise organisational performance. It is to be recognised that rules-based, compliance oriented activities are not the focal point of management accounting (Brewer, 2008).

Given the above, one broadly held view of the development of the accounting and finance profession pathway is that financial accounting is a stepping stone to management accounting. Consistent with the perception of value creation, management accounting helps to drive the success of the business, while strict financial accounting is more of compliance and historical in nature. In India, the provisions of section 148 (1) of Companies Act of 2014 (earlier section 233 (B) of Companies Act of 1956) are applicable to certain class of companies which have to maintain the cost accounting records as per the cost accounting record rules formulated by the Cost Audit Branch of the Ministry of Corporate Affairs, Government of India, thus making it mandatory for certain class of companies.

1.6 Interdependence of Financial Accounting, Cost Accounting and Management Accounting

Although financial accounting and management accounting constitute two different fields of study, one cannot exist without the other. In order to understand this interdependence, the fields are defined and the relevant functions of each in the day-to-day business activities. Cost accounting is a part of management accounting and it provides cost data for inventory valuation for finalisation of Profit and Loss Accounts and the preparation of Balance Sheet under financial accounting, thus integrated to the financial accounting system. Cost accounting measures and reports financial and other information related to the organisation's acquisition or consumption of resources. It provides information for both management accounting and financial accounting and acts as a subset (Raiborn et al., 1993) which is depicted in Figure 4.1.

Figure 1.4 Financial Accounting, Management Accounting and Cost Accounting Overlap*



***Source:** Raiborn et al.(1993,p.13)

Management accounting is an applied science to produce theoretically grounded solutions for practical purposes (Mattessich, 1995; Labro &

Tuomela, 2003). The rate of change in the practice of and research on management accounting seems to be on the rise (Kasanen et al., 1993). Many organisations in the current competitive environment are endeavouring to modify their prevailing, or implementing new state-of-the-art management accounting practices based on novel management accounting ideas, practices, systems, configurations, methods, and information.

The Table 1.3 below would explain the difference between Financial Accounting and Management Accounting.

Table-1.3: Difference between Financial Accounting and Management Accounting*

FINANCIAL AND MANAGEMENT ACCOUTNING DIFFERENCES		
	Financial Accounting – Highly Standardized	**Management Accounting - Highly Customized**
Primary users	External	Internal
Primary organisational focus	Whole	Parts
Information characteristics	**Must be**	**May be**
	Historical	Forecasted
	Quantitative	Quantitative or Qualitative
	Monetary	Monetary or non-monetary
	Accurate	Timely
Overriding criteria	**Generally Accepted Accounting Principles**	**Situational Relevance (Usefulness)**
	Consistency	Situation relevant (useful)
	Verifiability	Benefits in excess of cost
	Uniformity	Flexibility
Record Keeping	Mandatory	Combination of formal & informal and Mandatory in certain cases.

***Source:** Raiborn et al.(1993,p.14)

It is obvious from the Table 1.3 that although financial accounting and management accounting are closely associated, financial accounting predominantly provides extractions of past financial transactions, whereas management accounting shows a strong futuristic orientation. Management accounting is not bound by externally enforced reporting rules (e.g. international financial reporting standards). It would make available more detailed business information than financial accounting, and is more multidisciplinary than pure financial accounting (Botes, 2005).

Many organisations are attempting to change their existing management accounting practices or trying to implement innovative practices based on new management accounting ideas, structures, processes and information systems for serving the information requirements of practicing managers. Much of this innovation and implementation concentrate on new costing or performance measurement systems. These developments offer new opportunities for innovative management accounting research in our country and provide scope for integration of existing accounting knowledge and modern practices.

1.6.1 Management Accounting under an Enterprise Resource Planning (ERP) System

An organisation uses many processes to achieve its objectives, as illustrated in Figure 1.5 below. Three processes are directly related to creating and delivering products and services. They are *buy*, *make*, and *sell*. Organisations use specific terms to identify these processes.

The procurement process (*buy)* refers to all of the activities involved in buying or acquiring the materials used by the organisation, such as raw materials needed to make products. The production process (*make*) involves the actual creation of the products within the organisation. Whereas the production process is concerned with acquiring needed materials *internally* (by making them), the procurement process is concerned with obtaining needed materials *externally* (by buying them). Each is appropriate for different types of materials. Finally, the fulfillment process (*sell)* consists of all the steps involved in selling and delivering the products to the organisation's customers (Magal & Word, 2012).

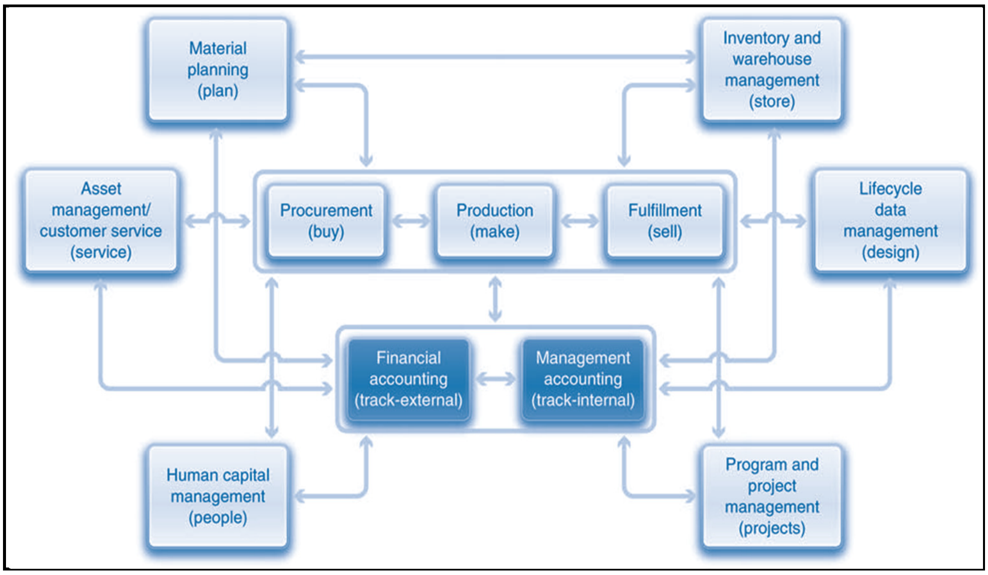
Closely related to buying, making, and selling are four processes used to *design*, *plan, store,* and *service* products. Once again, organisations use specific terms for these processes.

- The lifecycle data management process (*design*) supports the design and development of products from the initial product idea stage through the discontinuation of the product.
- The material planning process (plan) uses historical data and sales forecasts to plan which materials will be procured and produced and in what quantities.
- The inventory and warehouse management (IWM) process (*store*) is used to store and track the materials.
- The asset management and customer service processes (*service*) are used to maintain internal assets such as machinery and to deliver after-sales customer service such as repairs. Going further, two support processes are related to *people* and *project.*

Human Capital Management (HCM) processes (*people*) focus on the people within the organisation and include functions such as recruiting, hiring, training, and benefits management. Project management processes (*projects*) are used to plan and execute large projects such as the construction of a new factory or the production of complex products such as airplanes. All these processes have an impact on an organisation's *finance.* This brings us to the last two processes, which *track* the financial impacts of processes.

Financial accounting (FI) processes (*track-external*) track the financial impacts of process steps with the goal of meeting legal reporting requirements- for example, Departments of Direct and Indirect Taxes or the Securities Exchange Board of India (SEBI). Management accounting or controlling (CO) processes (*track-internal*) focus on internal reporting to manage costs and revenues (Magal & Word,2012).

Figure 1.5: Key Business Processes in Manufacturing*



***Source:** Magal & Word (2012,p.6)

1.7 Management Accounting Systems and Institutions in India

Comparative national management accounting is a young discipline. A recent survey of management accounting practice in Europe reveals five major issues that contrast across national management accounting practice. In the light of this , a survey of Spanish management accounts was undertaken and found that there was declining use of official government guidance on management accounting; the emerging management accounting profession was qualified by university education, and was not generally involved in any professional body; although the literature indicates a strong Anglo - American influence on modern Spanish management accounting, it was found a strong, previously unreported, German influence; a wide range of innovative management accounting approaches have been tried; there was a move towards a planning objective as the focus of the management accountant's work (Blake et.al., 2000).

1.7.1 The Institute of Cost Accountants of India (ICAI-CMA)

The Institute of Cost Accountants of India (ICAI) (the erstwhile Institute of Cost and Works Accountants of India, the ICWAI) was established in 1944 as a company under the Indian Companies Act by the pioneers in the cost accounting in the country with such objects as developing the profession of cost accountancy and imparting training in the subject etc. The Institute's consistent and determined efforts to promote the growth of the cost accountancy profession and the valuable services rendered by it to the industrial and commercial organisations have generated the feeling that cost accountancy should find its proper place in every industrial and commercial unit in the country. (ICAI-CMA, 1987). In 1954, the Estimates Committee of Parliament, in its 9th report, laid great emphasis on cost accounting in public sector industries and recommended creation of a machinery for proper regulation of the profession of cost accountancy in India. A similar emphasis on the importance of cost accounting was also laid by the Public Accounts Committee of the Parliament on different occasions. (Statutory cost audit – Social Objective published by the Institute of Cost Accountants of India, 1987). Taking into account of these recommendations and fully appreciating the importance of cost accounting, the Central Government ultimately gave the Institute statutory recognition in 1959 through an Act of Parliament –the Cost and Works Accountants Act of 1959 to regulate the profession of cost accountancy. As a consequence, the Chartered Accountants Act of 1949 which was originally sought to regulate the profession of accountancy was amended confirming it only to the profession of Chartered Accountancy (ICAI -CMA, 1987). Thus the cost and management accounting came under the purview of the Institute of Cost Accountants of India and the financial accounting under the purview of the Institute of Chartered Accountants of India. The members of the Institute of Cost Accountants of India are entitled to use the pre-fix CMA which stands for Cost and Management Accountant. Surprisingly, for unknown reasons, the Institute of Cost Accountants of India does not include the term "Management Accounting" in its name although both the Chartered Accountants Institute and Cost Accountants Institute offer management accounting qualifications and award their own diplomas. Currently, the general practice worldwide is to have CMA or CIMA type designations (Khanna, 2011 as cited in Previts et al., p.122, 2011).

1.7.2 Indian Cost Accounting Service (ICAS)

The Central Government has created an All-India cadre known as Indian Cost Accounts Service, at par with Class-I services of the Central Government to advise the government on various fiscal matters. Office of Chief Adviser Cost (CAC) is responsible for advising the Ministries and Government Undertakings on Cost Accounting matters and to undertake cost investigation work on their behalf. Office of Chief Adviser Cost is one of the divisions functioning in the Department of Expenditure. It is a professional agency staffed by Cost/Chartered Accountants.

Chief Adviser Cost Office, is dealing with matters relating to costing and pricing, industry level studies for determining fair prices, studies on cost reduction, cost efficiency, appraisal of capital intensive projects, profitability analysis and application of modern management tools evolving cost and commercial financial accounting for Ministries/ Department of Government of India.

It was set up as an independent agency of the Central Government to verify the cost of production and to determine the fair selling price for Government Departments including Defense purchases in respect of the cases referred to. The role of the Office was further enlarged and extended to fixing prices for a number of products covered under the Essential Commodities Act, such as, Petroleum, Steel, Coal, Cement etc. under the Administered Price Mechanism (APM). In the post-liberalisation Era, the office is receiving and conducting studies in synchronisation with the liberalisation policy of the Government in addition to the traditional areas of cost-price studies.

1.7.3 Statutory Cost Audit Branch, Ministry of Corporate Affairs, and Government of India

Under the rules 5 (1) and 6(4) of the Companies (Cost Records and Audit) Rules of the Companies Act of India, 2014 (earlier section 209(1) of the Companies Act of 1956), certain industries in the core sectors are required to comply with Statutory Cost Audit. This Statutory cost audit could be undertaken only by a qualified member of the ICAI-CMA who holds a valid certificate of practice. The members of this Institute can prefix CMA with their names which stand for Cost and Management Accountant subject to the membership regulations of the Institute.

1.8 Management Accounting -Global practices

The state of art of Management Accounting Practices (MAP) in any country is contextual true to the nature of the subject. Management Accounting Practices (MAP) have to fit into a context appropriately, if it has to be meaningful as well as useful. In this regard relevant practice is more appropriate than best practice. In a working paper submitted by Amat et al., (2000), the following have been listed as the key drivers of variations in management accounting practices across nations:

Table 1.4: Key drivers of Management Accounting Practices across nations*

1	Government	6	Academics
2	Taxation policies	7	Ownership of the firm
3	Price Controls	8	Bonus schemes
4	Protection and competition	9	Inflation, and
5	The CMA profession	10	Other country influences.

***Source:** Amat et al.(2000,p.5-13)

Governments of various countries have traditionally played a major role in the evolution of cost accounting practices. Policy intervention, administered pricing, social pricing, funding plans and so on and so forth could be the reasons for such a role. As a result they have put forward detailed requirements on cost accounting in judicial or even a quasi-judicial form. For example, USA had set up the Cost Accounting Standard Board to deal with the variations in war claims that came up during the Vietnam War. Greece had hired in early 1980 teams of cost accountants to make product cost calculations at a minor level to prevent profiteering (Ministry of Corporate Affairs (MCA), 2008).

Taxation laws in various countries exerted a major influence on the adoption of cost accounting standards. Germany had a tradition of binding detailed cost calculations even through the accounting link. The Finnish tax laws prescribed the valuation of inventory on variable costing basis and thus promoted the marginal cost accounting practices in the country. In Italy, a national propensity for tax evasion has given rise to distrust particularly in small firms leading to prescription of cost records which may be accessed by the authorities to detect tax evasion (MCA, 2008).

1.9 Statement of the Problem

Across the world, Management Accounting Practices (MAP) are gaining importance than ever before in the perception of practicing managers and policy makers for better organisational performance. A preliminary study conducted by way of discussions with Senior Finance & Accounting Mangers of selected manufacturing companies in India revealed that adoption of best Management Accounting Practices (MAP) are limited in this context. As most of the MAP tools are developed in the advanced countries, the adoption of these tools in the Indian context requires further examination on its feasibility in Indian environment. An ideal scenario would be proper restructuring and adoption of advanced Management Accounting Practices (MAP) and effective implementation of those practices to enhance organisational performance. Hence this study is proposed to explore the level of adoption of best management accounting practices by the Finance and Accounting Managers in the manufacturing business enterprises in India. The study also aims to identify critical variables in the framework that will align with the Management Accounting Practices (MAP) and other environmental and organisational factors to improve the organisational performance.

Based on the contingency theory, it can be argued that organisations are likely to perform effectively if they implement Management Accounting Practices (MAP) that suit their organisation's situational factors in a competitive environment. This suggests a positive relationship between Management Accounting Practices (MAP) and organisational factors. In their study, Baines & Langfield-Smith (2003) measured organisational factors by means of managers' perception over a three-year period. This study provides a more detailed survey to capture the time lag of five years as it is considered normal for management accounting practices to stabilise, especially in an Enterprise Resource Planning (ERP) environment and to deliver the required information on a real time basis from go live. Kober, Ng & Paul (2007) studied the interrelationship between management control systems and strategy in Australian organisations. Their analysis confirmed the existence of a two way relationship between management control systems and strategy, whereas, Chenhall & Langfield-Smith (1998b) examined how combinations of management techniques can enhance the organisational performance of organisations, under particular strategic priorities. This study extends these contributions by investigating how the configuration of Management Accounting Practices (MAP), Organisational Strategy (OS) and Organisational Design (OD) can improve organisational performance, mediated through Management Accounting Practices (MAP). Therefore, a theoretical advance in knowledge is attempted.

1.10 Objectives of the Research

Keeping the above observations in the backdrop, the following objectives were finalised for the study:

1. To explore the type, nature and use of Management Accounting Practices (MAP) followed in the manufacturing business enterprises in India.
2. To examine the structure and composition of critical variables adopted in the study that lead to Organisational Performance (OP) under Management Accounting Practices (MAP) in the national context relevant to manufacturing sector.
3. To contribute to the understanding of Management Accounting Practices (MAP) among Indian companies in the manufacturing sector.

4. To examine the linkages among the critical variables on Management Accounting Practices (MAP) leading to better organisational performance by estimating the structural model.

1.11 Scope of the Research

The scope of the research is to examine the trends with regard to Management Accounting Practices (MAP) exclusively for the manufacturing sector in the Indian context. This study attempts to explore the influence of certain selected critical variables, identified from prior empirical evidences, expert views and based on the personal experiences of the researcher. Thus six variables are considered as critical and the scope of the study is limited to understand the behaviour of these variables only, under the contingency theory framework. The research also considers the empirical evidences available till September 2014 when the primary data was collected.

1.12 Expected Outcome of the Study

The study envisages to clearly examine the linkages among critical variables identified to have impact on the organisational performance of the firm mediated through Management Accounting Practices (MAP). Hence it is expected that findings of the study can give greater insights to the practicing Finance & Accounting Managers to understand the multiple spectrum of benefits offered by effective management accounting best practices and to think about the next best practices in manufacturing firms. It is also expected that the findings of the study can offer a new outlook for the manufacturing enterprises in deploying emerging management accounting best practices for creating competitive advantage for these enterprises, which will help them in developing better strategies aimed at better organisational performance.

Further, this study attempts to provide incremental contributions to the literature on management accounting practices by explaining how organisations implement management accounting innovations to improve organisational performance, thus providing guidance for decision makers, professionals and practitioners. By observing the performance implications of the possible configuration of Management Accounting Practices (MAP) and organisational factors in response to the environmental factors, the findings of this study will make a significant contribution to management accounting theory and literature.

1.13 Chapter Scheme

After introduction and the background of the study in Chapter-1, the remainder of the thesis is organised as follows. Chapter-2 draws extensively on previous research to identify the theoretical foundations for this study. Six core areas are covered in this chapter. At first, the foundation of contingency theory was being laid out. Then the principal areas of literature with respect to the six variables which form the theoretical framework – competitive environment, manufacturing technology, organisational design, organisational strategy, management accounting practices and organisational performance are presented. The theoretical framework, conceptual model, scale development, measurement strategies and hypotheses for the study are explained in Chapter-3.The adoption of the research methodology and research instruments are explained and justified in Chapter-4. The discussion of findings of the pilot study, data analysis and hypotheses testing in this study are presented in Chapter-5. Finally, the detailed discussion of the findings is presented in Chapter-6, together with the suggestions and conclusions, its contribution to the body of knowledge in this area, limitations, and also a few suggestions for future research.

Researching the practice of management accounting is interesting at the same time challenging, because management accounting is a set of practices that are often loosely combined with one another and inconsistent across both time and space. A multiplicity of ways of researching management accounting practice also have begun, changed over time, and have been spread unevenly around the world. Even management accounting terminology is neither same nor lasting, with the term ''management accounting'' itself apparently look as if in the 1930s and 1940s in the United States of America after many of the individual practices had already developed.

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Chapter

2 REVIEW OF LITERATURE

Contents

2.1 Introduction

The first chapter laid the foundation and the justification for this study. This chapter reviews the research literature on management accounting practices and its linkages with environmental and organisational factors with organisational performance. It also provides the basis for the design of the research conducted in terms of research methods used. This chapter is divided into six sections starting with the review of the prior literature with respect to the foundations of the contingency theory in management accounting, covering the contributions made by various scholars. The next section begins with the discussions about various studies in the Indian context and their contributions, followed by a detailed discussion of other studies about the external (environmental) factors and internal (organisational) factors as well. These studies had already explored the relationships among competitive environment, manufacturing technology, organisational strategy and design and management accounting practices, but in a different context and settings. Finally, the focus then shifts to the alignment of management accounting practices with organisational performance aspects.

The literature review is that part of research which endeavours to fill the gap in the domain of research by exploring the different variables that covers the nomological network of the study with reference to management accounting practices and organisational performance of the manufacturing sector in India. The nomological network for this study contained variables such as Competitive Environment (CE), Manufacturing Technology (MT), Organisational Strategy (OS), Organisational Design (OD), Management Accounting Practices (MAP) and Organisational Performance (OP). The first four variables mentioned above, in association with Management Accounting Practices (MAP) are assumed as capable of improving the performance of a manufacturing business enterprise. The scope of this chapter is to introduce the variables of interest identified in this study and to examine the nature of linkages among those variables identified from previous studies, based on contingency theory especially in the context of manufacturing sector. In this chapter an extensive literature review of relevant foundations for this study is undertaken. In determining the theoretical foundations relevant for this study, three key factors are taken into account, namely:

1) Research gap
2) Relevance of this study to the national context and
3) Review of literature

2.2 Research Gap

Every research is fundamentally an attempt to bridge certain gaps with regard to the knowledge pertaining to a subject or to understand the difference in perceptions about certain prevalent concepts among stakeholders about a problem under investigation.

Gaps were noticed in three major areas in the Indian context:

1. The knowledge gap with regard to the number of studies conducted in the domain of Management Accounting Practices (MAP) and its importance in developing countries particularly with reference to India.

2. Also, there are not many studies conducted to understand the difference in perception about the importance of Management Accounting Practices (MAP) between finance and accounting (F&A) managers in the developed and developing countries.
3. There is limited empirical research available which examine how the configuration of Management Accounting Practices (MAP) and organisational factors respond to the environmental factors to enhance organisational performance.

In this study, the perception gap was observed among practicing managers in developing countries. Most of the Management Accounting Practices (MAP) have been formulated in the west as a response to political, economic, social and technological changes in the west. Though they are formulated in the west, these innovations could be adopted in the Indian context with local variations. It was felt that the Finance and Accounting (F&A) Managers of developing countries like India do not have strong favourable perceptions towards the importance of the strategic dimension of the management accounting practices when compared to the practitioners of developed countries. This perception gap among Indian Finance & Accounting Managers could be catastrophic in our mission to become a global manufacturing hub through the 'Make in India' campaign, to give a boost to our manufacturing sector. Hence formulation and execution of effective strategies demand thorough exploration aimed at bridging this gap.

Further, in the literature review stage, the number of significant studies identified in the context of developing countries or Less Developed Countries (LDCs) especially in the Asian settings were relatively less and with respect to India there was only one. Hence contributing more content into the existing knowledge bank related to Management Accounting Practices (MAP) and its importance will always help in guiding the finance and accounting managers in the manufacturing sector of India, in enhancing the organisational performance of their business enterprises in future. In this effort, the researcher had conducted a detailed review of literature and also had discussions with experts and listed down certain critical variables as mentioned under Section 2.1 which actively take part in a theoretical framework that portray the formation of Organisational Performance (OP) under favourable perception of Management Accounting Practices (MAP) by the finance and accounting managers in the manufacturing sector in India. The essence of these efforts is presented here and the articles are arranged in the following Table 2.1 for a better understanding.

Table 2.1: Management Accounting in Less Developed Countries*

ASIA			
Sl.No	**Country**	**Number of papers**	**Authors and year of study**
1	Bangladesh	7	(Alam and Lawrence, 1994), (Alam, 1997), (Hoque, 1995), (Hoque and Hopper, 1994, 1997), (Rahman, and Scapens, 1986), (Uddin and Hopper, 2001)
2	China	17	(Bromwich and Wang, 1991), (Chalos and O'Connor, 2004), (Chan and Chow, 2001), (Chan et al., 2001), (Chu and Rask, 2002), (Chan and Lee, 1997), (Lin and Yu, 2002), (Firth, 1996), (Liu and Pan, 2007), (Maschmeyer and Ji-Liang, 1990), (O'Connor et al., 2004),(O'Connor et al., 2006), (Scapens and Yan,1993), (Scapens and Ben-Ling, 1995),(Skousen and Yang, 1988), (Yan and Gray, 1994), (Zhou,1988)
3	India	1	(Anderson and Lanen, 1999)
4	Indonesia	2	(Efferin and Hopper, 2007); (Marwata and Alam, 2006)
5	Malaysia	2	(Chun, 1996), (Tayles et al., 2007)
6	Pakistan	1	(Ansari and Bell, 1991)
7	Sri Lanka	5	(Alawattage and Wickramasinghe, forthcoming), (Jayasinghe and Wickramasinghe, 2007);(Wickramasinghe and Hopper, 2005); (Wickramasinghe et al., 2004a); Wickramsinghe et al., 2007)
8	Taiwan	1	(Lee, 2001)
9	Thailand	1	(Virameteekul et al., 1995)

***Source:** T.Hopper et al.(2008,p.37)

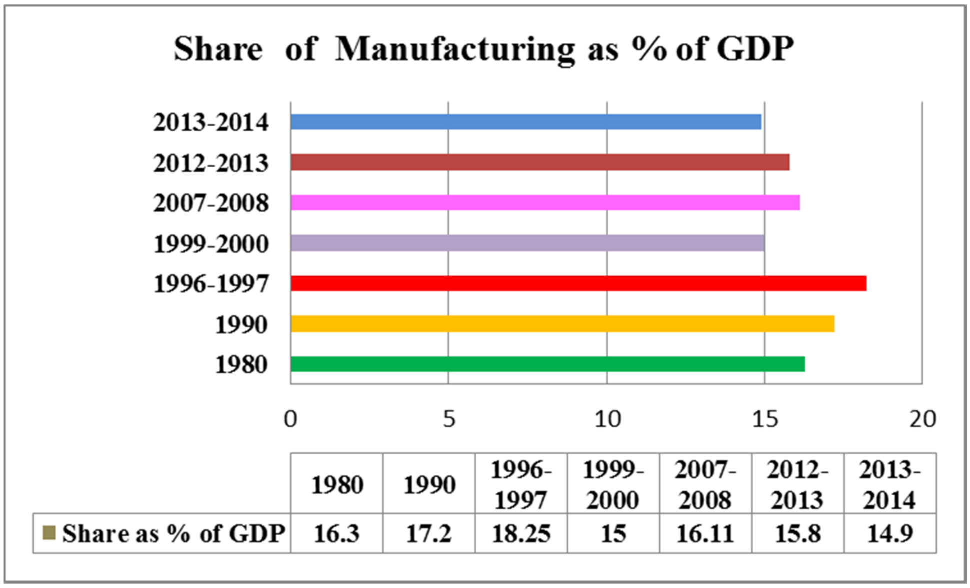
2.3 Relevance of this Study to the Indian Context

As mentioned earlier, there is a scarcity of empirical research especially in the context of developing countries in general and in the Indian settings in particular. Deeper understanding of management accounting practices, however, is still evolving as both academia and practitioners search for ways and means to understand the impact of Management Accounting Practices (MAP) on Organisational Performance (OP).

For several reasons changes in management accounting practices are likely to occur in manufacturing companies (Sulaiman & Mitchell, 2005). Manufacturing companies are exposed to changes in the manufacturing environment such as, changes in production cost structure (Innes & Mitchell, 1990) and new high technological manufacturing techniques (Kaplan & Atkinson, 1989). Due to the changes in the manufacturing environment, these companies are also commonly associated with innovation in management accounting practices, such as ABC, JIT and TQM (Smith et al., 2008). Furthermore, most prior studies on management accounting practices had also selected manufacturing companies in their survey (Abdel-Kader & Luther, 2008; Baines & Langfield-Smith, 2003; Cadez & Guilding, 2008a; Gerdin, 2005; Laitinen, 2006; Moores & Mula, 1993).

The critical importance of manufacturing sector to national development has made the Government of India take several important measures to rejuvenate this sector, particularly in the last one decade. However, there has not been any sign of the rejuvenation and the trend was also not positive. It may, however, be noted that the share of registered manufacturing in GDP has increased from about 9.8 per cent in 2004-05 to 11.2 per cent in 2012-13 and the share of unregistered manufacturing declined from 5.4 per cent to 4.5 per cent in 2012-13 (Cherunilam, 2015). The long term average growth of India's manufacturing sector was less than 7 per cent compared to 12 per cent of China. While India's manufacturing sector contributes barely 15 per cent to the GDP, with a share in world manufacturing of less than two per cent, manufacturing contributes more than one-third of the GDP of China which accounts for nearly 14 per cent of the world manufacturing – up from less than three per cent in 1991. In several other developing Asian countries like Thailand and Malaysia too, the manufacturing sector contributes more than 30 per cent of the GDP (NMCC, 2006). Thus, the ratio of India is only about half of those of several emerging economies. The following Figure 2.1 will provide a view of the contribution of the manufacturing sector to India's Gross Domestic Product (GDP) which was adopted from the National Manufacturing Competitiveness Council, Govt. of India, the National Strategy for Manufacturing, 2006 and Government of India, Economic Survey, 2013 – 14.

Figure 2.1: Contribution of manufacturing sector to India's GDP*



***Source:** Cherunilam (2015,p.8)

The strategies for accelerating growth of manufacturing in India in the 12th Five Year Plan and beyond, formulated by the Planning Commission, endorsed the objectives of the National Manufacturing Policy (NMP), viz., increasing manufacturing sector growth to 12-14 per cent over the medium term, to make it the engine of growth for the economy and contributing at least 25 per cent of the GDP by 2025 (Cherunilam, 2015). While India has the potential to emerge as a major manufacturing destination of the world, there are many challenges on the way and there are also several critical issues pertaining to the socio-cultural and ecological implications of the development strategies and tactics, including the covert objectives. Important ones include: technological deficiencies, ease of doing business in India, declining competitiveness, corruption, infrastructure, governance, national security, law and order, education, inflation and ecological impact. Goldman Sachs gave top priority to improving governance in their proposal of the Ten Things for India to achieve its 2050 Potential. According to Goldman Sachs, India's governance problems overarch all its other problems. Without better governance, delivery systems and effective implementation, India will find it difficult to educate its citizens, build infrastructure, increase agricultural productivity, and ensure that the fruits of economic growth are well-distributed (O'Neill & Poddar,2008).

Manufacturing management in India today is seen only in an operational framework, consisting of tools and techniques. Technology alone is regarded as the deciding factor for organising manufacturing function. Therefore, the only manufacturing policy embedded in the concept of Indian management was the maximisation of utilisation of manufacturing facilities and set-up. As a result, various important strategic decisions regarding manufacturing facilities like technology, layout, work organisation, etc. and other kinds of manufacturing infrastructures are taken on an ad-hoc basis. This state of affairs prevents the function from playing an active role in developing competitive advantages. At present, the Indian firm does not possess a focused operational policy with regard to manufacturing. There is a need for the Indian management to be made more aware of the strategic management framework of manufacturing and the role of management accounting practices to support the strategic initiatives.

After a decade into the 21st century, the role of manufacturing in the global economy continues to evolve. Over the next fifteen years, another 1.8 billion people will enter the global consuming class and worldwide consumption will nearly double to $64 trillion. Developing economies will continue to drive global growth in demand for manufactured goods, becoming just as important as markets as they have been as contributors to the supply chain. And a strong pipeline of innovations in materials, information technology, production processes, and manufacturing operations will give manufacturers the opportunity to design and build new kinds of products, reinvent existing ones and bring renewed dynamism to the sector (McKinsey, 2012). This industry was selected as it has the potential to be one of the most active and important contributor to the Indian economy.

As discussed under section 1.3 of the first chapter ,this study endeavours to contribute to the existing literature of management accounting research predominantly from Indian perspective as a rapidly developing country, by explaining how manufacturing business enterprises adopt innovative Management Accounting Practices (MAP) to improve organisational performance.

2.4 The Review of Literature for This Study

While attempting to understand Management Accounting Practices (MAP) and its linkages to selected environmental and organisational factors, researchers had used a number of exploratory frameworks of which contingency theory is more prevalent. The present research also uses a contingency theory framework which suggests that organisational systems and designs are a function of environmental and organisational factors (Chenhall, 2003; Gerdin, 2005; Haldma & Lääts, 2002; Cadez & Guilding, 2008a). This perspective emphasises the importance of proper alignment in using MAP for better organisational performance.

In the contingency perspective, researchers have attempted to investigate the factors that influence the adoption of MAP, by trying to answer questions on how environmental factors like Competitive Environment (Hoque, 2004; Govindarajan & Shank, 1992; Hope & Hope, 1995; Leftesi, 2008; Foster & Gupta, 1994; Simons, 1990; Libby & Waterhouse, 1996; Guilding & McManus, 2002; Hwang, 2005) and Manufacturing Technology (Granlund, 2011; Hald & Mouritsen, 2013; Dechow & Mouritsen, 2005; Haldma & Lääts, 2002) and organisational factors like Organisational Strategy (Hoque, 2004; Leftesi, 2008; Guilding & McManus, 2002; Hwang, 2005; Dent, 1990; Chenhall, 2003; Langfield-Smith, 2007; Shank & Govindarajan, 1992; Chenhall & Langfield-Smith, 1998; Cinquini & Tenucci, 2010; Cadez & Guilding, 2008b) and Organisational Structure (Hwang, 2005; Leftesi, 2008) would influence organisational performance mediated through management accounting practices.

Further the contingency theory judges that the degree and importance given to organisational performance are formed by organisational structure (Miles & Snow, 1994; Hwang, 2005), Organisational strategy (Hoque, 2004; Ittner &Larcker, 1997), Competitive environment (Govindarajan, 1984; Chenhall & Morris, 1986; Chong & Chong, 1997; Gul & Chia, 1994; Hoque & Hopper, 1997; Mia, 1993; Mia & Chenhall, 1994; Kohli & Jaworski, 1990) and the MAP adopted (Ittner &Larcker, 1997; Simons, 1990; Cadez & Guilding, 2008b; Baines & Langfield-Smith, 2003; Cravens & Guilding, 2001;

Mahama, 2006). Finally, the contingency perspective advocates association between the competitive environment and the strategy of the organisation (Hwang, 2005).

The review of relevant literature was done in three steps. At first, the contextualisation of the contingency perspective relating to Management Accounting Practices (MAP) was done and secondly, a summary of selected previous studies undertaken based on the contingency variables was made to justify the validity of present study. Thereafter, an overview of studies undertaken in other developing countries is also given. Finally, the prior review of literature was extensively done with regard to all the six variables selected in this study.

2.4.1 Overview of Contingency Theory in Management Accounting

The theoretical perspective of organisational behaviour under contingency theory emphasises how contingent factors such as technology and the task environment affected the design and functioning of the organisations. (Covaleski et al., 1996; Chenhall, 2003; Hwang, 2005; Cadez & Guilding, 2008a).

Organisational theories emphasise the fact that enhancement of organisational performance is an outcome of successful managerial decisions taken by the management (Raaij et al., 2003; Lee & Park, 2006). Accounting is the fundamental formal information system available to the management for decision making (Roslender & Hart, 2002a). This study focuses on the use of Management Accounting Practices (MAP) as an effective tool for enhancing organisational performance (Bromwich, 1990; Cadez & Guilding, 2008a; Sidhu & Roberts, 2008; Roslender & Hart, 2002b). It is argued in this study that organisations that systematically employ appropriate MAP would be able to initiate more effective managerial decision making, which in turn would lead to better organisational performance.

Contingency theory is paramount to explain how accounting systems might be affected by the alignment between environmental and organisational factors. The focus of contingency approach in examining these relationships is the perception of alignment of the organisational factors with environmental factors (Tuan Mat, 2010).

Donaldson (2001,p.7) defined "Contingency' as "any variable that moderates the effect of organisational characteristics on organisational performance."

Contingency theory suggests that a correct match between organisational characteristics to contingencies will improve organisational effectiveness (Morton & Hu, 2008). Management accounting researchers sought to explain management accounting practices using different elements of organisational theory (contingency theory, systems theory, institutional theory and organisational & behavioural decision theory). Within these sub-theories, contingency theory states that there is no 'one best' design for a management accounting information system, and it all depends upon the situational factors (Drury, 2008). The situational factors represent the contingent factors or contingent variables.

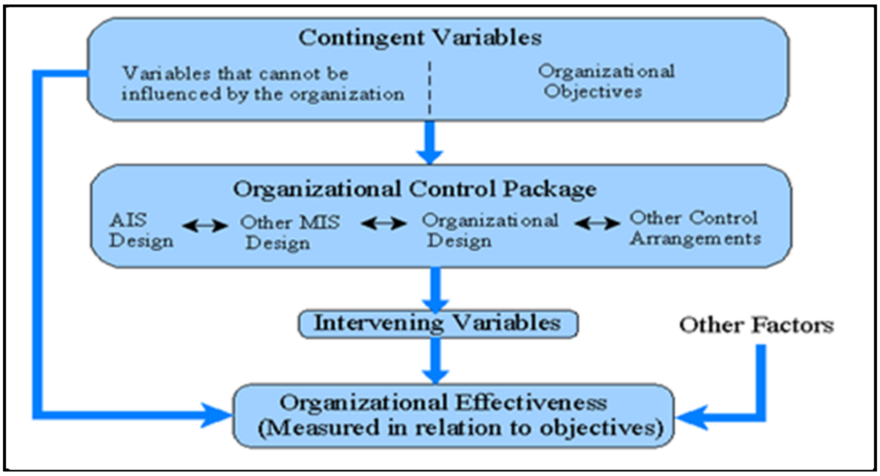
The "Contingency Theory" of organisations holds that the "optimum" organisation structure is primarily dependent on the external environment of the enterprise. Stable environmental conditions call for centralised structures, while a dynamic environment requires a decentralised structure. It was suggested that contingency theory is appropriate in the context of a developing country like India (Negandhi & Reimann, 1972).

In the following section, some of the major contingency theory contributions in the area of management accounting practices are discussed.

2.4.2 Otley's Contingency Framework

Original View of Contingency Theory from Otley (1980) in Ittner & Larcker (2001) is illustrated in the following Figure 2.2.

Figure 2.2: Otley's (1980) Contingency Theory Framework*



***Source:** Ittner and Larcker (2001,p.355) adopted from www.maaw.info

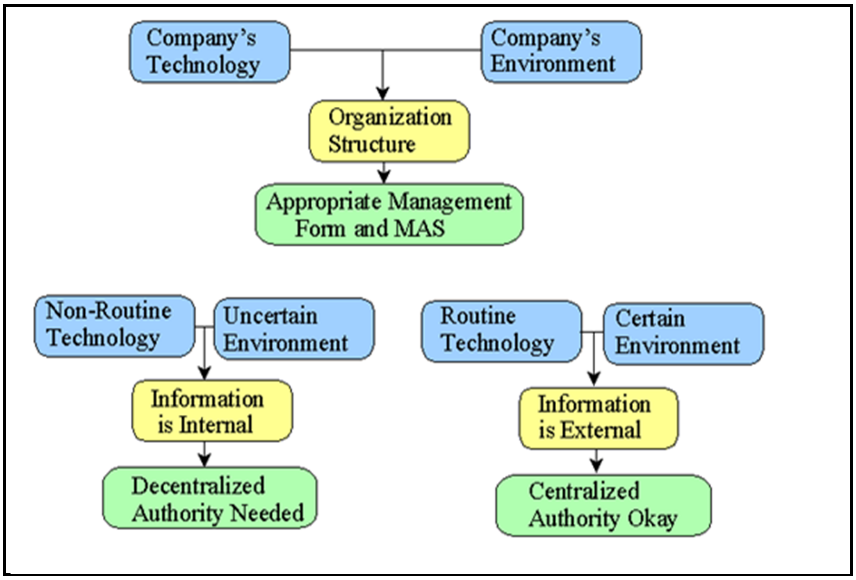
2.4.3 An Expanded View of Contingency Theory from the Tiessen & Waterhouse

An extended observation of contingency theory is that the structure of an organisation be influenced by the company's technology and environment and the effectiveness of the management accounting system is contingent on the organisation's structure.

The place of information relative to technology and environment has a significant impact on organisation structure. In uncertain environments with non-routine technology, information is normally internal. Where environments are certain, or where technology is routine, information is external (Tiessen & Waterhouse, 1983).

The scopes of structure and control include authority configuration and activities configuration, i.e., rules and procedures that govern the choice of individuals. In the contingency model, decentralised authority is more suitable where environment is uncertain or non-routine technology exists. Centralised authority is more suitable when environment is certain. The graphic illustration given in Figure 2.3 below reflects the interpretation of these theoretical concepts.

Figure 2.3: The Expanded view of Contingency Theory of Organisations*



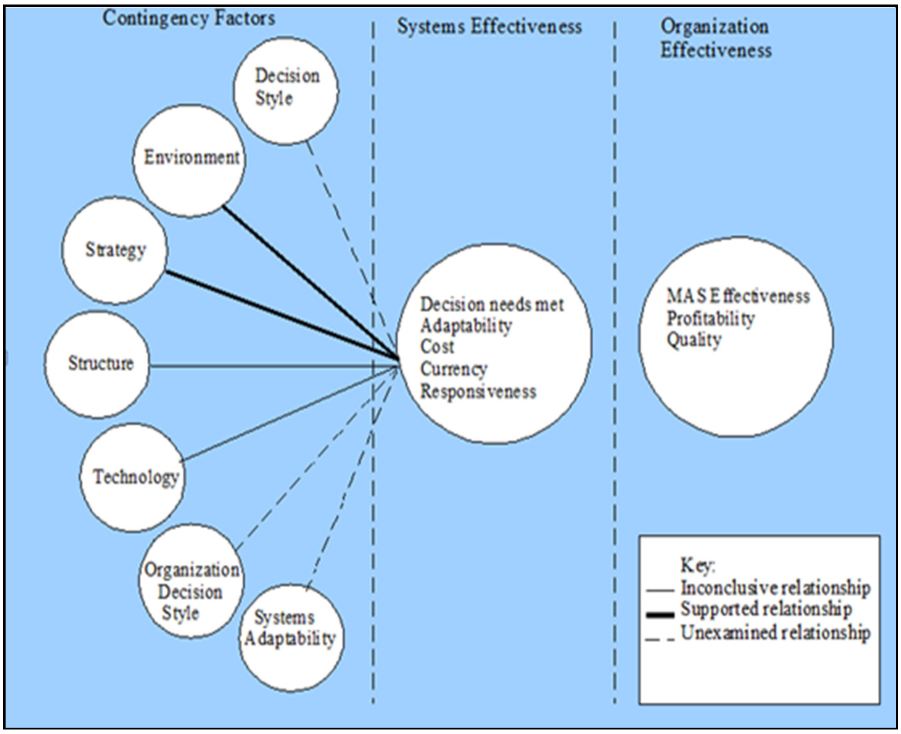
***Source:** Tiessen & Waterhouse (1983,p.251) adopted from www.maaw.info

2.4.4 Contingency Framework (updated) of Macy and Arunachalam

To update the framework, the authors Macy and Arunachalam (1995) included systems change (adaptability) and organisational decision making as processes, instead of factors. The following Figure 2.4 illustrates the updated contingency framework and highlights the various relationships that have been studied in prior research.

They are of the view that the use of contingency theory would suggest that organisations align their systems and processes with their environment (external factor) and strategy (internal factor),and that the effectiveness of management accounting systems will depend on the extent to which the characteristics of Management Accounting Practices (MAP) meet the requirements of the various contingencies faced by the organisation.

Figure 2.4: Updated Contingency Framework*

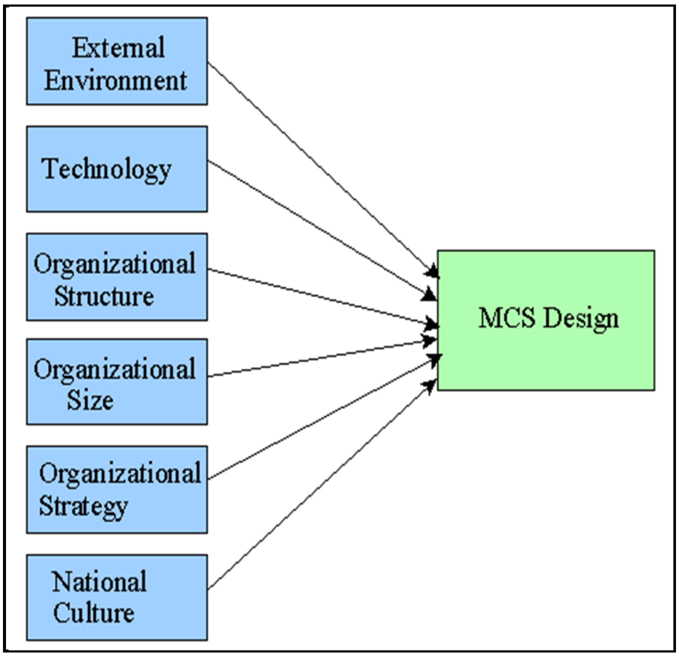


***Source:** Macy and Arunachalam (1995,p.74) adopted from maaw.info

2.4.5 The Functionalist View of Contingency Theory from Chenhall

Chenhall (2003) discusses contingency theories from a functionalist viewpoint where the assumption is that management accounting systems are developed, or adopted to provide the information requirements in realising chosen organisational objectives. The suitable management accounting system is contingent on the external environment, technology, organisational structure, organisational size, organisational strategy and national culture. The Figure 2.5 below illustrates this functionalist view.

Figure 2.5: The Functionalist View of Contingency Theory

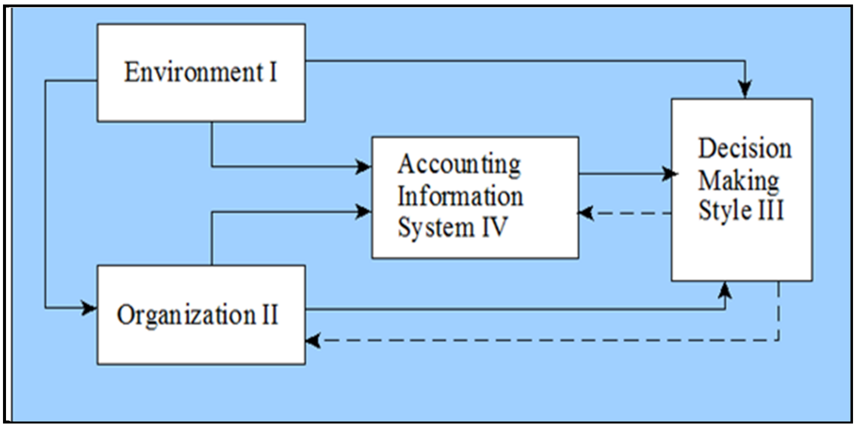


***Source:** Chenhall (2003,p.127) adopted from ww.maaw.info

2.4.6 Gordon and Miller Framework

In the contingency theory of organisations, there is no universally accepted model of the organisation that explains the multiplicity of organisational systems design. Gordon and Miller (1976) recommended the usefulness of contingency theory for developing effective management accounting systems. Gordon and Miller (1976) proposed that the design of management accounting information systems should be dependent on firm-specific contingencies where environmental, organisational and decision style variables could contribute to understanding such systems. The characteristics of management accounting practices studied in prior research are based on the accounting information systems framework proposed by Gordon and Miller and include the following: environment, technology, organisational characteristics, decision style, systems characteristics and management accounting systems' effectiveness as shown in the Figure 2.6 below.

Figure 2.6: Gordon and Miller's Framework*



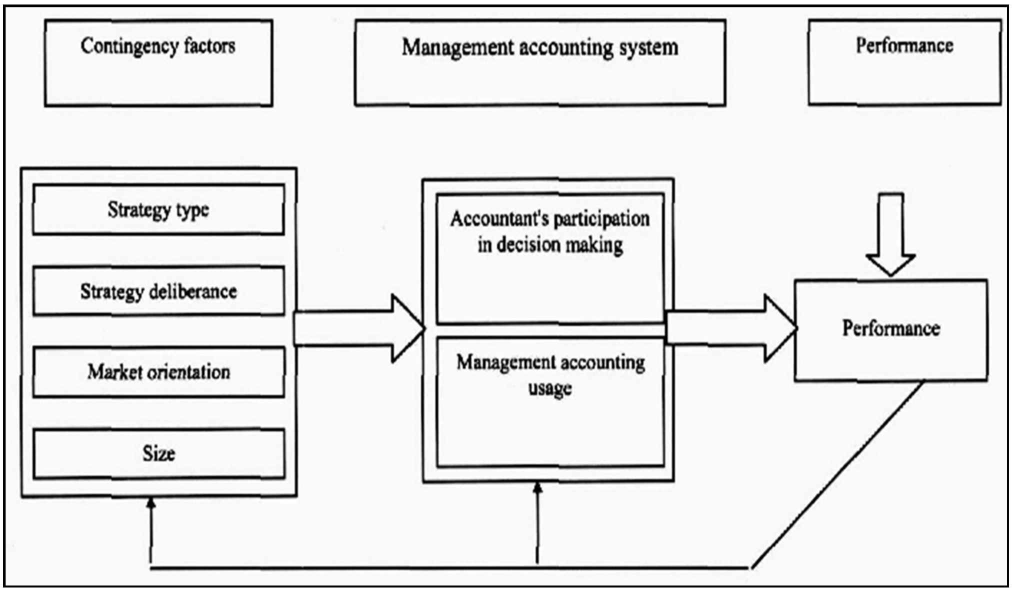
***Source:** Macy and Arunachalam,(1995,p.66) adopted from www.maaw.info

A contingency view suggests that the effective management accounting systems should align with both internal and external factors. Contingent on the fit between management accounting system features and these several factors affecting the organisation, different levels of effectiveness might be observed.

2.4.7 Cadez Framework

The study by Cadez,(2007) was also built on the premises of contingency theory. The fundamental tenet of contingency theory holds that company performance is a product of an appropriate fit between the structure (management accounting system) and context (contingency factors). He had empirically assessed an integrative contingency model of management accounting which is shown in the following Figure 2.7.

Figure 2.7: Contingency Model of Management Accounting *



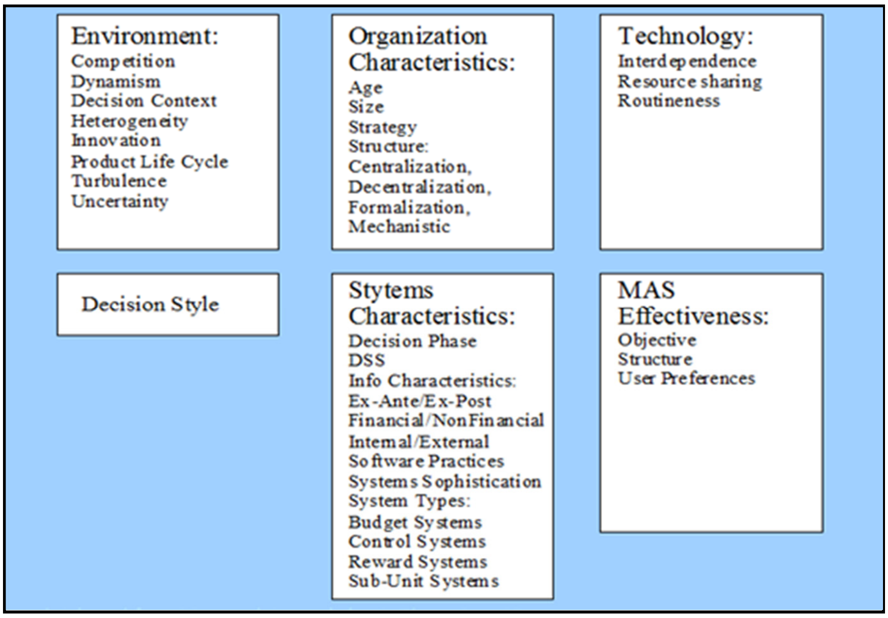
***Source:** Cadez (2007, p.129)

The contingency factors identified derive from conventional theories of organisational structure, referred to as strategy-structure-performance paradigm by Anderson and Lanen (1999). Hambrick (1980) looked at strategy as a concept, particularly worthy of empirical investigation due to its potential association with many other organisational factors. In his study, Cadez had the focus on business level strategy which was operationalised using Miles and Snow's (1978) typology. The dependent variable in this model was company performance. Consequently, it was assumed that both high and low performing companies exist as a result of more or less consistent combinations of context and structure. From a holistic perspective, the findings provide support for the central proposition of contingency theory, (Cadez, 2007).

2.4.8 Summary of Various Contingency Variables used in Prior Research

The Figure 2.8 given below would give an outline of the various contingency variables used in prior research as adopted from Macy and Arunachalam, (1995).

Figure 2.8: Frameworks used in Prior Research*



***Source:** Macy and Arunachalam (1995,p.77) adopted from www.maaw.info

Drawing upon a structural contingency theory of management accounting, this study observes how environmental (competitive and technology) factors would influence organisational factors (strategy and structure) and management accounting systems. Further, this study examines whether organisational performance is contingent on the alignment of management accounting effectiveness with the environmental and organisational factors.

In the management accounting context, the contingency approach is based on the premise that there is no universally acceptable accounting information system that fits all organisations in all circumstances (Otley, 1980, Emmanuel et al., 1990; Islam & Hu, 2012). Therefore, there is no universal control system that is "best". The suitability of the control system is determined by the settings and context of the organisation (Waterhouse & Tiessen, 1978; Fisher, 1995; Alrawi & Thomas, 2007). So, the selection proposition of contingency theory proposes association between an organisation's context and control system used (Selto et al., 1995; Alrawi & Thomas, 2007; Islam & Hu, 2012).

In order to make contributions to filling the recognised research gaps, it is important to review existing literature, and thereby identify theoretical foundations upon which this study is based. Also, it is necessary to have a basis upon which a meaningful comparison can be made with the findings of this study.

2.5 Introduction of Variables under the Study (Environmental and Organisational Antecedents)

Justified by the need of this study in the Indian manufacturing sector, and the research objectives set, Competitive Environment (CE) and Manufacturing Technology (MT) are explored as the environmental antecedents and Organisational Strategy (OS) and Organisational Design are explored as organisational antecedents, in association with the use of Management Accounting Practices (MAP) that would lead to better Organisational Performance (OP). Environments are observed as a multifaceted system of interrelated economic, market, technological, social, political and demographic variables (Kattan et.al., 2007). Environment refers to particular characteristics such as intense price competition from existing or potential competitors (Chenhall, 2007). Based on the literature, an attempt is made to explore the external and internal environments. External environment factors are termed as environmental antecedents and internal environment factors are termed as organisational antecedents in this study.

In the following section the theoretical foundations concerning these factors/antecedents to Management Accounting Practices (MAP) are reviewed and presented in the following sequence:

1) Competitive Environment (CE)
2) Manufacturing Technology (MT)
3) Organisational Strategy (OS)
4) Organisational Design (OD)
5) Management Accounting Practices (MAP)
6) Organisational Performance (OP)

2.5.1 Empirical Studies on Competitive Environment (CE)

This section reviews the literature examining the empirical studies related to Management Accounting Practices (MAP) and external Competitive Environment (CE). In management accounting literature, environment is a critical factor that determines the management accounting and control systems used by the organisation (Ezzamel, 1990; Gordon & Miller, 1976; Jusoh, 2010). Based on literature (Hwang, 2005; Kattan et al., 2007; Tuan Mat, 2010), both external and internal environment factors need to be explored. In this study, Competitive Environment (CE) and Manufacturing Technology (MT) are considered as environmental (external) antecedents. Organisational Strategy (OS) and Organisational Design (OD) are considered as organisational (internal) antecedents, which will influence MAP as an effective management information system for decision making leading to better organisational performance.

In uncertain environments executives neither have access to all relevant information nor are they able to anticipate all consequences (Alkaraan & Northcott, 2006). Environmental uncertainty is the gap between the information one has and the information that one must have to perform an activity (Galbraith, 1973). The opportunities and threats to organisations are created in the environment external to them (Hwang, 2005) and would shape the organisational structure and managerial decision making process (Duncan, 1972; Keats & Hitt, 1988). In the contingency literature related to management accounting context, environmental uncertainty impacts on organisational structure, performance evaluation, budgeting and budgetary control (Haldma & Lääts, 2002; Astley & Van de Ven, 1983; Hwang, 2005).

Due to intense competition, organisations are increasingly recognising the importance of organisational strategy as a critical source of competitive advantage (Kalagnanam & Lindsey, 1998). Linking to this logic, in highly competitive environments, environmental signals must be detected in advance, and timely communication of environmental information is essential in such situations. To achieve organisation-environment alignment, the speed of decision making in the implementation of strategic decisions is critical in such situations (Yasai-Ardekani & Haug, 1997).

The present day marketplace is characterised by increased focus on quality and better customer service (Hoque, 2004). To compete favourably in such conditions, organisations must maintain an efficient and effective management accounting system (Cooper, 1995). To respond quickly and effectively to the dynamic market competition, organisations must adopt organisational integration and coordination (Khandwalla, 1972). Hence organisations need management accounting practices that track both financial and non-financial performance (price, market share, marketing and product competition, customer satisfaction, number of competitors and competitors' actions) (Hoque , 2001; Baines & Langfield-Smith, 2003; Cavalluzo & Ittner, 2004).

When rivalry among competitors is intensified, more choices will be available for consumers. Therefore, organisations must find a means to discover what the customers want and to offer superior customer value than their competitors (Kohli & Jaworski, 1990). The management accounting and control system plays a significant role in achieving a competitive advantage (Baines & Langfield-Smith, 2003). Thus, as an organisation's competitive environment becomes intense, a more sophisticated management accounting and control system is needed to facilitate improved managerial decision making (Libby & Waterhouse, 1996). Competitive environment is a term commonly used to refer to rivals and rivalry, but this definition is too narrow. Competition is the tug-of-war over profits that occur not just between rivals but also between a company and its customers, its suppliers, makers of substitutes and potential new entrants (Magretta, 2012).

Accounting principles, standards, and practices are usually a direct product of the circumstances and influences of their environments (Khanna, 2011 as cited in Previts et al., 2011,p.117). The post 1991 reforms changed the environment for Indian business. Indian companies realised that the traditional Indian business model appropriate for "sheltered firms" had to be abandoned. First, the liberalisation of industrial licensing meant that new domestic players could easily emerge in what were previously tightly controlled industrial sectors. As a result, companies went through a tough corporate restructuring program to enhance domestic competitiveness in the face of more aggressive market place. Second, as import tariffs were cut and entry barriers for foreign companies were reduced, international players began to view India as a potential market. Subsequently, they brought to India world class products and services. These forced even Indian firms with no global ambitions to become globally competitive to survive this foreign competition (Kumar, 2009). After twenty four years of liberalisation, privatisation and globalisation, the manufacturing sector is undergoing the next phase of transformation with the “Make in India” initiative, which will further intensify competition in this sector. Therefore the finance and accounting managers would require adopting more sophisticated management accounting practices to facilitate real time decision making and thus enhance organisational performance.

The Boston Consulting Group used the term “globality” instead of gloablisation. Globality is not a new and different term for globalisation; it’s the name for new and different global reality in which all be competing with everyone, from everywhere for everything (Sirkin et al., 2008). Globalisation is a cavalcade that traveled from West to East – big transnational companies centered in Europe, Japan and the United States marching out from their corporate fortresses to foreign lands in search of low-cost manufacturing and low-end markets (Sirkin et al., 2008). A great key to India’s emerging economy is its rapidly expanding middle class. While the American middle class struggles to stay solvent, India’s has more than tripled in the last twenty five years to 250 million – almost the size of the U.S population (Iacocca, 2008). This study is an exploration among Indian finance and accounting managers in the manufacturing sector to understand how they used the management accounting systems for decision making in the onslaught of competition. Key findings from the previous studies on Competitive Environment are compiled in the following Table 2.2.

Table 2.2: Findings from the Previous Studies: Key Variable – Competitive Environment (CE)*

Sl.No	Author/s	Variables Used	Key Findings
1	Hoque (2005) New Zealand	Non-financial measures	The findings suggest that performance should be a declining function of the size of the "mismatch" between an organisation's environment and use of the different combinations of non-financial performance measures.
2	Hoque (2004) New Zealand	Suppliers' actions, competitors' actions, industrial relations, production and information technology, customer preferences, globalization, government regulations and economic environment	The study finds the absence of a significant relationship between environmental uncertainty and performance through management's use of non-financial performance measures.
3	Chong & Chong (1997) Australia	Adopted the instrument developed by Gordon & Narayanan (1978)	They concluded that significant direct effect of perceived environmental uncertainty (PEU) on MAS and significant indirect effect of SBU strategy and PEU on performance through which managers use MAS information.
4	Gul & Chia (1994) Singapore	Adopted the instrument developed by Mills & Snow (1978) and also adopted 8 items of Govindarajan (1984).	In their study it was found that decentralisation and the availability of broad scope and aggregation of information are associated with higher managerial performance under strong perceived external uncertainty (PEU). It was also found that under weak PEU, decentralisation and availability of MAS and aggregation of information are associated with lower managerial performance.

Source: Abugalia (2011,p.86-88)

2.5.2 Empirical Studies on Manufacturing Technology (MT)

This section reviews the literature examining the use of advanced manufacturing technology and Management Accounting Practices (MAP). Manufacturing environments have progressed through centuries and still evolving since the Industrial Revolution. Many companies employed basic methods and techniques of management accounting in the medieval era. Later, many others improved it according to their needs and depending on technology and manufacturing techniques that were in use. However, development of management accounting slowed down prior to the 1950s, although manufacturing technology was improving faster than before. Moreover, many companies have begun to introduce advanced manufacturing techniques: computer integrated manufacturing and flexible manufacturing systems in the last quarter of the twentieth century (Senker, 1985; Jaikumar, 1986; Bear et al., 1994). These systems have increased the scope and scale of manufactured products, reduced the number of workers required for manufacture, and enhanced the quality of products. However, most manufacturing companies, if not all, continued to adopt conventional cost and management accounting techniques that were claimed to be obsolete and unsuitable, for the new and advanced manufacturing environments (Cooper & Kaplan, 1988; Kaplan, 1983, 1984b; 1986b).

Technology is a key factor that needs to be explored with respect to management accounting practices (Huang et al., 2010; Waweru, 2008; Haldma & Lääts, 2002; Dunk, 1992; Merchant, 1984; Khandwalla, 1977). Many of the studies that explored the relationship between organisational technology and MAP had not adopted the basis of contingency theory. Only a few empirical studies were found to have used the contingency theory to discover the impact of technology on MAP (Kaplan & Mackey, 1992).

Technological change is one of the principal drivers of competition. It plays a major role in industry structural change, as well as in creating new industries. It is also a great equaliser, eroding the competitive advantage of even well-entrenched firms and propelling others to the forefront. Many of today's great firms grew out of technological changes that they were able to exploit. Of all the things that can change the rules of competition, technological change is among the most prominent (Porter, 1985). Advancement in manufacturing technology would trigger complexity and sophistication in the management accounting practices (Libby & Waterhouse, 1996; Baines & Langfield-Smith, 2003; Waweru et al., 2004). A significant positive correlation between manufacturing technology and the management accounting information system was found among Korean manufacturing companies (Choe, 2004). Newer technologies will affect the cost structure, and when the technological processes continue, the accounting system also will become more sophisticated (Haldma & Lääts, 2002). The manufacturing technology a firm uses, influences the type of accounting practices that a firm adopts and the investment in technology will enhance the quality of management control systems (Otley, 1980;Huang et al., 2010).

Thus this study aims to understand the perceptions of Finance & Accounting managers in the Indian manufacturing sector about how management accounting practices had responded to the new technologies, for better decision making thus contributing to the existing literature based on contingency theory framework. Having discussed in detail about Competitive Environment (CE) and Manufacturing Technology (MT), the two factors which are considered as environmental factors or antecedents to Management Accounting Practices (MAP), the next is oganisational factors or antecedents. Under organisational antecedents, Organisational Strategy (OS) and Organisational Design (OD) only are considered in this study. The following section will review the literature pertaining to these two factors as antecedents to Management Accounting Practices (MAP).

2.5.3 Empirical Studies on Organisational Strategy (OS)

The contingency theorists broadly classified the contingent factors into environmental and organisational (Laitinen, 2006). A detailed description on Competitive Environment (CE) and Manufacturing Technology (MT) as external environmental factors had been already presented in the precious section. In this section, the prior studies which had explored the interrelationship between management accounting practices and organisational factors internal to the organisation, i.e. Organisational Strategy (OS) and Organisational Design (OD) are covered.

Strategy explains how an organisation, faced with competition, will achieve superior financial performance (Magretta, 2012). Corporate strategy is the overall strategy for a corporation that consists of diversified businesses in multiple industries; it is *not* the same thing as competitive strategy, because competitive advantage is won or lost at the level of an individual business unit. The goal of corporate strategy should be to enhance the competitive advantage of its multiple business units. As the corporation sits on top of the business units and is the seat of power and control, this distinction is often lost in practice (Porter, 2008). In this study by organisational strategy, it is meant as competitive strategy at business unit or organisational level. Increasing globalisation has resulted in extreme and hostile international competition, increased customer demands including diversified customer needs, and shorter product life cycles (Dent, 1990; Shields, 1997).

The strategy an organisation adopts constitutes the logic underlying its interactions with its environment. It is well established that an organisation's strategy is its response to its environment, and that the appropriate matching of strategy and the environment can enhance organisational performance (Burns& Stalker, 1961; Porter, 1980). Several empirical studies have examined the linkages between external environment and strategy. Successful firms aligned key elements of strategy with their external environment (Fuchs &Mifflin, 2000). A positive association was explored between perceived environmental uncertainty and strategy (Chong & Chong 1997). Similarly, a significant relationship was found between an unpredictable external environment and an innovation strategy (Miller, 1987). As the business environment becomes controlled, more and more by demanding customers and as competitors respond to the customer demands in increasingly sophisticated ways, a business enterprise may place greater importance on developing a suitable strategy (Perera et al., 1997; Sim & Killough, 1998). Competitive advantage and superior performance can be gained through adoption of Management Accounting Practices (MAP) tailored to support business strategy (Simons, 1987).

Organisational strategy has been identified as a critical internal factor to discover in the investigation of the contingency view of management accounting practices (Cinquini &Tennucci, 2010; Leftesi, 2008; Langfield-Smith, 1997; Chapman, 1997; Chenhall & Morris, 1995; Kaplan & Norton, 1992; Gupta & Govindarajan, 1984; Miles & Snow, 1978). The fundamental relationship between strategy and management accounting practices is increasingly gaining the attention of researchers (Langfield-Smith, 2007; Chenhall, 2003; Miles, 2003; Dent, 1990). Strategy symbolises a principal contingency variable (Hwang, 2005), and Management Accounting Practices (MAP) which are tailored to support strategy can enhance competitive advantage and superior organisational performance (Langfield-Smith, 1997). Different types of organisational strategic plans would lead to different configurations of control systems. There are many researchers who had investigated the linkages between MAP and organisational strategy adopted by business enterprises under the contingency approach (Ojra, 2014; Abugalia, 2011; Tuan Mat, 2010; Chenhall & Langfield-Smith, 1998; Hope & Hope, 1995; Shank & Govindarajan, 1992; Govindarajan & Gupta, 1985; Simons, 1991,1995). There are also many other studies based on contingency theory, which explored the linkages between strategy, MAP and performance of organisations (Langfield-Smith, 1997).

The choice of accounting techniques and manufacturing practices are influenced by organisational strategy (Selto et al., 1991). The changes in MAP follow economic reforms and are contingent on organisational business strategy (Anderson & Lanen, 1999). The heart of the working of a business is how the three processes of people, strategy, and operations link together. Leaders need to master the individual processes and the way they work together as a whole. They are the foundation for the discipline of execution, at the centre of conceiving and executing a strategy (Larry et al., 2002). The key findings from the previous studies on Organisational Strategy (OS) are compiled in the following Table 2.3.

Table 2.3: Findings from the previous studies: Key variable – Organisational Strategy (OS)

Sl.No	Author/s	Variables Used	Key Findings
1	King, Clarkson & Wallace (2010) Australia	Use of differentiation and low-cost strategy.	In their study it was found that to a great extent written budgets for operational performance was used for employing a cost leadership strategy. The study also provided evidence of a positive association between the extent of 'fit' and performance.
2	Hyvonen (2007) Finland	A customer-focused strategy. The measurement is derived from the study of Chenhall and Langfield - Smith (1998).	The results of this study indicate that there is a significant relationship between customer focused strategy and financial performance measures.
3	Zairul Hoque (2004) New Zealand	Prospectors and defenders using the Miles and Snow (1978) typology.	This study revealed the a significant, positive relationship between the strategic choices of management and performance through usage of non-financial measures for performance evaluation.
4	Bouwens and Abernethy (2000) Netherlands	Four dimensions of Management accounting systems - scope, integration, aggregation and timeliness.	The results of this study indicate that customization affects management accounting systems via interdependence rather than directly.
5	Chenhall & Langfield-Smith (1998) Australia	Differentiation, low cost and combination of both. 33 indicators that reduced to 6 dimensions of MAPs.	This study revealed that a differentiation strategy would benefit from balanced performance measures and low cost strategy would benefit from traditional MAPs and activity based techniques.
6	Perera, Harrison & Poole (1997) Australia	Customer focus and performance. Performance was measured by using the instrument adopted by Abernethy and Lillis (1995).	This study provided empirical evidence of the increased use of non-financial performance measures by firms pursuing a customer-focused manufacturing strategy.
7	Chong & Chong (1997) Australia	Prospectors and defenders using the Miles and Snow (1978) typology.	This study revealed significant direct effect between Perceived External Uncertainty (PEU) and MAP. The results also indicated the indirect effect between strategy and PEU on SBU performance.
8	Abernethy & Lillis (1995) Australia	Manufacturing flexibility and Product variations. Also included quality and dependability measures. 18 items based on Kaplan (1983) and Howell & Saucy (1987).	This study proved that there was a significant difference between flexible and non-flexible firms in terms of efficiency based measures.
9	Govindarajan (1988) USA	Product selling price, % of sales spent on R&D,% of sales spent on marketing, product quality, brand image and product features using differentiation and low cost strategy.	This study found that multivariate fit was significant among differentiation SBUs but not significant among low-cost units.

Source: Abugalia (2011,p.99-101)

2.5.4 Empirical Studies on Organisational Design (OD)

This is the last dimension of the organisational factors considered in the study as an antecedent to the Management Accounting Practices. The Organisational Design (OD) or structure is an important dimension of management control that influences the internal environment of an organisation. It describes the formal conditions of different roles for organisational units and responsibilities for groups to perform the organisational activities (Chenhall, 2003). Subdivision of organisational activities is considered to be an indispensable feature of the organising function of management. Subdivision empowers the organisation's internal functions to be divided into different parts that are manageable by managers (Chenhall & Morris, 1986). In traditional business, a manager has responsibility both for the work that has to be done and for the workers who are to do it. It would be inconceivable in a conventional organisation for the management of the work and of the workers to be split. But in a process-centred organisation that's what exactly happens. The process- the coordinated tasks that create value for the customer- is ultimately the responsibility of the process owner (Michael, 1996). Every company has two organisational structures: the formal one is written on the charts; the other is the everyday living relationship of the men and women in the organisation (Geneen & Moscow, 1984).

The management literature offers numerous definitions of organisational design or structure. Organisational design, in general, is the way in which the organisation is integrated and differentiated (Lawrence & Lorsch, 1967). Integration means the extent to which the subdivisions perform in ways that are consistent with organisational objectives, comprising of rules and standard operating procedures. According to Abugalia (2011), differentiation is termed as the extent to which organisational subunit managers act in the capacity of entrepreneurs by decentralising authority. The argument of contingency theory based researchers is that Management Accounting Practices (MAP), structures and processes are influenced by competitive environment, manufacturing technology and organisational strategy. There are many organisational dimensions that act as contextual factors inside and outside the enterprise and those may have close linkages to management accounting practices (Laitinen, 2006; Moores & Yuen, 2001). These contingent variables such as environmental uncertainty, intensity of competition, organisational strategy, structure and manufacturing technology, are interconnected to the management accounting practices (Laitinen, 2001; Libby & Waterhouse, 1996; Simons, 1987).

While previous studies have added to our understanding of the relationship between contextual variables and management accounting practices, only a few contingency studies had successfully measured the relationships using a structural model. The Management Accounting Practices (MAP) should consider both the strategy followed and design adopted before supplying information for decision making in order to ensure better organisational performance (Moores & Mula, 1993). The key findings from the previous studies on Organisational Design (OD) are compiled in the following Table 2.4.

Table 2.4: Findings from the previous studies: Key variable – Organisational Design (OD)

Sl.No	Author/s	Variables Used	Key Findings
1	King, Clarkson & Wallace (2010) Australia	Type of budgets and extent of their use.	In this study conducted in Australian primary health care sector, they found that a business's use of written budgets is positively related to its size and structure (decentralisation), and for those businesses that use written budgets, the extent of use is positively related to structure (decentralisation),business strategy (Cost leadership) and negatively associated with a component of PEU dynamism.
2	Soobaroyen & Poorundersing (2008) Mauritius	Decentralisation using the instruments developed by Burns & Stalker (1961) and Gordon & Narayanan (1984).	This study proved that decentralization policy has a beneficial effect on the quality and sophistication of Management Accounting Systems.
3	Sine, Mitsuhashi & Kirsch (2006) USA	Role formalization, functional specialisation , administrative intensity and firm performance.	This study conducted in USA concluded that in a dynamic, turbulent, and uncertain environments, new ventures and mature organisations face fundamentally different challenges requiring different approaches to organisational structure. These results stand in contrast to empirical research based on work by Burns and Stalker, indicating that in a dynamic industry, firms with less formal structures (more organic structures) outperform firms with more formal structures (more mechanistic).
4	Williams & Seaman (2002) Singapore	Management Accounting System (MAS) change; information; decision making; operating performance; task uncertainty.	This study explores the indirect effect of MACSs change on departmental performance for a cross-sectional sample of 232 medium-sized Singaporean firms. It was hypothesised that MACSs change affects performance but not directly. Instead, this relationship is mediated by managerial-relevant information (MRI) that is impacted by MACSs change, which, in turn, enhances performance.
5	Nicolau (2000) USA	Internal organisation structure, Accounting system design and Perceived accounting information system (AIS) effectiveness.	Results of this empirical study in USA indicated that, as hypothesized, the fit between the accounting system design and the contingency factors resulted in a more successful system. Specifically, system fit was a significant factor that explained variations in perceived AIS effectiveness, as measured by decision makers' perceived satisfaction with the accuracy and monitoring effectiveness of output information.

6	Libby & Waterhouse (1996) Canada	Decentralisation, size, competition, and capacity for change.	An exploratory study in Canada that examines the extent and relationship of changes in management accounting and control systems (MACS) in a sample of manufacturing organisations is reported by them. The results show that the greatest number of changes occurred in those systems that support decision making. Organisational capacity for change, measured as the overall number of management accounting and control systems present in the organisation, was the best predictor of change. Organisational size, structure and intensity of competition did not predict changes in management accounting systems.
7	Chia (1995) Singapore	Decentralisation and Management Accounting Information systems. Adopted the instruments developed by Burns and Stalker (1961) and Gordon and Narayanan (1984).	The results of this study which was carried out in Singapore indicated that decentralization interacts significantly with each of the MAS information characteristics to positively enhance firm performance.
8	Chenhall & Morris (1986) Australia	Structural decentralisation, Perceived environmental uncertainty, organisational interdependence and Management accounting systems design.	The authors conducted this study in Australia and the findings indicated that: 1) Decentralization was associated with a preference for aggregated and integrated information; perceived environmental uncertainty with broad scope and timely information; organisational interdependence with broad scope, aggregated, and integrated information. 2) The effects of perceived environmental uncertainty and organisational interdependence were, in part, indirect through their association with decentralization.
9	Gordon & Narayanan (1984) USA	Perceived environmental uncertainty, organisational structure and Management Accounting Systems (MAS).	The research reported in this study conducted in USA concerns the relationships among an organisation's environment, structure and information system. Based on an empirical study it appears that information systems and organisational structures are both a function of the environment. However, after controlling for the effects of the environment, it does not appear that an organisation's information system and structure are significantly related to each other.

Source: Abugalia (2011,p.108-111)

2.5.5 Empirical Studies on Management Accounting Practices (MAP)

Accounting was originally created, at least five hundred years ago, to provide the data a company needed for the preservation of its assets and for their distribution, if the venture were liquidated. And the one major addition to accounting since the 15th century – cost and management accounting, a child of the 1920s - aimed only at bringing the accounting system up to 19th century economics, namely, to provide information about, and control of, costs (Drucker,1993). At the heart of the management accounting process is a communication system, or a set of communications systems, that provide information to managers (Alexander,2006). Management accounting is generally believed to be a product of the nineteenth century, when large business enterprises such as textile mills, iron and steel works etc. appeared with an extensive use of machinery in industrial production (Wilson & Chua, 1993; Littleton, 1966). While this belief is partly true for the systematic recording technique of cost accounting that was developed in the nineteenth century and greatly extended in recent decades, some elements of cost accounting are much older in the form of industrial bookkeeping practices and techniques (De Roover, 1968).

2.5.6 Management Accounting Practices – Evidence from India

The academic research papers examining management accounting practices of Indian companies are very few. A study by Anderson & Lanen (1999) used a contingency theory framework and investigated the evolution of management accounting practices in 14 firms in India. The authors used a survey and also personal interviews to observe changes in the practice of management accounting by firms, based on two factors. The first factor was the experience and exposure of a firm to global markets. The second factor was the competitive strategy adopted by the firms. They analysed a firm's exposure to the global markets and categorised their sample firms as national or international, based on the responses to seven survey questions.

Based on the survey responses, Anderson & Lanen (1999) evaluated the competitive strategy of the firm using the Miles & Snow (1978) typology of defenders and prospectors as shown in the Table 2.5 below.

Defenders are firms that operate in relatively more stable environments and compete through low cost. Defenders use repetitive technology and economies of scale for efficiency. Prospectors, on the other hand, are firms that operate in an uncertain and rapidly changing environment and use flexible and non-repetitive technologies.

The outcomes show that, consistent with the forecasts of contingency theory, the extent of use of precise management accounting practices varies as a function of the firm's strategy and global orientation. Besides, Anderson & Lanen (1999) also found that all the firms in the sample indicate that their planning process became more decentralised since 1991, the year of opening up of Indian economy through liberalisation, privatisation and globalisation and managers have a better understanding of strategic intentions and participation in formulating strategic plans. Customer satisfaction surveys are used as inputs in the decision making process (Kallapur &Krishnan, 2008, p.).

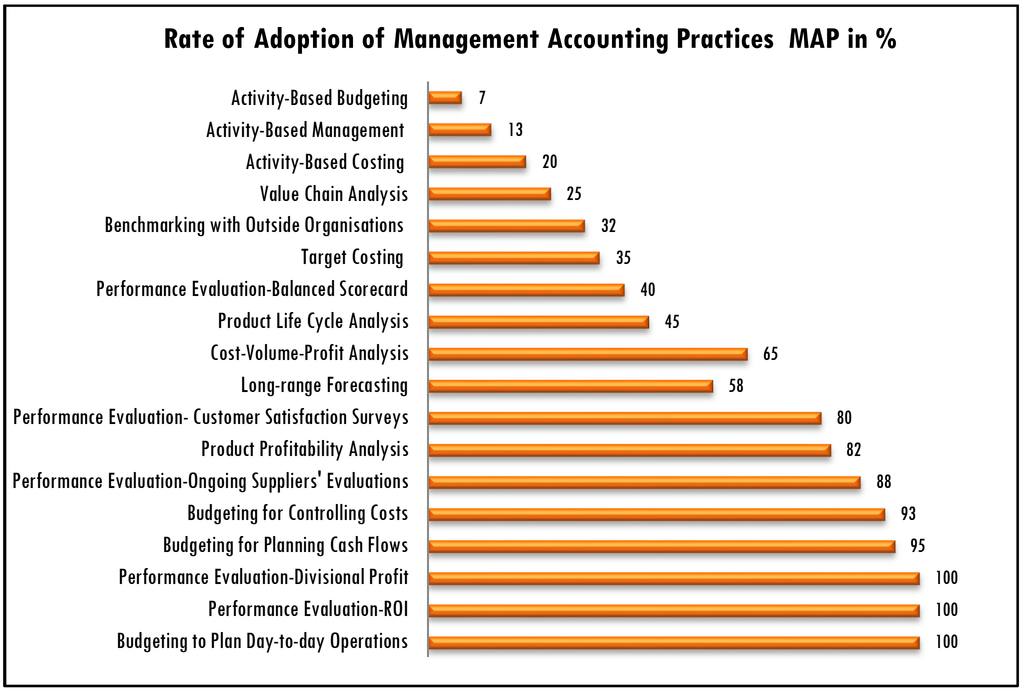
Table 2.5: Summary of Key Results from Anderson & Lanen (1999)*

Summary of key results from Anderson & Lanen (1999)					
Sl.No.	**Management accounting/Control issue**	**Prospector (P) versus Defender (D)**		**Domestic (D) versus International (I)**	
		P vs D	Potential explanation	D vs I	Potential explanation
1	Involvement of mid-level managers and line workers in strategic planning	P > D	Prospectors have higher levels of decentralization		
2	Use of market share growth	P > D	Prospectors operate in higher uncertainty markets		
3	Use of competitor performance data for strategic planning	P > D	Prospectors operate in higher uncertainty markets		
4	Use of customer satisfaction data for strategic planning	P > D	Prospectors need to be more nimble in identifying market		
5	Use of external agencies to assess quality			I > D	Important to maintain higher quality standards in international markets
6	Use of cost data in developing budgets	D > P	Defenders place greater importance on cost data when preparing budgets	D > I	International firms may have deeper pockets that loosen budget constraints
7	Plant managers participate in setting budgets	D > P	Defenders place priority on cost management and plant managers are the fi rst line of cost control	D > I	Domestic firms have capital constraints
8	Use of employee surveys to obtain cost reduction opportunities	P > D	Prospectors make more intensive use of methods to obtain ideas		
9	Firm's information system provides accurate data	P > D	Prospectors more likely to view information system as accurate		

***Source:** Kallapur and Krishnan (2008,p.1405)

Another study by Joshi (2001) examines management accounting practices based on a survey of 60 large and medium-sized (sales revenue exceeding US $ 25 million) manufacturing companies in India and contrasts the results with a similar study of Australian firms by Chenhall & Smith (1998). The survey instrument was adapted from Chenhall & Smith (1998b) and Miller et al.(1992). An extract of the results from Joshi's survey is presented in Figure 2.9 below. Joshi finds that Indian companies use traditional management accounting practices, such as budgeting, for operational planning and cost control, and performance evaluation based on return on investment and divisional profit extensively. Some management accounting practices, such as supplier evaluation and product profitability, were used to a moderate extent. However, the use of recent management accounting practices such as Activity- Based Costing (ABC), activity-based management, balanced scorecard, benchmarking and target costing is less frequent. The companies in his sample did not place much emphasis on nonfinancial performance measures and instead placed heavier emphasis on financial measures. Joshi also found evidence that larger companies were significantly more likely to use recent management accounting practices such as ABC.

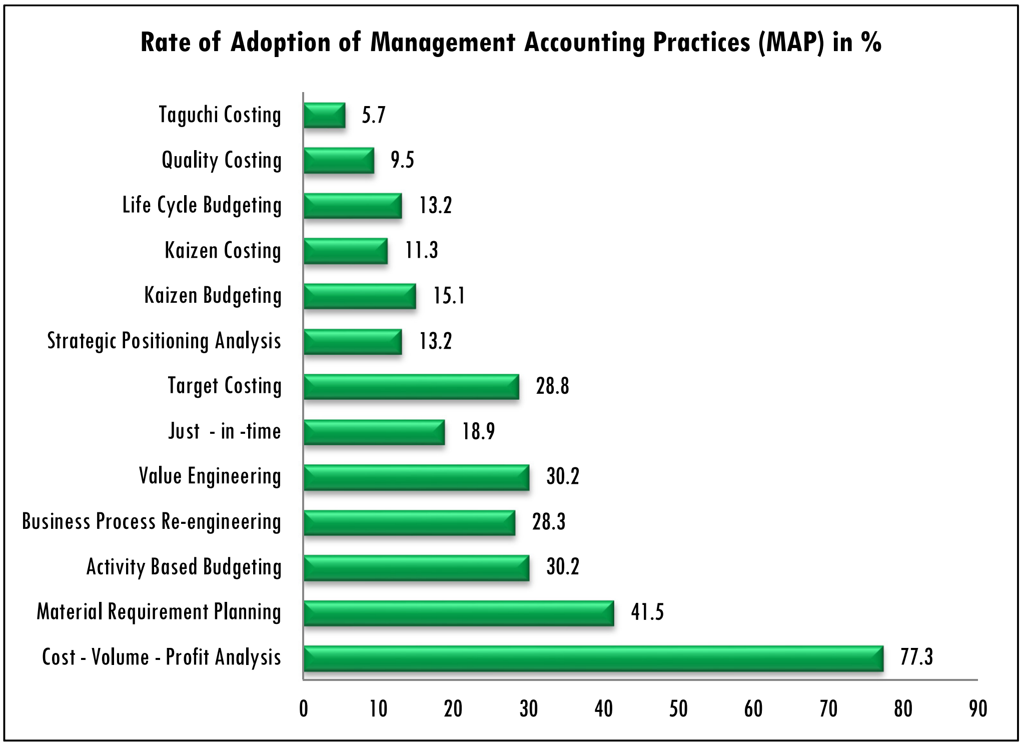
Figure 2.9: Summary of Key Findings from Joshi (2001)*



***Source:** Kallapur and Krishnan (2008,p.1406)

To better understand the distribution of management accounting practices in India, a team of three authors representing two management institutes in India and the Securities Exchange Board of India (Anand et al., 2005) conducted a comprehensive survey of Indian companies in 2003, with the objective of understanding the prevalence of managerial accounting practices such as cost management, ABC and the balanced scorecard. Their survey instrument was mailed to the chief financial officers of 579 companies and they received a response from 53 companies. The findings from their survey are summarised in a series of three published papers. A summary of the key findings of Anand et al.(2005) regarding the extent of usage of cost management tools in India is provided in the following Figure 2.10.

Figure 2.10: Summary of Key Findings of Anand et al.(2005)*



***Source:** Kallapur and Krishnan (2008,p.1406)

In the study by Anand et al.(2005), examined the extent of adoption of the Balanced Score Card (BSC) by Indian companies.

Regarding the importance of each of the four perspectives of the Balanced Score Card, a majority of the respondents (87.5%) ranked the financial perspective as the most important, followed by the customer perspective. The respondents indicated that the key performance indicators used for the customer perspective was customer satisfaction with quality and on-time delivery. For the internal business perspective, the most important key performance indicator was unit cost. Respondents indicated that the most important performance indicator for the innovation and growth perspective was market share. For the financial perspective, ROI and days of working capital were the most frequently used performance measures. Of the respondents, 58.3% indicated Economic Value Added (EVA) as the most important key performance indicator in the shareholder perspective.

Using the data from the same survey, Anand et al. (2005) examined the extent of adoption of ABC in Indian companies in an article published in the Decision Journal. They also examined whether firms using ABC systems are more likely to have accurate cost and profit information for managerial decision making. Of the 53 firms that responded, 26 firms (49%) reported that they used ABC systems either as a supplementary/offline system (11 firms) or as a fully integrated accounting and ERP system (15 firms). The adopting firms were predominantly from the manufacturing sector (20 firms, or 76.92%). Respondents indicated that difficulties in implementation arose because of the inability of traditional costing systems to capture the informational needs of an ABC system (42.3%), difficulty in developing an activity directory (34.6%) and a lack of review of the implementation process (30.8%) (Kallapur & Krishnan, 2008, p.1406).

2.5.7 Management Accounting Practices (MAP) – Studies Based on Contingency Theory from Other Countries

This contingency approach borrows from previous research concerning the critical variables, their interaction and influence of MAP on Organisational Performance (OP) which is shown in the following Table 2.6 and the prior research studies in management accounting in the other countries like Africa, Australia etc. are also shown from Tables 2.7 to 2.12.

Table 2.6: Selected prior studies on MAP based on contingency approach and the explored variables*

Sl.No	Studies	Context (National & Industrial)	MAP/SMA/ MAS Others	Explored Contingency Variables
1	Jafar Ojra (2014)	Palestine	SMA	External Environment, Internal Environment, Organisational Strategy, Organisational Performance and Strategic Management Accounting Techniques
2	McManus (2012)	Australian Hotel industry	SMA	Customer Accounting & Marketing Performance. Factors Explored Included Competition Intensity, Environmental Uncertainty, Organisational Factors (Strategy, Structure, Market Orientation, Size), Customer Measures, Performance (Financial and Non-Financial)
3	Mufta S Abugalia (2011)	Libya	MAP	External Environment, Business Strategy, Organisation Structure, Manufacturing Technology and Organisational Performance
4	Abdul Rasid et al., (2011)	Malaysian Financial institutions	MAS	Technology, Organisational Structure, Innovation, Management Accounting System, and Organisational performance
5	Dik (2011)	Arab Countries Sharia compliant companies	MAS	Cultural dimensions, Organisational structure, Management accounting instruments, and Environmental circumstances
6	Nimtrakoon & Tayles (2010)	Thailand manufacturing and non-manufacturing companies	MAP	Management accounting practices, perceived environmental uncertainty, company size, competitive strategy
7	Cinquini & Tenucci (2010)	Italian manufacturing companies	SMA	Business Strategy, Strategic Management Accounting, Company Size
8	Tuan Mat (2010)	Malaysian Manufacturing industry	MAP	Strategy, organisational structure, environment, technology, organisation size, management accounting practices and organisational change, and performance
9	Waweru (2008)	Canadian Manufacturing firms	MACS	Management Accounting Systems, Organisational structure, Organisational size, Intensity of competition, Technology, Competition strategy, Management Accounting Change
10	Hyvönen (2008)	Manufacturing firms in Finland	MAS	Technology, Strategy, management accounting system, and organisational performance

11	Kattan et al., (2007)	Palestinian Company	MAP	External Environmental Uncertainties and Management Accounting and Control Systems
12	Cadez & Guilding (2007)	Slovenian and Australian Companies	SMA	Strategic Management Accounting techniques
13	Bhimani & Langfield-Smith (2007)	UK firms (large)	SMA	Structure, formality, financial & non-financial information, strategy implementation and strategic management accounting
14	Abdul-Kader & Luther (2006)	UK food and soft drinks industry	SMA	Strategic management accounting practices, Strategy, organisational performance, decision making information
15	Guilding et al., (2005)	UK and Australian companies	SMA	Cost-plus pricing (SMA), Competition intensity, company size, Industry type
16	Löfsten & Lindelöf (2005)	Swedish Technology-based firms	MAP	Environmental hostilities, Strategic orientation, Technology, Management accounting techniques, and performance
17	Hwang (2005)	South Korean retailing industry	SMI	Environmental uncertainty, Business strategy, market orientation, organisational structure, organisational performance
18	Hoque (2004)	New Zealand Manufacturing Companies	SMA	Strategic management accounting, Business Strategy, Environmental Uncertainty, and Organisational Performance
19	Guilding & McManus (2002)	Australian companies	SMA	SMA (Customer Accounting), Market Orientation, Intensity of competition
20	Chenhall (2003)	Critical review of past studies	MCS	Management control systems, organisational performance
21	Haldma & Lääts (2002)	Estonian Manufacturing firms	MAP	Environmental factors, technology, organisational factors, strategy, management accounting systems, and performance
22	Guilding & McManus (2002)	Australian companies	SMA	SMA (Customer Accounting), Market Orientation, Intensity of competition
23	Cravens & Guilding (2001)	New Zealand, UK & US strongly branded companies	SMA	Brand value accounting, Internal Management decision making and control
24	Guilding et al., (2000)	New Zealand, UK and US companies	SMA	Strategic Management Accounting Techniques, Company size
25	Anderson & Lanen (1999)	Indian firms	MAP	Competitive strategy, management accounting practices, firm specific factors and performance
26	Guilding (1999)	New Zealand Companies	SMA	Strategic management accounting techniques, company size, competitive strategy and strategic mission
27	Govindarajan & Gupta (1985)	US firms (multiple-industries)	MCS	Strategy, incentive bonus systems, firm control systems, and organisational performance
28	Merchant (1985)	US firms (electronics industry)	MAIS	Company Size, Product Diversity, Strategy, Decentralisation and use of Budgetary Information, and performance

Abbreviations and Expansions:
SMA- Strategic Management Accounting; MAI = Management Accounting Information;
MAP = Management Accounting Practices; MAS = Managerial Accounting Systems;
SMI = Strategic Management Implementation; MAIS= Management Accounting Information Systems;
MACS = Management Accounting and Control Systems

***Source:** Ojra (2014,p.115-116)

Table 2.7: Studies on MAP in Africa*

Africa			
Sl No	**Country**	**No.of studies**	**Authors and Year of study**
1	Algeria	2	(Jones and Seffiance, 1992); (Ouibrahim and Scapens, 1989)
2	Egypt	3	(Hassan, 2005); (Kholeif et al., 2007);(van-Triest and Elshahat, 2007)
3	Ghana	3	(Rahaman and Lawrence, 2001); (Uddin and Tsamenyi, 2005);(Joseph Mbawuni I & Anderson Ronald Anertey,2014)
4	Malawi	2	(Mserembo and Hopper, 2004); (Tambulasi, 2007)
5	Mauritius	1	(Soobaroyen and Sannassee, 2007)
6	Nigeria	2	(Olowo-Okere and Tomkins, 1998); (Asechemie and Ikeri, 1999)
7	South Africa	2	(Botha, 1995); (Waweru et al., 2004)
8	Tanzania	2	(Goddard and Assad, 2007) (Satta, 2006)
9	Uganda	1	(Awio, et al., 2007)
10	West Indies	1	(Cowton and O'Shaughnessy, 1991)
11	Zambia	1	(Dixon et al., 2007)
12	África – general	2	(Asechemie, 1996, 1997)
	Total	**22**	

***Source:** T.Hopper et al.(2008,p.37)

Table 2.8: Studies on MAP in Australia*

Australia			
Sl No	**Country**	**No.of studies**	**Authors and Year of study**
1	Fiji	2	(Alam et al., 2004) ;(Sharma and Lawrence, 2005)
2	Kiribati	1	(Dixon, 2004)
	Total	**3**	

***Source:** T.Hopper et al. (2008,p.37)

Table 2.9: Studies on MAP in Latin America*

Latin America			
Sl No	**Country**	**No.of studies**	**Authors and Year of study**
1	Brazil	1	(Guerreiro et al., 2006)
2	Mexico	2	(Frucot and Shearon, 1991); (Leach-Lopez et al., 2007)
3	Venezuela	1	(Rivera, 1982)
4	Unspecified	2	(Collins et al., (1997); (Neu et al., 2006)
	Total	**6**	

***Source:** T.Hopper et al.(2008,p.37)

Table 2.10: Studies on MAP in the Middle East*

Middle East			
Sl No	**Country**	**No.of studies**	**Authors and Year of study**
1	Bahrain	1	(Joshi, 2000)
2	Palestine	1	(Kattan, Pike, and Tayles, 2007, JAOC)
3	Syria	1	(Abdeen, 1980)
	Total	**3**	

***Source:** T.Hopper et al.(2008,p.38)

Table 2.11: Studies on MAP –General Review*

General Review Papers Relevant to Management Accounting		
Sl No	**No.of studies**	**Authors and Year of study**
1	1	(Aharoni, Y, 1981),
2	1	(Belverd and Needles, Jr., 1976)
3	1	(Caiden and Wildavsky, 1974)
4	1	(Cook and Kirkpatrick, 1995)
5	1	(Diamond, 2004)
6	1	(Enthoven, 1982)
7	1	(Ghartey, 1985)
8	1	(Hafsi et al., 1987)
9	1	(Hove, 1986)
10	1	(Lehman, 2007)
11	1	(Maunders et al., 1990)
12	1	(Mimba et al., 2007)
13	1	(Mirghani, 1982)
14	1	(Murphy, forthcoming)
15	1	(Ndzinge and Briston, 1999)
16	1	(Needles, 1994)
17	1	(O'Dwyer, 2005)
18	1	(Perera, 1989),
19	1	(Rahman et al., 1997),
20	1	(Samuels, 1990)
21	2	(Vernon-Wortzel and Wortzel, 1989),
22	1	(Wallace, 1990)
Total	**23**	

***Source:** T.Hopper et al.(2008,p.38)

Table 2.12: Studies on MAP – Cross Continental (Global)*

Cross Continental (Global)		
Sl No	**No.of studies**	**Authors and Year of study**
1	3	(Bokorski, 1997) (Hafsi and Thomas, 1988); (Cools et al., forthcoming)

***Source:** T.Hopper et al.(2008,p.38)

Management Accounting Practices (MAP) affect planning, coordination, communication and evaluation. In addition, it influences the decision-making and behaviour of people involved in the process. Management accounting practices must guarantee that strategies are followed and, consequently, that objectives are achieved. Previous studies have attempted to analyse the nature of management accounting in various countries (Anthony et al., 1984).

A questionnaire survey was conducted among large manufacturing firms in Australia and Japan during 1997. The results of the survey have revealed a number of important differences between the two countries. For example, while Management Accounting Practices (MAP) of the Australian companies place an emphasis on cost control tools at the manufacturing stage, those of the Japanese companies devote a much greater attention to cost planning and cost reduction tools at the product design stage. Further, the Japanese companies seem to have introduced more frequent changes to management accounting practices than their Australian counterparts (Wijewardena & De Zoysa, 1999).

There was another study which focused on managers' need for information for managerial purposes and examines their degree of satisfaction and perception of missing information. Data for this study were collected from 120 interviews with managers from eleven major French companies. This study sought to target the factors determining managers' needs. They consequently developed a model that examined how manager-based variables (function, career path, objectives pursued) and company-based variables (performance, private sector or public sector status) determine managers' needs. The model also had taken into account managers' individual strategies in selecting and using information. Based on this model they suggested exploring three roads forward, each of which could eventually lead to an improvement in managers' satisfaction with the management accounting information that they receive (Mendoza & Bescos, 2001).

From the beginning of the 21st century, both academics and practitioners have started to question prevailing traditional management accounting thinking. With ever increasing competition and changes in manufacturing environment, cost structures, and technological innovations, a change in Management Accounting Practices (MAP) was pertinent (Joshi, 2001). The transformation of management accounting practices (Roslender & Hart, 2003) was grounded on the need for accounting for strategic positioning (Roslender, 1995, 1996), a perspective that builds on the linkage of organisational strategy with management accounting practices which was first introduced by Simmonds (1981) and subsequently positioned by Bromwich (1990). That view of management accounting equals the contingency perspective, which suggests that flexibility and adaptability are important for the survival of organisations, and the system needs to be designed to support such adaptability (Gordon & Miller, 1976; Waterhouse & Tiessen, 1978; Kattan et al., 2007).

The contingency theory highlights the need to examine the interface between the organisation and its environment (Khandwalla, 1977). The Management Accounting Practices (MAP) followed in the organisations must be therefore strategically designed and implemented to fit the organisational environment. The interest of practicing managers and academicians about the strategy support dimension of management accounting is growing (Tuan Mat, 2010; Cadez & Guilding, 2007, 2008a; Langfield-Smith, 2008; Bhimani & Langfield-Smith, 2007; Roslender & Hart, 2003). However, there is still no unanimity as to what constitute the strategy dimension of management accounting practices (Cadez & Guilding, 2008b; Roslender & Hart, 2003; Nyamori et al., 2001; Tomkins & Carr, 1996). More research therefore is needed to illuminate the adoption of strategically oriented management accounting techniques and the finance and accounting managers' participation in strategic management processes.

The review of literature provided two perceptions of the strategic emphasis of management accounting practices .One perception is considered as the use of a set of strategically oriented management accounting techniques. The other perception is concerned with the involvement of finance and accounting managers in the strategic decision making process. Therefore, it is essential to explore strategic dimension of the use of management accounting techniques for organisational performance (Cinquini & Tenucci, 2010; Cadez & Guilding, 2008b; Cravens & Guilding, 2001).

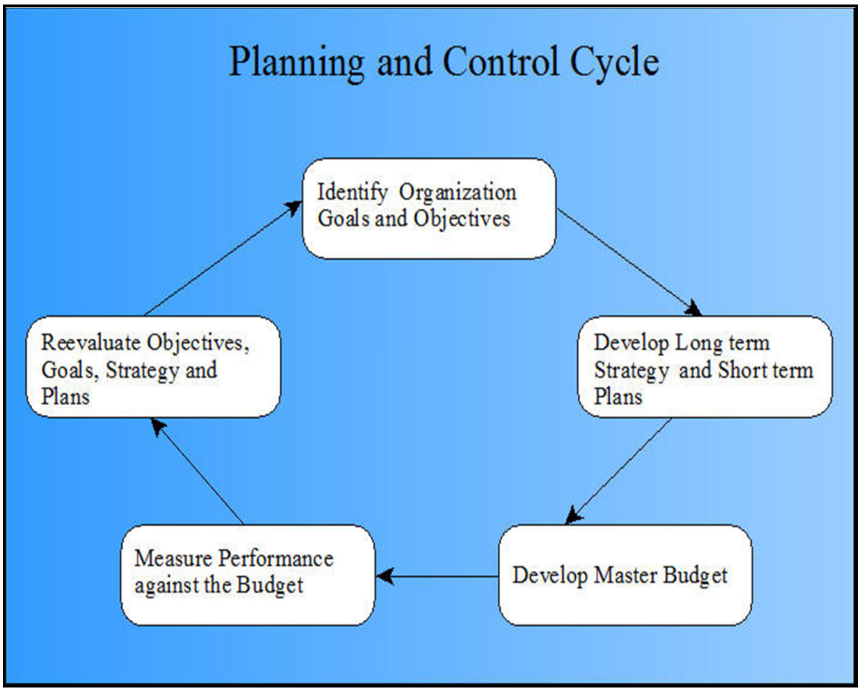
A number of studies have examined the contingency context and strategic management accounting tools as evident from the Table 2.7 above. There is increasing research interest in the strategic dimension of management accounting practices,due to the growing importance to managers for effective decision making .This area is still under detailed exploration by researchers and managers and no universally accepted strategy-management accounting practices' framework exists (Cinquini & Tenucci, 2010, Cadez & Guilding, 2008; Langfield-Smith, 2008; Roslender & Hart, 2003; Nyamori et al., 2001;Coad, 1996; Tomkins & Carr, 1996).

The context of the management accounting practices, both traditional and advanced (those with strategic emphasis) to be measured in this study is justified based on methodological support from prior studies (Guilding et al., 2000; Cravens & Guilding, 2001,Tuan Mat,2010). It was also attempted to test the Management Accounting Practices (MAP) in the Indian context in comparison with those adopted in Australian and Malaysian companies. The theoretical foundations of sixteen different Management Accounting Practices (MAP) are discussed in the following sections.

2.5.8 Budgetary Control

Budgeting is an important tool for forecasting and controlling the activities within an organisation and for allocating the entity's resources so as to achieve its objectives and goals (Drury et al., 1993). The concept of planning and control is summarised in Figure 2.11 given below. After the organisation's objectives, goals and strategy have been identified, the master budget is developed to express the plans in monetary terms. The master budget serves as a tool for communication and coordination recognising the interrelationships within the organisation. The control elements of the cycle involve calculating differences (variances) between the actual results and the budget estimates to help monitor performance (Atkinson et.al., 2001).

Figure 2.11: Budgetary control – Planning and Control Cycle*



***Source:** Atkinson et.al.(2001,p.1) adopted from www.maaw.info

A manager's job is primarily to improve systems and not to manage by numbers or inspect the work of others based on new knowledge and new ideas. The Deming-Shewhart Cycle then follows as a facilitating guide to this "new knowledge." The four activities included in this cycle are: plan, do, check, and act. Plan the action or change, do it, check it (i.e., study the results), and act. Though very simple its use is absolutely fundamental to never-ending improvement to systems. A Business Plan approach and use of statistical methods for business management was highly recommended (Francis & Gerwels ,1989). Budgets can have an "interactive" role where they are used as a "dialogue, learning and idea creation machine." Budgets also have a "diagnostic" role, which refers to the traditional purposes of performance management and responsibility accounting (Burchell et al., 1980). There is an interaction effect of strategic change and style of budget use. The level of strategic change needs to be matched with the appropriate style of budget use (i.e., diagnostic or interactive), to generate high performance (Abernethy & Brownwell, 1999).

Modern management accountants use the "flexible budget" to compare forecast results attained at actual levels of output. The flexible budget distinguishes between variable and fixed costs and thereby forecasts total costs and profits at any level of actual output, within a given amount of fixed capacity (Johnson & Kaplan, 1991). Valid forecasts are vital for short-term financial planning. A quarterly rolling forecast process also forces managers to be forward – looking, at least once per quarter, to scan the external environment and recent internal performance to identify new opportunities, respond quickly to new threats, and revise action plans to address performance shortfalls. Using quarterly rolling forecasts allows companies to incorporate the most recent information and insights about the marketplace (Kaplan & Norton, 2008).

Critical success factors like Return on Investment (ROI), on-time deliveries, throughput, customer lead-time, and headcount productivity can all be monitored using statistical techniques. As the emphasis on quality and productivity was increasing, the finance managers and internal auditors are realizing the effectiveness of Continuous Process Improvement (CPI), which highlights the cause of the problem for evaluating, controlling, and improving processes (Reeve & Philpot, 1988).

2.5.9 Absorption Costing

The main purposes of a cost accounting system include providing product costs for both internal and external reporting purposes as well as information for performance evaluation and control. The history of absorption costing is as old as cost accounting. Absorption costing which is also known as full costing is a method for appraising or valuing a firm's total inventory by including all manufacturing costs as product costs, regardless of whether they are variable or fixed and therefore it is frequently referred as the full cost method (Lal & Srivastava, 2008; Chandra & Paperman, 1976; Seiler, 1959). The total cost (fixed plus variable costs) is charged to cost per unit and total overheads are absorbed according to the level of production (Rajasekaran & Lalitha, 2010). In absorption costing technique, uniform unit cost is available only at constant level of production and different unit costs are available at different levels of output. Absorption costing technique does not aid management in decision making process whenever they are encountered with the problem of product mix, pricing decision and temporary stoppage of production activity (Bhattacharyya, 2011).

Generally Accepted Accounting Principles (GAAP) represent the standards that most companies follow for financial reporting. Generally Accepted Accounting Principles (GAAP) require companies to use absorption costing for all external reporting. Companies which use a different form of product costing for internal analysis still need to maintain an absorption costing system externally for GAAP. Companies who use absorption costing for all products costing have an advantage in that the same costs can be used for all purposes.

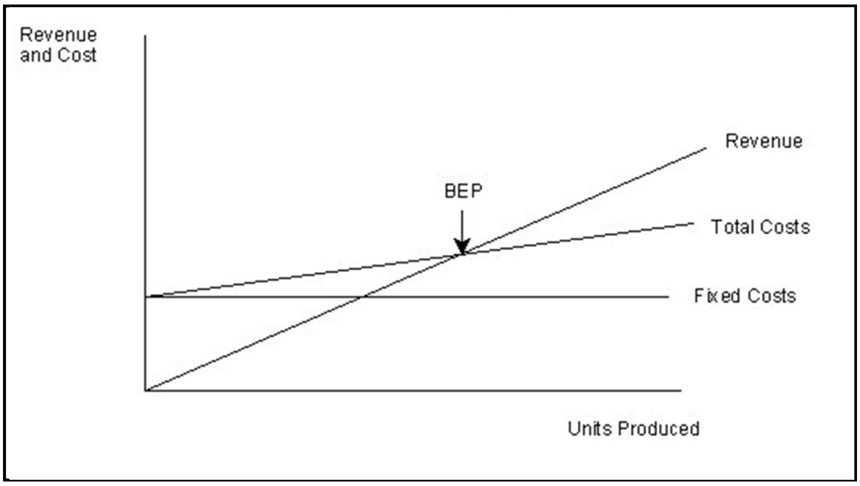
Absorption costing has two major weaknesses in that it allows management to manipulate net income by over/under producing and does not reveal details about variable and fixed costs, thereby making it impossible to determine operating leverage and operating risk. The recommended absorption-cum-direct costing income statement provides a solution to both these problems by combining the best qualities of absorption and direct/variable costing income statements and incorporating the concept of operating income, which provides a clear reflection of the operating results (Sopariwala, 2009).

2.5.10 Cost-Volume-Profit Analysis

The Cost-Volume-Profit (CVP) model was designed to be used in conjunction with a traditional cost accounting system. Through a set of simplifying assumptions, CVP analysis develops equations to represent a product's cost and revenue functions. The starting point of any CVP analysis is the computation of a product quantity needed to break even and earn a specific level of profit (Kee, 2001). The Cost-Volume-Profit (CVP) analysis is frequently used by management as a basis for choosing among alternative decisions such as the sales volume required to earn a given level of profit, the most profitable combination of products to produce and sell are examples of decision problems where CVP analysis is useful. However, the fact that traditional CVP analysis does not include adjustments for risk and uncertainty, which may in any given instance, severely limit its usefulness (Jaedicke & Robichek, 1964).

The cost-volume-profit analysis is still relevant to modern manufacturing firms and efficiently utilising the infrastructure of a firm to increase production volume can be profitable. The basic Cost-Volume-Profit Analysis (CVP) assumes constant levels of fixed costs, unit variable costs and selling prices. The Figure 2.12 below indicates a "break-even" level of activity where the sales curve intersects with the cost curve. The purpose of CVP is to show the sensitivity of profits to changes in volume (Luther & O'Donovan, 1998).

Figure 2.12: The basic Cost –Volume-Profit graph*



***Source:** Luther & O'Donovan (1998,p.18) adopted from www.maaw.info

The analytical tool Cost-Volume-Profit (CVP) analysis is used widely in managerial decision making. In its basic form, CVP examines sales price, variable costs and fixed costs in relation to target profit levels (Guidry et.al., 1998).

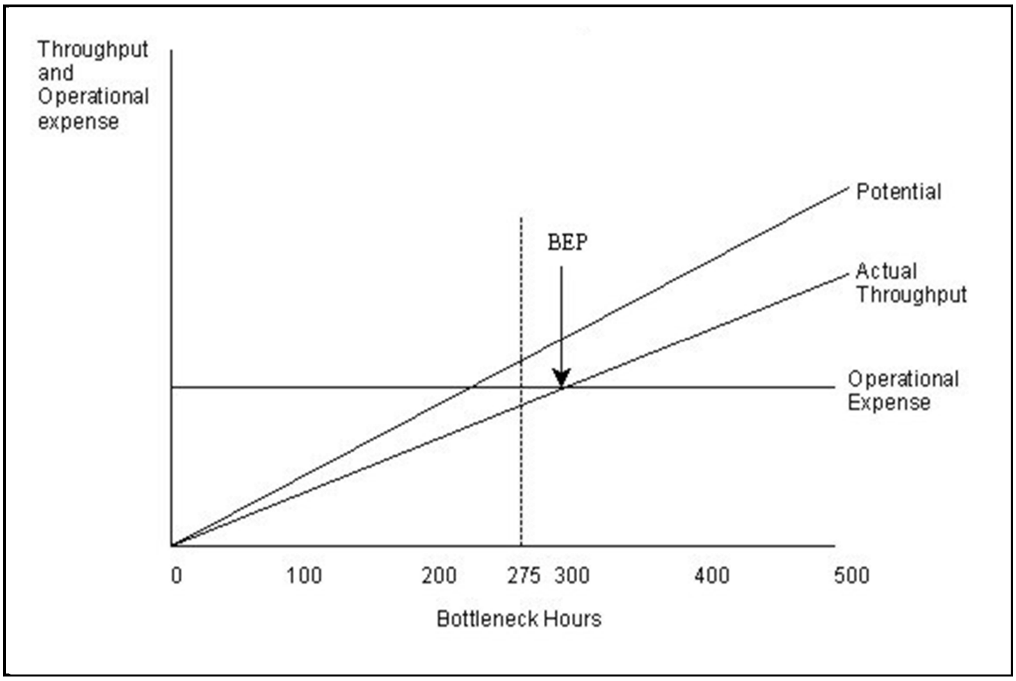
2.5.11 Marginal Costing

Management Accounting may be defined as the application of accounting techniques for providing information designed to aid all levels of management in planning and controlling the activities of the business enterprise in decision making. Marginal costing is a costing technique in which only variable manufacturing costs are considered and used while valuing inventories and determining the cost of goods sold. That is, only variable manufacturing costs are considered as product cost and are allocated to products manufactured. Absorption cost also known as full costing is a costing technique in which all manufacturing costs, variable and fixed are considered as cost of production and are used in determining the cost of goods manufactured and inventories.

Under variable costing, only those manufacturing costs that vary with output are treated as product costs. This would usually include direct material, direct labor, and the variable portion of manufacturing overhead. Thus in inventory valuation or in cost of goods sold, fixed manufacturing overhead is not treated as product cost under marginal costing technique (Lal & Srivastava, 2008; Swamidass, 2000; Chandra & Paperman, 1976; Seiler, 1959). The categorisation of cost into fixed cost and variable cost helps in providing relevant information about cost for short-term decision making, which is very beneficial for managers. If a manufacturing organisation is producing more than one product, then to determine which product is more favourable for the organisation regarding cost-benefit analysis can be guessed by Marginal Costing (Bhattacharyya, 2011; Drury, 2008; Seiler, 1959).

Luther and O'Donovan (1998) argue that contribution maximisation is still relevant. They modified the traditional Cost - Volume - Profit (CVP) analysis and applied Goldratt's Theory of Constraints. In their new approach to CVP, Luther and O'Donovan replaced production volume with a constraint on the horizontal axis and termed the new approach Cost-Constraint-Profit (CCP) analysis which is shown in Figure 2.13.

Figure 2.13: Cost-Constraint-Profit analysis*



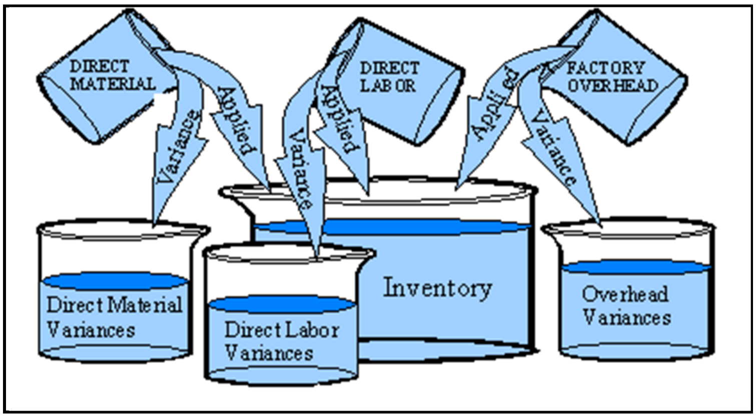
***Source:** Luther & O'Donovan (1998,p.19) adopted from www.maaw.info

In the Theory of Constraints (ToC), performance is measured by throughput, inventory and operational expense. A constraint in a manufacturing system is anything that limits manufacturing volume. The capacity to generate throughput is frequently constrained by bottlenecks. The goal of the manufacturing system is to maximize throughput per bottleneck hour (Goldratt, 1992).

2.5.12 Standard Costing

In a standard cost system, all manufacturing costs are applied, or charged to the inventory using standard or predetermined prices, and quantities. The differences between the applied costs and the actual costs are charged to variance accounts as shown in the Figure 2.14 below. The variances provide the basis for the concept of accounting control, which is somewhat different from the statistical control.

Figure 2.14: Standard costing and variance analysis*



***Source**: Cheatham & Cheatham (1996,p.25) adopted from www. maaw.info

The standard costing systems are not out dated, but they do need to be revised. By focusing on continuous improvement, standard costing systems can still be useful to managers. Standard costing systems be combined with activity based costing (ABC), since ABC systems are more useful for product costing, while standard cost systems are more useful for control. The balance between the two systems provides for a more effective and efficient way to manage (Cheatham & Cheatham, 1996).

Companies must realise that in order to take full advantage of the standard costing technique, they must continuously update standard quantities and standard prices because learning curves and business environments are always changing. The information produced should help management focus on potential areas where costs can be reduced and inefficiencies can be improved (Stammerjohan, 2001).

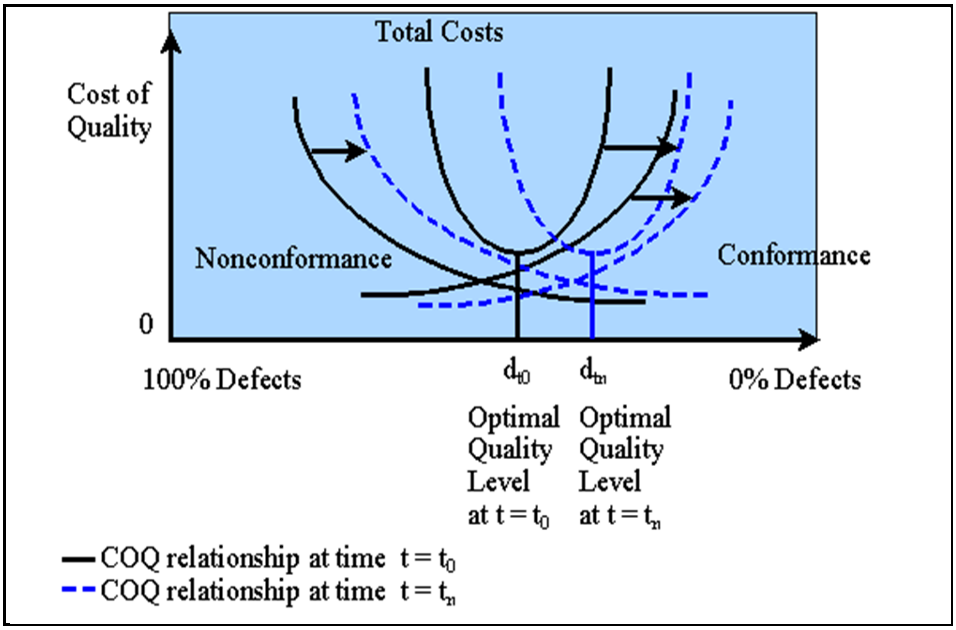
2.5.13 Quality Costing

Competitive forces are requiring firms to pay increasing attention to quality. Customers are demanding higher-quality products and services. Improving quality may actually be the key to survival for many firms. Improving process quality and the quality of products and services are fundamental strategic objectives. If quality is improved, then customer satisfaction increases; if customer satisfaction increases, then market share will increase, and if market share increases, then revenues will increase. Moreover, if quality improves, then operating costs would decrease. Thus improving quality can increase market share and sales, while simultaneously decreasing costs. The overall effect enhances a firm's financial performance and competitive position (Hansen & Mowen, 2013). To control the cost of quality, quality cost analysis was developed in the management accounting area. According to some experts, most companies, if they properly evaluate their costs of quality, will find that they are between 15 and 25 percentage of sales (Harry & Schroeder, 2006). Quality cost analysis is therefore developed as another strategically oriented management accounting practice. Whether perceived or real, product or service quality can be a source of competitive advantage (Guilding et al., 2000). Heagy (1991) classifies quality costs as prevention, appraisal and failure costs. Management may monitor these costs to secure an optimal level of relativities (Guilding et al., 2000).

A combination of management techniques and management accounting practices enhance the performance of organisations, under particular strategic priorities. Companies were identified as emphasising product differentiation, low price strategies or a combination of both.The Cost of Quality framework is an economic framework developed by quality experts Juran and Feigenbaum. This new reporting combines cost of quality with non-financial quality indicators used to assess quality performance objectives. These changes in reporting bring new roles for management accountants. There are two categories of quality costs, conformance costs and non-conformance costs. Conformance costs include costs of preventing non-conformance and costs of appraising conformance to specifications. Non-conformance includes costs of quality failures that are internal or, in the worst case, external to the firm.

The Cost of Quality framework shown in the Figure 2.15 below by the solid lines and relates quality spending and quality performance costs. This suggests an "optimal" level of quality spending and quality performance that relates to the minimum of the sum of conformity and nonconformity costs. Critics such as Crosby reject this model and argue that "quality is free" and that companies should strive towards achieving "zero defects"(Anderson & Sedatole, 1998).

Figure 2.15: The Cost of Quality Framework*

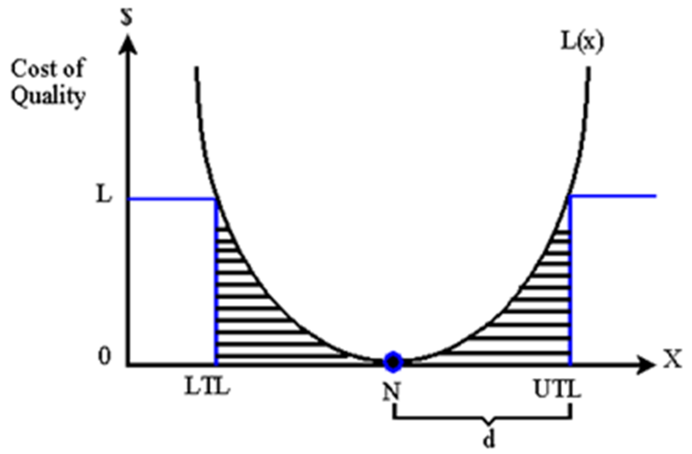


***Source:** Anderson & Sedatole (1998,p.213) adopted from www.maaw.info

The traditional method for identifying defective products involves a comparison between characteristics of products as produced to design specifications. Typically, there is a “tolerance limit” assigned as a target value. As long as the products fall within a given range (a goalpost), the products are considered equally valuable. Products that fall outside of the goalposts are considered defective (Anderson & Sedatole, 1998).

Taguchi views the goalpost idea as inappropriate and hypothesises that the quality losses are a quadratic function with a value of zero at the nominal value (N) in the graphic illustration below. But the losses differ from the goalpost concept as indicated by the shaded areas in the graphic. Any deviation from the nominal value (N) causes losses to society equal to L(x) as shown in the Figure 2.16. However, the authors say that they have found no evidence that the Taguchi function is applicable, or that firms are using the Taguchi's loss function approach.

Figure 2.16: Quality Loss framework*



L = Loss associated with producing outside of the tolerance limits in the traditional quality loss function.
L(x) = loss associated with producing anything other than the nominal specification in the Taguchi Loss Function.
LTL = lower tolerance limit. UTL = upper tolerance limit.
N = nominal specification.
d = difference between the nominal specification and the tolerance limit.

***Source:** Anderson & Sedatole (1998,p.213) adopted from www.maaw.info

Deming was critical of the zero defect philosophy because it is associated with the idea of meeting specifications as opposed to continual reduction in variation and improvement in the mean outcome through improvement of the process or system. There are two philosophies associated with quality. One concept is the zero defects philosophy and the other concept is the robust quality philosophy based on the Taguchi loss function (Roth & Albright, 1994).

The zero defects philosophy is associated with defining quality as conforming to specifications where the only costs attributed to variation are those that fall outside the specification limits. This is referred to as the goalpost view. However, the robust quality philosophy views any variation from a target value as undesirable because it causes unnecessary costs to be incurred by the manufacturer, the customer or society. It was the robust quality philosophy indicated by the loss function which provides a way to estimate these costs (Deming, 1993).

2.5.14 Target Costing

To survive today, firms must become experts in developing products that deliver the quality and functionality that customers demand while making the desired profits. To guarantee that products are sufficiently profitable when launched, many firms subject them to target costing, a profit management technique, and the strategic dimension of management accounting practices (Cooper & Slagmulder, 1999). The authors studied the mature, highly effective target costing systems of seven Japanese companies and documented their costing procedures. Although practices differ among these firms, the authors identified an underlying generic approach for implementing target costing systems.

There are two steps applicable to new products were identified; setting a target profit margin consistent with the company's long-term profit objectives and computing the product's allowable cost (by subtracting the target profit margin from the target selling price).

Product-level target costing comprises setting a reasonably achievable product-level target cost, imposing discipline upon the development process to attain the target cost (whenever feasible), and achieving the cost goal without sacrificing functionality and quality, primarily through value engineering and other engineering-based cost reduction techniques (Cooper & Slagmulder,1999).

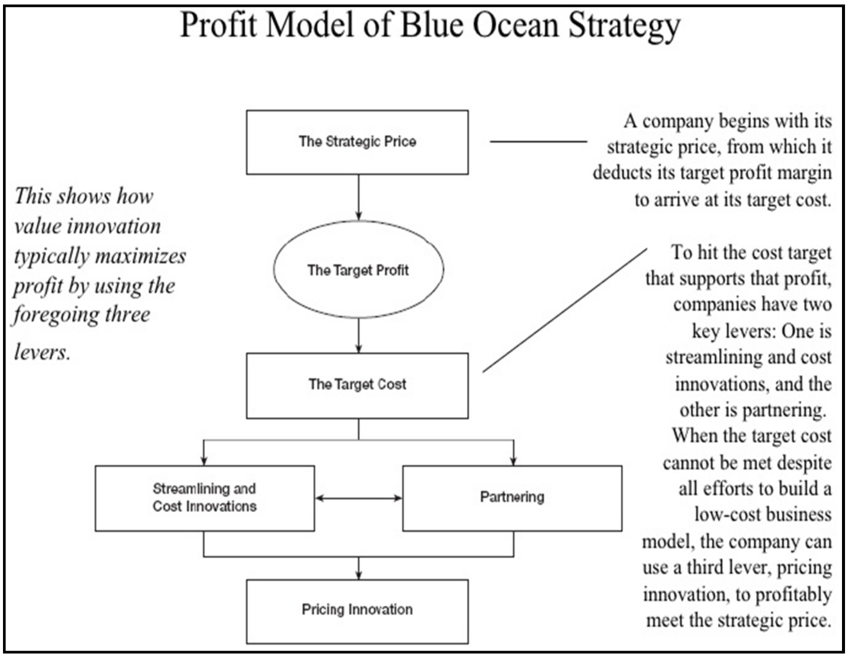
Component-level target costing included decomposing the product-level target cost to the major functions or subassemblies (in a car, the engine, transmission, cooling system, air conditioning system, and audio system), setting component-level target costs, and managing suppliers (clearly conveying to them the competitive cost pressures facing the lean enterprise) (Cooper & Slagmulder, 1999).

The cardinal rule of the companies studied by Cooper & Slagmulder (1999) was never to exceed the target costs. They enforce this rule in three ways by offsetting design improvements that result in increased costs with savings elsewhere in the design, by not launching products that exceed the target cost, and by carefully managing the transition to manufacturing in order to achieve the target cost (Cooper & Slagmulder, 1999). The target costing approach puts less emphasis on such cost classifications as fixed and variable. Rather, it seeks to minimise total costs throughout the value chain (Hope & Player, 2012).

Target costing refers to the process where a product is designed to satisfy a customer need and a target cost is determined for the product (Guilding et al., 2000). This target costing philosophy can be categorised as the strategic dimension of management accounting as it moves costing away from a quest for accurate monitoring towards forward-looking costing philosophy aimed for competitive advantage (Guilding et al., 2000). A company begins with its strategic price, from which it deducts its target profit margin to arrive at its target cost. To hit the cost target that supports that profit, companies have two key levers: one is streamlining and cost innovations, and the other is partnering. When the target cost cannot be met despite all efforts to build a low cost business model, the company should turn to the third lever, pricing innovation to profitably meet the strategic price. Of course, even when the target cost can be met, pricing innovation still can be pursued. When a company's offering successfully addresses the profit side of the business model, the company is ready to advance to the final step in the sequence of blue ocean strategy. A business model built in the sequence of exceptional utility, strategic pricing, and target costing produces value innovation (Kim & Mauborgne, 2005).

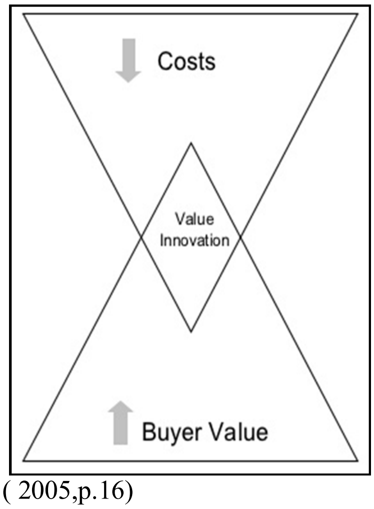
Value innovation places equal emphasis on value and innovation. Value innovation is a new way of thinking about and executing strategy that results in the creation of a blue ocean. The creation of blue oceans is about driving costs down while simultaneously driving value up for buyers. Thus value innovation, the cornerstone of blue ocean strategy, is the simultaneous pursuit of differentiation and low cost, creating a leap in value for both buyers and the company.

Figure 2.17: The Profit Model of Blue Ocean Strategy*



***Source:** Kim and Mauborgne (2005,p.136)

Figure 2.18: Value Innovation-the Cornerstone of Blue Ocean Strategy*



***Source:** Kim & Mauborgne (2005,p.16)

Value innovation is created in the region where a company's actions favourably affect both its cost structure and its value proposition to buyers. Cost savings are made by eliminating and reducing the factors an industry competes on. Buyer value is lifted by raising and creating elements the industry has never offered. Over time, costs are reduced further as scale economies kick in due to the high sales volumes that superior value generates (Kim and Mauborgne, 2005). These relationships are shown in Figures 2.17 and 2.18 above.

2.5.15 Activity Based Costing (ABC)

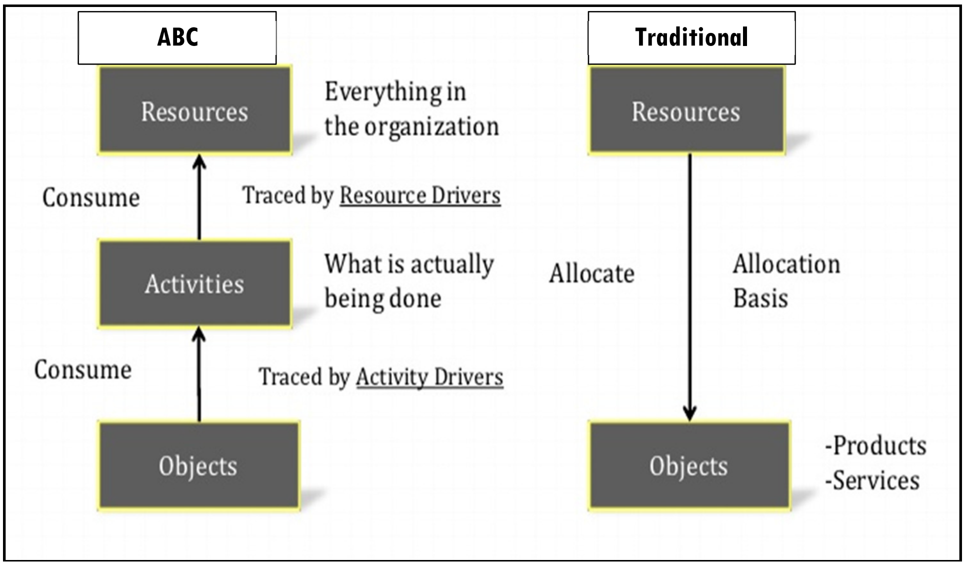
One pioneering costing method designed to deal with dearth of traditional costing systems is Activity Based Costing (ABC). ABC, pioneered by Robin Cooper, Robert Kaplan and H. Thomas Johnson (Cooper, 1990a; Cooper and Kaplan, 1988), is a costing methodology used to mark out overhead costs directly to cost objects, that is, products, processes, services, or customers and help managers to make the right decisions regarding product mix and competitive strategies (Ray,2012).

In an environment where revenue growth is slow or flat, profits are depressed, and firms are unable to sustain growth, organisations revert to lay-offs, sales of assets, cost cutting, and fire sale promotions. Unfortunately, such last option decisions are often down without accurate cost information (or good approximations) about products and customers. Frequently, cost information needed to make business decisions must be derived as opposed to being collected from enterprise business applications (general ledger) by account, cost centre, item and project. Removing or limiting base accounting details may further complicate the requirement for costing detail, and firms may need to enable Activity Based Costing (ABC) to estimate process costs and provide missing details. Unfortunately, many firms do not know which are the profitable orders, customers, products and cost effective suppliers, because these actionable information are not readily available (Decker, 2004).

Geared toward compliance with financial reporting requirements, traditional cost accounting systems often allocate costs based on single-volume measures such as direct labour hours, direct labour costs, or machine hours.

While using a single volume measure as an overall cost driver seldom meets the cause-and effect criterion desired in cost allocation, it provides a relatively cheap and convenient means of complying with financial reporting requirements. In contrast to traditional cost accounting systems, ABC systems are not inherently constrained by the tenets of financial reporting requirements. Rather, ABC systems have the inherent flexibility to provide special reports to facilitate management decisions regarding the costs of activities undertaken to design, produce, sell, and deliver a company's products or services. At the heart of this flexibility is the fact that ABC systems focus on accumulating costs via several key activities, whereas traditional cost allocation focuses on accumulating costs via organisational units. By focusing on specific activities, ABC systems provide superior cost allocation information, especially when costs are caused by non-volume-based cost drivers. Even so, traditional cost accounting systems will continue to be used to satisfy conventional financial reporting requirements. ABC systems will continue to supplement, rather than replace, traditional or conventional cost-accounting systems which are shown in the following Figure 2.19.

Figure 2.19: Traditional Costing Vs Activity Based Costing*



***Source:** Adopted from www.ximb.ac.in

ABC assigns Costs to Products by tracing expenses to "activities". Each Product is charged based on the extent to which it used an activity. Financial accounting categorises expenses by spending code; salaries, fringe benefits, utilities, travel, communication, computing, depreciation etc. ABC collects expenses from this financial system and drives them to the activities performed. It is called as mapping resources to costs to activities which is shown in the following Table 2.13.

Table 2.13: Mapping of resources to costs to activities

Mapping resources to costs to activities

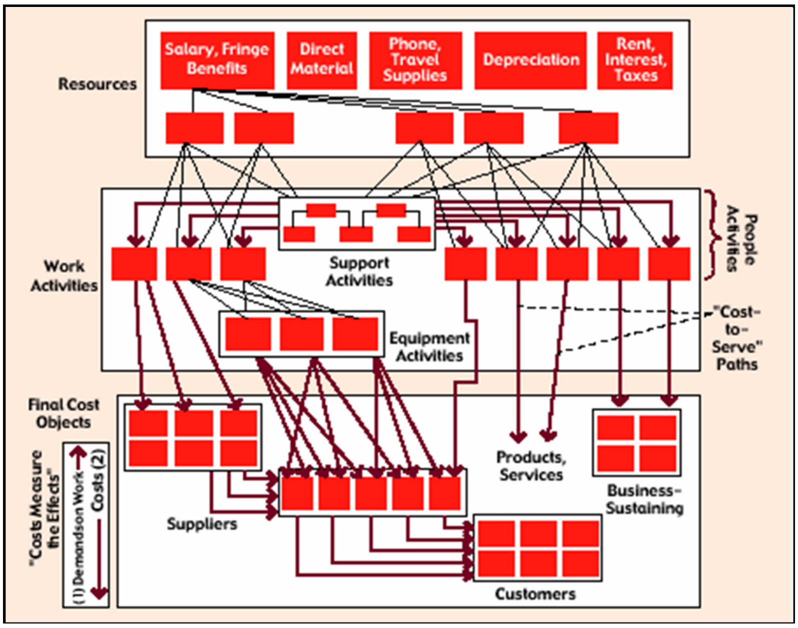
Accounting Records	
Salaries	313,000
Depreciation	155,000
Electricity	132,000
Supplies	25,000
Travel	100,000
Total	725,000

ABC Records						
Activities	Salaries	Depreciati	Electricity	Supplies	Travel	Total
Business Development	20,000	25000	5000		5000	55,000
Maintaining Present Business	80,000	60000	50000	5000	10000	205,000
Purhcasing Material	125,000	50000	20000	20000	60000	275,000
Set up Machines	25,000	10000	2000			37,000
Running Machines	50,000	10000	50000			110,000
Resolve Quality Problems	13,000		5000		25000	43,000
Total	313,000	155000	132000	25000	100000	725,000

***Source:** Adopted from www.ximb.ac.in

Complexity and product/service diversity are escalating. Unique customer needs are driving this explosion. Meeting customer needs is resulting in increasing overhead costs, but the majority of those overhead costs can be casually traced to whom (which customer) or to what (which product) the overhead activity work is benefiting. When redistributing costs, accountants call the *whom* and *what* the final cost objects. Ideally all cots should be directly charged, but as technology increases, more costs are indirect. Activity-Based Costing (ABC) acts as a surrogate for directly charging costs of activities that traditionally have not been traced to cost objects. ABC displaces the traditional and distorting practice of allocating ("spreading like peanut butter") expenses. Allocations should be a last resort (Cokins, 2004).

Figure 2.20: ABC Cost Assignment network*



***Source:** Cokins (2004, p.85)

ABC systems require a new kind of thinking. Traditional cost systems are the answer to the question, "How can the organisation allocate costs for financial reporting and for departmental cost control?"

Thus Activity Based Costing (ABC) is a management accounting practice which allocates all direct and indirect (overhead) costs to cost objects (products and services) in order to help management understand critical business information. It allocates direct and indirect costs to products and services based on the level of activities used to create and deliver those products and services. Compared to traditional accounting, ABC is a decision making tool which provides more accurate cost and profit information and allows management to understand the cost and profit drivers and improve their business (Kaplan &Cooper, 1998).

2.5.16 Activity Based Management (ABM)

The term Activity-Based Management became popular later after Cooper and Kaplan adopted the term "activity-based costing" used in a Harvard Business School case about John Deere Company's cost system.

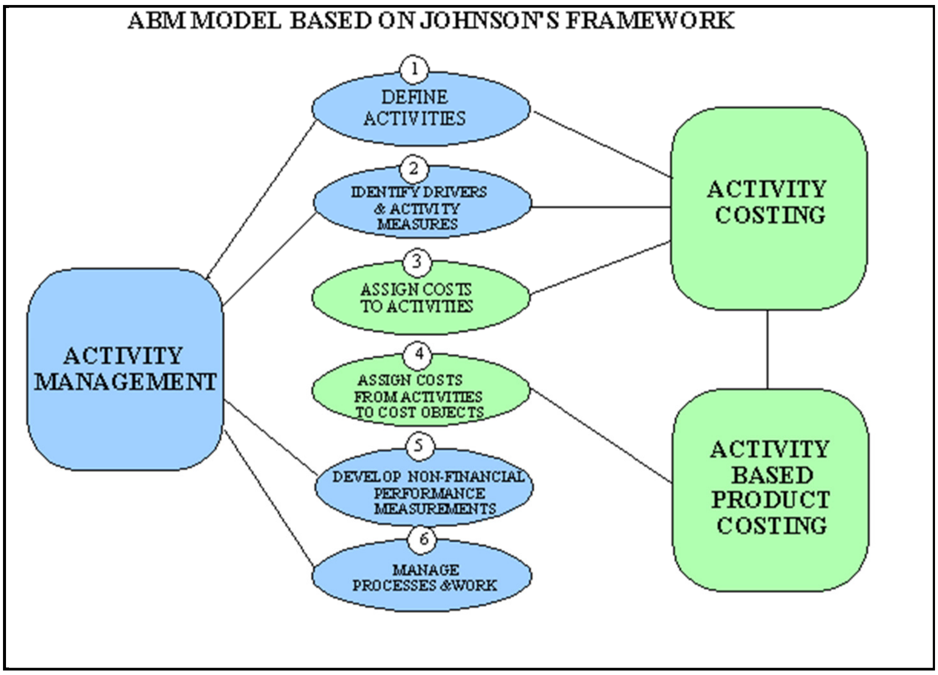
Many organisations use activity-based information to monitor and support process improvements. Activity-Based Management (ABM) is used in combination with activity-based costing to improve processes and reduce cost. It is a management tool that involves analysing and costing activities with the goal of improving efficiency and effectiveness. The twin objective of ABM is, first, to identify both value added and non-value added activities and second to redesign processes to eliminate wasteful spending on non-value added activities. Even though ABM is closely related to Activity-Based Costing (ABC), yet the two schemes differ in their primary goals. ABC focuses on activities with the goal of measuring the costs of products and services produced by them, ABM focuses on activities with the goal of managing the activities themselves.

There is significant confusion about the semantics and acronyms associated with activity-based information for which no standard definitions exist. In a narrow sense, Activity-Based Costing (ABC) can be considered the mathematics, used to reassign costs accurately to cost objects, that is outputs, products, services and customers. Its primary purpose is profitability analysis. Activity-Based Cost Management (ABCM) uses the ABC cost information to not only rationalise what products or services to sell but, more important, to identify opportunities to change the activities and processes to improve productivity (Cokins, 2004).

Activity-Based Management (ABM) integrates ABC and ABCM with non-cost metrics such as cycle time, quality, agility, flexibility, and customer service. ABM goes beyond cost information. ABCM and ABM overlap. ABM is the more popular acronym used in regard to leveraging ABC data (Cokins, 2004).

The Johnson's ABM framework separates the concepts into Activity Management, Activity Costing and Activity Based Product Costing which shown in the Figure 2.21. Note that the cost components are disconnected from activity management. Johnson's view is that processes and work should be managed, not costs.

Figure 2.21: Activity-based management (ABM) framework of Johnson*



***Source:** Johnson (1990,p.223) adopted from www.maaw.info

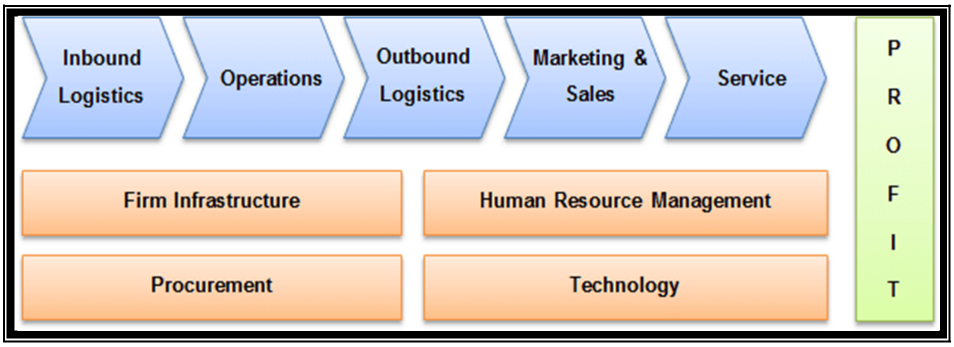
2.5.17 Value Chain Analysis

Which activities a business undertake are directly linked to achieving competitive advantage. For example, a business which wishes to outperform its competitors through differentiating itself through higher quality will have to perform its value chain activities better than the opposition. By contrast, a strategy based on seeking cost leadership will require a reduction in the costs associated with the value chain activities, or a reduction in the total amount of resources used. In either case the information provided by the management accounting systems would guide the managers not only with respect to the cost of various activities that are in the value chain inside the enterprise and but also the cost information with respect to the extended value chain outside the enterprise. The value chain concept has been extended beyond individual firms. It can apply to whole supply chains and distribution networks. The delivery of a mix of products and services to the end customer will mobilise different economic factors, each managing its own value chain. The industry-wide synchronised interactions of those local value chains create an extended value chain, sometimes global in extent.

The competitive advantage is derived from providing better customer value for equivalent cost, or equivalent customer value for lower cost. Porter describes the series of activities occurring between a product's design and distribution as links in a chain, upon which the Value Chain (VC) analysis is based (Porter, 1985). Thus the value chain analysis helps to identify how customer value can be improved or costs reduced in an enterprise's pertinent section of the value chain (Guilding et al., 2000). Value chain costing provides a useful extension to conventional cost analysis and insights for make/buy and forward/backward integration decision making (Shank & Govindarajan, 1992).

Porter introduced the generic value chain model in 1985. Value Chain (VC) represents all the internal activities a firm engages in to produce goods and services. VC is formed of primary activities that add value to the final product directly and support activities that add value indirectly. The Figure 2.22 illustrated below explains Porter's VC model (Porter, 1985).

Figure 2.22: Michael Porter's Value Chain Analysis Model*

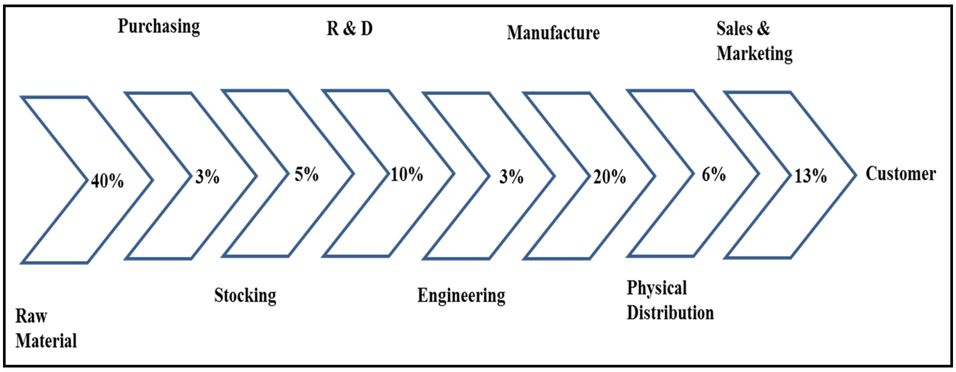


***Source:** Porter (1985,p.46)

The strategic dimension of management accounting is used to measure the importance of the customer's perceived value which is called as value chain analysis. Through evaluating the strategic advantages and disadvantages of the company's activities and value-creating processes in the market place, value chain analysis is essential to assess the company's competitive advantages. In the past, Management Accounting Practices (MAP) concentrated on internal information. It put excessive emphasis on control of production costs. The modern business idea presumes that cost reduction must be found in the "value-added" process; that is, selling price less the cost of raw material or the cost of work-in-process items. There are other inputs such as engineering, maintenance, distribution and service, so purely following a value added approach can be misleading.

The goal is to perform value chain activities more efficiently, and ultimately surpass industrial competitors (Patridge & Perren, 1994). A clear distinction is to be made between value added chain "within" a particular company and the value added chain in the vertical business system that connects raw material suppliers to manufacturers to distributors to, eventually, the final end customer. As value is added through these chains, so are costs. It is a useful exercise therefore to split up costs according to the step in each chain at which they are accumulated and to compare, where possible, cost and value additions. Too high costs at the end of the line can often be attributed to on stage or another where costs substantially exceed value additions. These become high priorities for management attention (Abell, 2010). Such analyses must be undertaken in two steps: the first step is to develop a clear picture of the *internal* value added chain, by breaking down internal operations into each of the main functions where value is accumulated. Direct costs are then assigned as shown in the following Figure 2.23. This not only gives an indication of cost versus value added at each stage, it enables management to identify clearly where the major elements of cost in the internal business system truly lie – and where there be real leverage for cost reductions if costs are out of line

Figure 2.23: Internal value chain cost analysis*



***Source:** Abell (2010,p.67)

Having performed such an internal cost analysis, attention has to be turned to the external business system – and analogous exercise undertaken to assess value and costs added by each member of the vertical chain. Such an analysis often points up the fact that leverage points for cost reduction lie beyond the organisational boundaries of one particular firm. Leverage points may well exist upstream in terms of improving raw material acquisition costs, intermediate processing costs, or in key components costs ,or downstream in physical distribution and marketing. Just-in-time inventory has had a major impact not only on dramatically shortening the cycle time between order placement and final delivery, but on squeezing out inventory carrying costs at key points in the overall business system (Abell,2010). The entire information required for such competitive decisions can only be generated through the management accounting process.

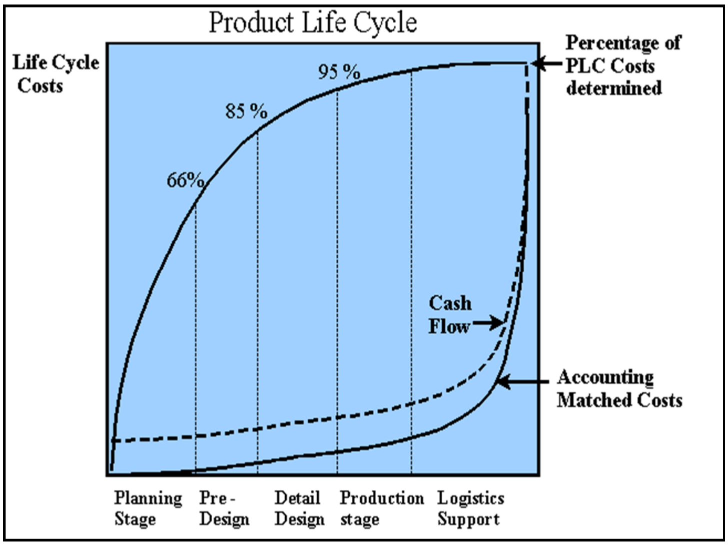
2.5.18 Product Life Cycle Cost Analysis

Product life-cycle is simply the time a product exists- from conception to abandonment. By replacing “conception” with “purchase” a customer oriented definition of product life-cycle can be obtained. The producer oriented definition of product life-cycle refers to the life of classes, forms, or brands. The producer of goods or services has two viewpoints concerning product life-cycle; whereas the customer oriented definition refers to the life of a specific unit of product-the marketing viewpoint and the production viewpoint. The marketing viewpoint describes the general sales pattern of a product as it passes through distinct life-cycle stages. All three life-cycle viewpoints offer insights that can be useful to producers of goods and services. In fact, producers cannot afford to ignore any of the three (Hansen & Mowen,2013).

A comprehensive life-cycle cost management program must pay attention to all these three viewpoints mentioned above, and this observation could produce an integrated, comprehensive definition of life-cycle cost management. Life-cycle cost management consists of actions taken that cause a product to be designed, developed, produced, marketed, distributed, operated, serviced and disposed of so that life-cycle profits are maximised. Maximising life-cycle profits means producers must understand and capitalise on the relationships that exist among the three life-cycle viewpoints. Once these relationships are understood, then actions can be implemented that take advantage of revenue enhancement and cost reduction opportunities (Hansen & Mowen, 2013).

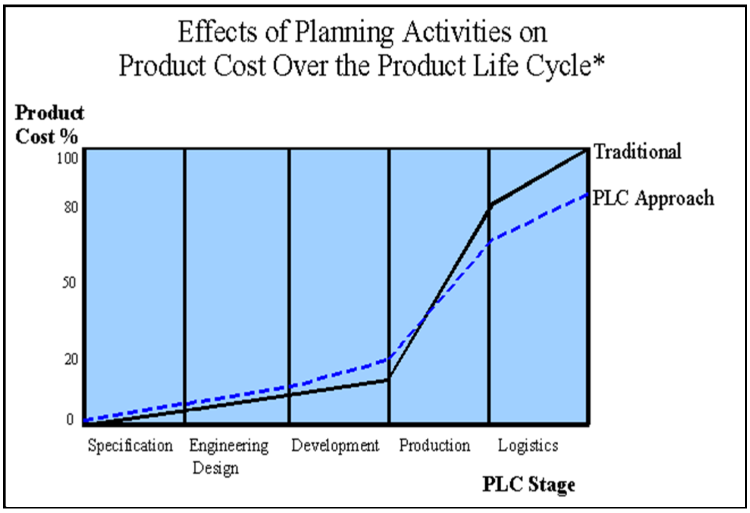
Life Cycle Cost (LCC) analysis provides a framework for specifying the estimated total incremental cost of developing, producing, using, and retiring a particular item. Aseidu & Gu (1998), in their paper, observed the issues of LCC analysis and the tools that have been developed to provide engineers with cost information to guide them in design. Atkinson et al., (2001) and Berliner & Brimson (1988) also studied life-cycle costing in detail and are depicted in the Figures 2.24 and 2.25 respectively.

Figure 2.24: Product Life Cycle Costing*



***Source:** Atkinson et.al. (2001) adopted from www.maaw.info

Figure 2.25: Traditional Costing and Product Life Cycle Cost Approach*



***Source:** Berliner & Brimson (1988,p.9) adopted from www.maaw.info

Although significant benefits are attributed to life cycle cost analysis, there is little evidence regarding the extent of its application in organisational settings. Moreover, there is scant systematic evidence available with respect to the array of factors that may influence its use. However, a review of the literature suggests that customer profiling, competitive advantage, and quality of information system information are three factors potentially impacting the extent to which life cycle cost analysis is used in firms (Dunk, 2004).

Numerous studies exist in the literature relating to life-cycle costing (Cinquini & Tenucci, 2010; Wilson, 1995; Shields & Young, 1991). Describing the strategic dimensions associated to this viewpoint, Wilson (1995) noted that, rather than evaluating costs on an annual basis, the relevant time frame in life cycle costing depends on the stages in a product's life cycle.

2.5.19 Benchmarking

Benchmarking is the search for the best practices within and across industries. There are several reasons why organisations engage in benchmarking:

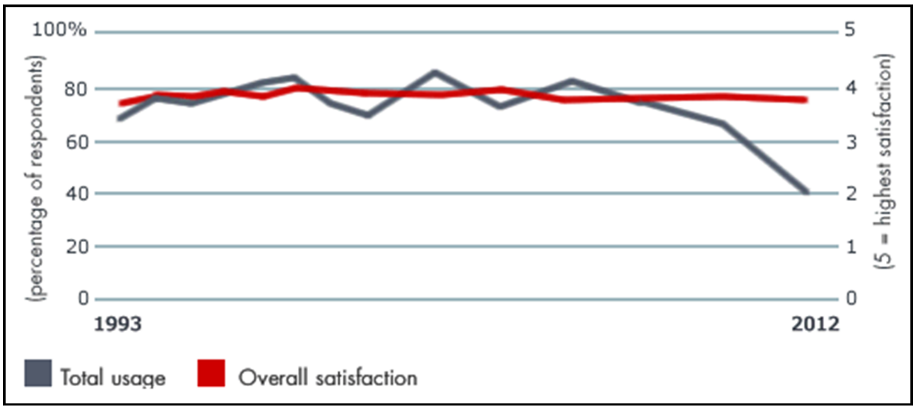
- For continuous improvement of internal operations
- To become more externally competitive, or
- For organisational survival.

Benchmarking is usually undertaken when an organisation believes that others outside the organisation have superior knowledge about processes, technology, quality or costing methods that are beyond the organisation's current state-of-the-art systems (Elnathan et.al., 1996). Benchmarking is measuring against an established standard (developed from a large enough sample of "best" company practices) to determine where an operation ranks. It is an analysis method that points out areas where possible improvements can be made. Benchmarking "standards" are based on "best practices" not perfect practices (Coburn et al.,1995).

Benchmarking is the search for industry best practices that lead to superior performance (Camp, 1989). This tool is one of the most recognised and widely used tools of all the business strategy tools. The survey done by The Global Benchmarking Network reveals that adaptation of the tool in organisations varies from 68% for informal benchmarking to 49% and 39% for performance and best practice benchmarking, respectively (Bain & Company, 2013).

Benchmarking improves performance by identifying and applying best demonstrated practices to operations and sales. Managers compare the performance of their products or processes externally with those of competitors and best-in-class companies and internally with other operations within their own firms that perform similar activities. The objective of benchmarking is to find examples of superior performance and to understand the processes and practices driving that performance. Companies then improve their performance by tailoring and incorporating these best practices into their own operations-not by imitating, but by innovating. The following Figure 2.26 shows that, although, the satisfaction of the tool is high, the usage of it has declined since the heights in 1999. Still, benchmarking remained the 4th top used tool by businesses in the world in 2013 (Bain & Company, 2013).

Figure 2.26: Usage & Effectiveness level of Benchmarking Tool*



***Source:** Bain & Company (2013)

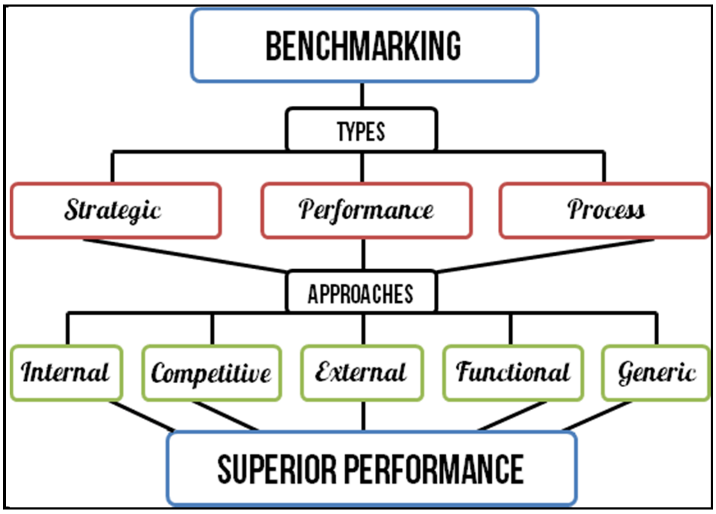
Management accounting is a part of finance function. Benchmarking in this area is directed towards planning and budgeting processes, billing, accounts receivable, accounting systems development, payroll, credit and collections, financial analysis and internal auditing (Elnathan et.al., 1996).

Benchmarking is a tool used by companies to identify areas of an operation which may need attention or correction. Benchmarking is done by comparing a company's own financial and operational information against that of a similar company or comparing internal operations of different departments within their own company. The idea is, if the numbers are off between the comparisons, then the company will be able to compare the differences in an effort to identify those factors that contribute to the discrepancies (Murray et al., 1997)

When gathering data for comparison on a chosen benchmark, it is often difficult to find reliable and complete information for external companies. There are many different ways to obtain the information needed. The sources listed included consulting firms, industry or professional organisations, state or national government agencies, or industry specific publications (Murray et al., 1997).

There are different types of benchmarking the managers can use: Strategic, performance and process benchmarking (Bogan et.al., 1994). In addition to these types, there are four approaches to benchmarking: internal, competitive, external, functional and generic (Kulmala, 2014). The following Figure 2.27 summarises the types and approaches to benchmarking.

Figure 2.27: Types and Approaches to Benchmarking*



***Source:** Adopted from www.strategicmanagementinsight.com

A benchmark is a standard of performance. As a financial management improvement strategy, benchmarking helps organisations identify standards of performance in other organisations and to import them successfully to their own (Hope & Player, 2012).

2.5.20 Product Profitability Analysis

Product profitability is derived by deducting the cost of the product from its price. Therefore, it also means the accuracy of product costs would determine the product profitability. The late Peter F.Drucker, the world's prominent management guru, predicted that management accounting would grow to play an even more important role in manufacturing of the future (in the American context) than it had in the past. He predicted that, by 1999, time-not labour-would be the critical driver of costs (Hutchinson, 2007). Shields &Shields (1998) had speculated that there will be an increasing divergence in management accounting practices across industries. Research into product costing practice, however, has tended to study product costing practices across industries and has not attempted to compare practices between industries. By comparing the product costing practices from a questionnaire completed by 129 management accountants working in different operating units from four manufacturing industries in Great Britain, it was revealed that, in general, there are no significant differences in the product costing practices across the four manufacturing industries. This provides some confirmation of the validity of the results of prior research that does not discriminate between the practices of the various industries included in their samples (Brierley et.al., 2001). Joye & Blayney (1990) provide details, across a variety of industries, of the proportion of direct material costs making up total production costs, the use of blanket overhead rates, direct labour and other overhead rates and provide a summary of their questionnaire results for each of the 20 industries studied.

Miller &Vollmann (1985) found that the proportion of manufacturing overheads to total manufacturing costs was particularly high in the electronics and machinery industries. Dean et al., (1991) report variations in direct materials, direct labour and overhead costs as a proportion of manufacturing costs in certain industries, and provide a summary of their results for each of the 13 industries studied. Cinquini et al., (1999) noted that there had been a growth over time in overhead costs for the bottled and canned soft drinks, electronic computer equipment and photographic equipment industries; while overheads had stayed relatively constant in the meat-packing, textile bags, and flour and meal industries.

2.5.21 Customer Profitability Analysis

There is only one valid definition of business purpose that is to create a customer (Drucker, 2009). Although many companies publicly claim to hold the customer as the most important factor in business, the cost accounting systems of these organisations do not reflect this. Most management accounting systems focus on “products, departments or geographical regions”, which have little to do with customers. Through responses to a survey, companies describe their views on capturing customer profitability measures, as well as attributes and deficiencies in their current cost models and business practices (Foster et al., 1996).

As companies realise the potential benefits of measuring customer profitability, many opportunities will open up. Customer Account Profitability (CAP) will affect strategic decisions, the valuing of intangible assets, and customer retention rates will be improved through CAP analysis. Using intangible assets as an example, business will realise the enormous future impact that current actions can have on assets such as brand name or customer base. Although there are many practical problems in taking a CAP approach, the future benefits will more than make up for issues that must be resolved (Foster et al., 1996).

Customer Account Profitability (CAP) can be looked at from many different contexts. At the lowest level, a company can look at the profitability of individual customers. This would be ideal for firms selling products or services to a few, large customers. A company could group customers together based on certain similar characteristics such as size of average transaction, business size, number of transactions, etc. This might be useful if the company has numerous customers and cannot capture data individually due to the enormous costs it would require (Foster et al., 1996).

There are five constructs of customer accounting found in related studies such as Kaplan and Norton (1992) in their work on Balanced Score Card. Guilding &McManus (2002) explain the five constructs as follows:

1. Customer Profitability Analysis - tracing profitability directly to a customer.
2. Customer Segment Profitability Analysis - tracing profitability directly to a customer group and market segment.
3. Lifetime Customer Profitability Analysis - Extend customer profitability analysis into the future to forecast lifetime profitability of the customer
4. Valuation of customers or customer groups as assets - This refers to the idea of including the value of customer relationships on the balance sheet as an asset.
5. Customer Accounting (the holistic notion) - all accounting practices directed towards appraising profit, sales, or present value of earnings relating to a customer or group of customers.

A company that produces many products may have a few that are not profitable, but because they are produced, they attract customers that are highly profitable on other products. A company's resources are not only used by products, but by customers, markets, and channels of distribution as well (Howell & Soucy, 1990). For example, Volume discounts, Commissions, Sales support, Inventory and distribution support, Inventory holding requirements, Freight policies, Credit and collection support, Accounts receivable, Order entry and customer support, and Field service etc. (Howell & Soucy, 1990).

These costs are generally considered period costs as Selling, General & Administrative (SG &A) expenses; and represent between 20% - 40% of the sales costs in some Fortune 500 companies. Even though much of these costs could be assigned directly to products, since Generally Accepted Accounting Principles (GAAP) do not disallow their assignment to products or customers, they are instead built on top of the product as part of the mark-up over cost. Accounting for the SG&A expenses in this manner may cause a company to continue producing a product or continue serving a customer that is not overall profitable to the company (Howell & Soucy,1990).

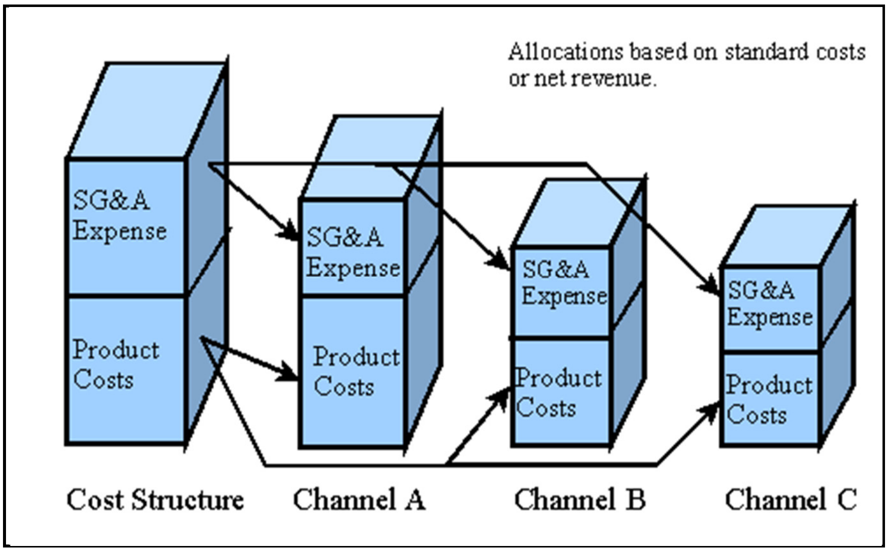
A new type of profit and loss statement has been developed to create a customer profit and loss profile. This analysis allows management to prepare a micro strategy to increase the profitability of each customer. On the macro level, a company can evaluate channel of distribution and market profitability and develop a plan for cost reduction and improved profitability. In many companies there is a pool of resources to the largest customers. Instead, management needs to reassign resources to activities and customers that will yield more sales, greater customer service, and higher profits (Howell & Soucy, 1990).

Instead of understanding the customer profitability in isolation, an attempt was made by Manning (1995) to determine distribution channel profitability which is a wider concept which includes the customer profitability. He had analysed three different approaches to customer distribution channel profitability – Standard, Activity-Based Costing approach (ABC) and Strategic Cost Management (SCM). Manning provides a four step approach for developing accurate channel and customer costs:

1. Separate the organisation's cost structure into activity and not-activity costs.
2. Identify the cost behaviour of all activity and non-activity costs.
3. Trace these costs to the individual products, channels, and customers.
4. Translate the product, channel, and customer cost elements into a total cost view for the business.

Product costs and selling, general and administrative (SG&A) costs are the two pools used for under the standard cost approach. SG&A costs are allocated to the channels based on the net revenues of the respective channels. This approach is useful if the organisation is aligned by channel or customer group, but these scenarios are not very realistic. The standard costing approach to determine channel profitability has all the same drawbacks as traditional standard product costing, which tends to distort cost (Manning, 1995). This is shown in the Figure 2.28 below.

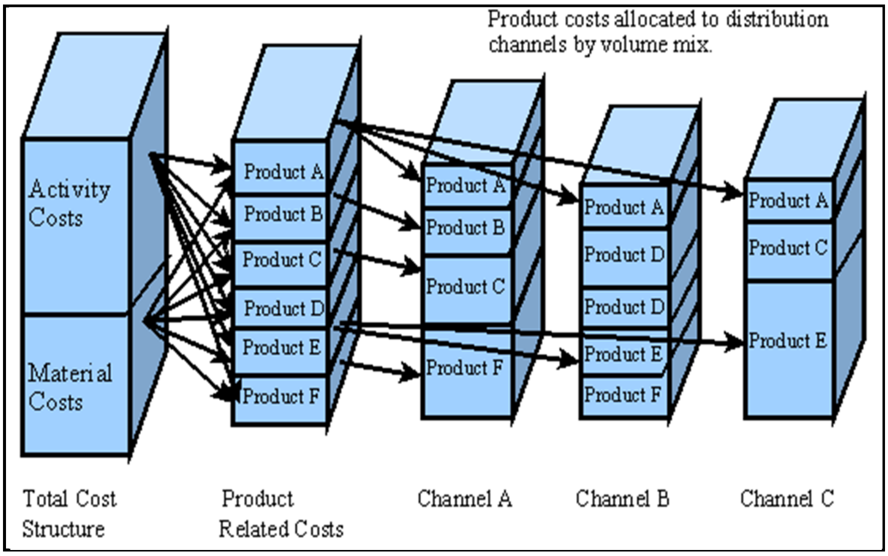
Figure 2.28: Standard Approach to Channel Profitability*



***Source:** Manning (1995,p.45) adopted from maaw.info

The Activity-Based Costing (ABC) method is more accurate at tracing costs to products, but is based on the assumption that all costs are product driven. However, channel costs and profitability are not typically driven solely by products, but also by the customers served and the channels through which the products are provided. Therefore, the ABC approach is not the best method to determine channel profitability. The following Figure 2.29 gives graphic view of the ABC approach as described by Manning (1995).

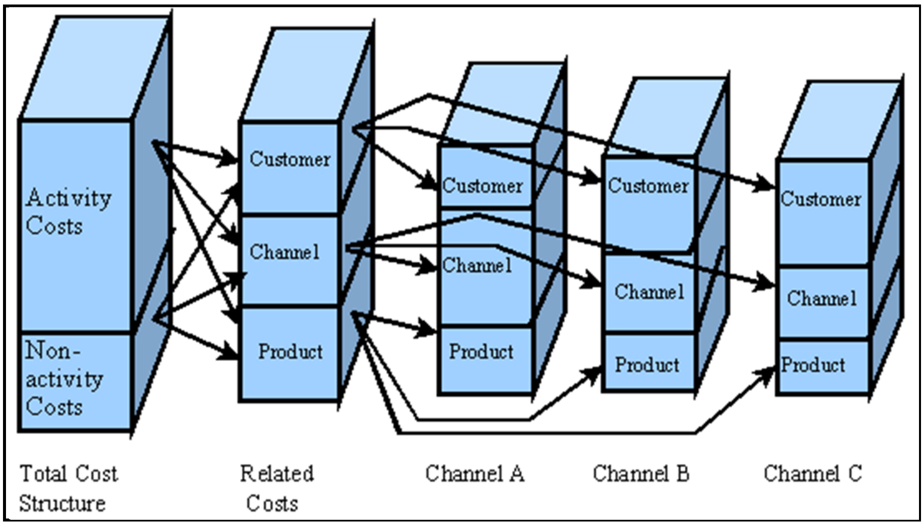
Figure 2.29: ABC approach to channel profitability*



***Source:** Manning (1995,p.46) adopted from www.maaw.info

Strategic cost management approach recognizes that costs are not driven solely by products produced, but also by the customers served and the channels through which the products are sold (e.g., distributors, catalogues, mega-stores, direct mail, e-commerce, etc.). This method separates costs into three different types: product-related costs, channel-related costs, and customer-related costs as shown in the following Figure 2.30.

Figure 2.30: Strategic cost management approach to channel profitability*



***Source:** Manning (1995,p.47) adopted from www.maaw.info

2.5.22 Shareholder Value Analysis / Economic Value Added

Shareholder Value Analysis (SVA) enables management to measure the economic impact of individual strategy decisions on the business. There are different viewpoints with regard to computation of shareholder value. For example, management can use SVA to determine the value of mergers and acquisitions, new product development, asset sales, capital expenditures, etc. Performance measures are needed for decisions regarding management compensation packages and resource allocation. Initial measures revolved around "stock price", but did not adequately reflect performance.

In 1991, Stern Stewart Management Services created Economic Value Added (EVA), a measurement that correlated with changes in shareholder wealth, but was not subject to random variations in stock price.

In this study, the Economic Value Added (EVA) approach is considered as a measure of shareholder value analysis. Economic Value Added (EVA) is a measure of financial performance based on the concept that all capital has a cost and that earning more than the cost of capital creates value for shareholders. It is after-tax net operating profit (NOPAT) minus a capital charge. It is true economic profit consisting of all costs including the cost of capital. If a company's return on capital exceeds its cost of capital it is creating true value for the shareholder (Dierks & Patel, 1997). EVA is calculated as follows:

EVA = (r-c) x Capital

EVA = (r x Capital) – (c x Capital)

EVA = (NOPAT- c x Capital

EVA = operating profits – a capital charge

where: r = rate of return, and c = cost of capital, or the weighted average cost of capital.

NOPAT is profits derived from a company's operations after taxes but before financing costs and non-cash bookkeeping entries. It is the total pool of profits available to provide a cash return to those who provide capital to the firm (Dierks & Patel, 1997). Many managers feel that traditional accounting-based measurement systems no longer adequately fulfill the need in developing strategic plans, evaluating the achievement of organisational objectives, and compensating managers. Perceived inadequacies in traditional accounting-based performance measures have motivated a variety of performance measurement innovations ranging from "improved" financial metrics such as "economic value" measures to "balance scorecards" of integrated financial and nonfinancial measures (Ittner & Larcker, 1998). Used correctly, shareholder value analysis is much more like an examination of the strategic fundamentals than a number-crunching exercise. Without a basis in the hard organisational and competitive realities, value-based numbers have no meaning. Shareholder Value Analysis

(SVA) is useful only when it is the last step in a rigorous evaluation of how strategic alternatives are likely to fare in the marketplace. When accompanied by sharp, critical strategic thinking, SVA gives reliable signals about a strategy's potential to create both shareholder value and sustainable competitive advantage (Day & Fahey, 1990). Accounting profits have proved time and again to be a poor indicator of future success (Hope & Player, 2012). Economic Value Added (EVA) models, if well implemented, will encourage managers to act like owners and consider their decisions in the context of whether they will increase shareholders' wealth.

2.5.23 Statutory Cost Audit Reporting

Statutory Cost Audit is a system of audit introduced by the Government of India for the review, examination and appraisal of the cost accounting records and attendant information, required to be maintained by specified industries. Cost audit is an innovation introduced for the first time in the world in India, with a view to regulating vital industries on healthy and sound lines. It is for cost – effective products and services to be available to customers; proper revenue to the Government's treasury and returns to other stake holders like vendors, workers, financial institutions and distributors (ICAI-CMA, 1977). It is the verification of cost records and accounts and a check on the adherence to the prescribed cost accounting procedures and principles and the continuing relevance of such produces (ICAI -CMA, 1977).

The Ministry of Corporate Affairs (MCA) constituted an Expert Group to review the existing mechanism of statutory cost accounting records and cost audit. The group, in its report submitted in December,2008,had recommended a radical shift of cost accounting records and cost audit from being compliance or rule-based governance to performance management framework with focus on three key objectives- enterprise governance, competitiveness and strengthening the regulatory mechanism. Cost audit methodology as structured originally under Section 233B of the Company's Act of 1956 and the existing cost audit report rules, as amended in the year 2014 as Section 148(1), was proposed to be realigned with the cost & management accounting perspectives.

In order to take advantage of the new product patent regime, it is imperative for Indian manufacturing industry to enhance its competitiveness, most importantly the cost competitiveness, because business success depends on how businesses innovate their products and processes. Statutory compulsions for maintenance of stipulated cost accounting records and their proper auditing by qualified cost auditors can provide the necessary impetus for organisations to become increasingly cost conscious. Besides, this can improve the quality of financial disclosures like the ones relating to segmental reporting, because it alone can provide reliable and accurate data required for its compilation (Manoj, 2008).

Moreover, for many of the essential goods it provides the government with the necessary data for informed pricing decisions thus enabling monitoring and control of their prices. From the financial reporting perspective, inclusion of relevant cost information as part of statutory financial reporting is an imminent need; and for public utilities and other essential services this has got added significance. Equally important is the need for reporting the particulars relating to the discharge of socio-environmental responsibilities of the business, value added and other efficiency parameters. The recent move from some corners to restrict the ambit of cost audit to a limited number of industries may be observed to be one that is highly counter-productive in nature and motivated from vested interests. In fact, it is high time that the realm of statutory cost audit is expanded to other manufacturing industries uncovered so far, as well as the services sector like banking, insurance, ICT and the like (Manoj,2008).

The cost records and the cost audit report will play a good role in providing valid and reliable documents for the Indian exporters to substantiate their fair approach against any allegation of dumping. In today's free market economy, a lot of goods are imported from different countries which hamper the growth of local industries due to dumping below costs. The provision of levy of anti-dumping duty by the Government requires exact cost of the product for which a regular cost audit will help to streamline the procedure. In fact Competition Law to be effective against any anti-competition activity presupposes the availability of reliable and authentic cost data. The transfer pricing issue has gained considerable momentum in the international scenario. Cost Audit Report Rules have been amended to take care of this aspect in the right perspective (Kumar, 2010).

Companies are indulged in inflating the value of inventories especially in cases where brought-forward losses were large. Inventories are also beefed up at the time of raising funds from banks and financial institutions. The most convenient way to check such practices is cost audit. However, a section of the industry had opposed mandatory cost audit on the ground that the cost audit reports are often leaked out to competitors. Since costing of the product is the most important aspect of fixing the selling price, most companies do not like to share the secret with an outside agency (Bakshi, 1997).

In India, the Institute of Cost Accountants of India (ICAI-CMA) is the custodian of the management accounting profession. It has the responsibility to bridge the gap between the roles of management accounting articulated by it and the role that its members actually play in the economy. The first step is to strengthen its efforts to create awareness and educate users of the services of its members about the potential of the management accounting profession. For instance, government should be educated on how strengthening and restructuring of cost audit will improve the productivity and competitiveness of industry and what role Cost & Management Accountants (CMAs) can play to improve the efficiency and effectiveness of welfare and infrastructure projects in the social sector. Small and medium enterprises should be educated on the potential of management accounting practices for better organisational performance (Bhattacharya, 2009).

Chatterjee & Mir, (2006), however, had an opposite view that the mandatory cost audit in India has not enhanced the level of trust of investors in financial statements. It had no impact in minimising the perceived risks of investors with respect to financial statement numbers, and the process of cost audit does not impact their choice of investment decision.

The cost audit is intended as a direct step towards developing and maintaining sound methods of cost accounting. It serves as a means of protecting the executive against faulty periodical reports. It makes for more efficient results in the cost department, since each operative knows that his work will be audited. When the investigation is complete, the accountant will present his report setting forth the results of the examination and embodying suggestions for improvement (Bennet, 1922). From this paper it was very clear that the need for audit of cost accounts was felt in different parts of the world, much earlier the statutory cost audit was introduced in India, in the year 1965.

Thus the concept and scope of cost audit in India is much wider as the definition lays much emphasis on the evaluation of the efficiency of operations and the propriety of management actions and decisions, and executive programs and policies. In this sense, cost audit appears synonymous with efficiency audit (ICAI-CMA, 2007).

2.5.24 Empirical Studies on Organisational Performance

Organisational performance encompasses the actual output or results of an organisation as measured against its intended outputs (or goals and objectives). Organisational performance encompasses three specific areas of firm outcomes: (a) financial performance (profits, return on assets, return on investment, etc.); (b) product market performance (sales, market share, etc.); and (c) shareholder return (total shareholder return, economic value added, etc.) (Richard et al., 2009).

It is an important consideration for the management of an organisation (both "for profit" or "not-for-profit"), to ensure that the available resources are being utilised in an efficient and effective manner to achieve specified results. Organisations should recognise the resources (human, financial, physical and intellectual/intangible) they need to deliver on their purpose and plan how those resources will be made available to and best managed by the organisation.

Once an organisation has decided on its purpose and related strategies , it is common practice as part of a strategic planning process, to choose measures or indicators that enable the top management to track progress i.e. the Key Performance Indicators (KPIs) to measure the organisation's performance on execution of its strategy and achievement of its purpose. Obviously, it is very important to ensure the metrics adopted are capable of being measured and understood. Often the management will choose a combination of financial and non-financial metrics. Non-financial performance measures are those which are not an outcome of the financial accounting function of an organisation. Here the management accounting function should step in to provide the critical non-financial information that would help the management for better decision making that would lead to enhanced organisational performance.

Business Performance Measurement (BPM) is a fast evolving and diverse research field which features highly on the agenda of academics and practitioners from functions including general management, accounting, operations research, marketing, and human resources. Utilising a citation analysis, Marr& Schiuma (2003), identifies the challenges for the field of BPM. The balanced scorecard seems to be the most influential and dominant concept in the field.

The role of performance measurement systems highlighted in the operations and business strategy literature emphasises the need and importance of implementing such systems in organisations (Valanciene & Gimzauskiene, 2007; Kloviene & Gimzauskiene, 2009). Organisations must therefore, give due consideration to maintain effective performance management systems, as it is critical to their existence. Moreover, this performance focus plays an important role in leading the organisations (Chow & Van der Stede, 2006). Supporting this 'leading role' view, Neely et al.,(1996) define performance measurement system as a balanced and dynamic system that supports the decision making process through gathering, elaborating and analysing information. This performance measurement lens is of major importance in this exploration of the strategic dimension of management accounting for effective decision making, which will eventually lead to better organisational performance.

The management accounting literature reflects an evolution in the role, design and organisational impacts of performance measurement. As the older brother, organisational theory has contributed to this development and has the richness to do so in the future. Synergistic effects could be obtained from the combination of specific knowledge and expertise from management accounting and organisational theory as well as fields such as strategic management, operation and production management and finance. Multidisciplinary perspectives could contribute to a more comprehensive understanding of performance measurement issues (Henri, 2004).

Organisational performance may be an antecedent or an outcome factor of management accounting (Tuan Mat, 2010). According to "performance as antecedent" view, low financial performance is one of the reasons why firms change or modify their management accounting practices and internal organisation factors, with the aim of enhancing performance (Laitinen, 2006; Granlund, 2001). The other view is the contingency theory view of "performance as outcome factor". If organisations adopt those Management Accounting Practices (MAP) that suit their environmental and organisational factors, they are likely to perform better (Chenhall, 2003; Otley, 1980, Macy & Arunachalam, 1995). This study follows the contingency view that enhanced organisational performance is an outcome of better and informed decisions provided by the Management Accounting Practices (MAP) followed in the organisations and hence, is the dependent variable. According to contingency theory, organisational performance is dependent on the fit between management accounting practices and its contextual variables (Jerrmias & Gani, 2002). There are many scholars who supported the view that contingency theory based management accounting research should place organisational performance as the dependent variable as performance is a product of appropriate fit between the management accounting practices and contingency factors (Cadez & Guilding,2008b;Chenhall, 2003;Chenhall & Langfield-Smith, 1998b).

In strategic management literature, multidimensional characteristics of performance have been discussed from different viewpoints (Alarcon & Bastias, 2000; Hambrick, 1980). One prominent view of the literature supports that both financial and non-financial dimensions of organisational performance need to be examined (Kloviene & Gimzauskiene, 2009; Valanciene & Gimzauskiene, 2007; Husted & Allen, 2007; Robbins, 2005). Linking to this logic,the contingency school of thought of performance increasingly advocates for examining both financial and non-financial facets of organisational performance (Hyvönen, 2008; Jusoh et al., 2006; Hwang, 2005; Chenhall, 2003; Ittner & Lacker, 1998).

Asel et.al. (2011) analysed the effects of economic crises on firms' use of Management Accounting Practices (MAP) and control mechanisms on their management of stakeholder relations. They explored the association between stakeholder management and use of management accounting and control systems. In the wake of the economic crisis of 2008, many firms were faced with severe threats that called for immediate short term performance to ensure firm survival. However, short-term actions like massive cost-cutting and cash generation often are blamed for going at the expense of long-term health as key stakeholder relations may be irreversibly harmed. Using survey data from 204 major Austrian corporations, they provided evidence that firms had significantly responded to the economic crisis by suitably adjusting their control systems. Their data did not indicate an immanent contradiction between a "short-term finance focus" and the pursuit of a sustainable organisational performance strategy.

Performance measurement systems like the Balanced Score Card (BSC) have extended the traditional financial focus of performance management systems to also include non-financial and stakeholder related measures (Perrini & Tencati, 2006; Speckbacher et al., 2003).

Perera et al. (1997) found a positive relationship between the various Management Accounting Practices (MAP) in an environment of manufacturing flexibility and the use of non-financial measures such as defect rates, on time delivery, quality and machine utilisation. Ittner & Larcker (1995), and Sim and Killaough (1998) both found a significant positive interaction between Total Quality Management (TQM) practices, management accounting information and performance. Mia and Clarke (1999) found an indirect relationship between the intensity of market competition and business unit performance through the use of management accounting information.

Following the evidence from the literature, both financial and non-financial performance measures also known as traditional and non-traditional performance measures (Hyvönen,2008) are explored in this study. In the present dynamic business environment, traditional performance measures do not satisfactorily reflect organisational performance. The traditional measures are narrow in focus as they only highlight the financial standards like Return on Investment (ROI), or net profit which are incomplete and historic in nature (Hoque, 2005).

Organisations must use non-financial performance measures also along with the financial measures as it will help managers to assess the variations in their business environment and enhance overall organisational performance (Kaplan & Norton, 2004). To contribute to the existing knowledge on organisational performance, this study tries to explore both the financial and non-financial performance measures from the perception of finance and accounting managers in the manufacturing sector in India.

2.6 Conclusions to the Chapter

This chapter has presented an extensive review of literature that connects the contingency variables as antecedents to Management Accounting Practices (MAP). These include the strategic dimensions of management accounting practices followed, external business environment (environmental factors)-competitive environment & manufacturing technology, internal business environment (organisational factors) - organisational strategy & organisational design and organisational performance. Each variable has been explored explaining relevant foundations for this study. It is important to understand these factors so that organisations can deal with the functional relationships and adopt the best of management accounting practices suitable to their individual environments (Bhimani, 1999).

Prior research in management accounting has also examined the various relationships between the environment, organisational and management accounting systems (Albright & Lee, 1995; Gurd & Thorne, 2003; Kloot, 1997; Lapsley & Pallot, 2000; Rowe et.al., 2008). Some types of information provided by management accounting systems can give rise to organisational learning (Chenhall, 1997) which in turn increases organisational performance (Choe, 2004).There are only a few published studies that have incorporated the impact of these relationships on organisational performance into a single research project. Thus this study attempts to bridge this apparent gap in prior research by contributing to the understanding of Management Accounting Practices (MAP) and Organisational Performance (OP) in India. In addition, the literature on the adaptation of Management Accounting Practices (MAP) to the context and settings of developing countries is limited, thus findings from this study may be relevant in other developing societies undergoing rapid change.

The prevalence of advanced management accounting techniques such as Activity-Based Costing (ABC) and Balanced Scorecard (BSC) in Indian companies is likely to grow in the future for several reasons. First, with the growth in outsourcing and the emergence of India as an economic partner, Indian companies will be under pressure to adopt modern Management

Accounting Practices (MAP) to improve efficiency and for benchmarking and performance evaluation. Second, there has been a growth in international joint ventures, which will facilitate the diffusion of refined accounting techniques. Third, Accounting and MBA curriculums in most universities expose students to modern management accounting techniques. Fourth, educational institutions such as the Indian Institutes of Management, Indian School of Business, and the Indian Institutes of Technology have actively recruited faculty trained in the US and Europe in permanent, as well as visiting, faculty positions, which would accelerate the dissemination of modern management accounting techniques (Kallapur & Krishnan, 2008).

The theoretical framework and justification for this research framework and the hypotheses that reflect the expected relationships between the factors included in the framework are explained in the next chapter.

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Chapter

3 THEORETICAL FRAMEWORK

• Contents •

3.1. Introduction

This chapter presents the theoretical framework for this thesis. The theoretical framework of the study forms the structure that can hold or support a theory of a research work. It provides guidance in determining which items to measure, and which statistical relationships should be analysed in a research. Theories are constructed in order to explain, predict and analyse relationships between variables of interest in a study and will also provide a general representation of relationships between variables under study. The conceptual framework, on the other hand, symbolises the specific direction by which the research will have to be undertaken. Statistically speaking, the conceptual framework describes the relationship between specific variables identified in the study. While the theoretical framework is the theory on which the study is based, the conceptual framework is the operationalisation of the theory. As with any relational analysis, development of a conceptual framework assist the researcher to complete two processes as suggested by Bliss et al., (1983):

- Offers a wide scope of rational thinking about the research and conceptualising the problem.
- Provides a basis to link ideas and data so that deeper connections can be discovered.

As stated in the introductory chapter, the objective of the study was to explore the type and nature of Management Accounting Practices (MAP) followed in the manufacturing companies in India and its impact on organisational performance. It aims to get a better understanding of the relationship between Management Accounting Practices (MAP) and organisational performance and competitive environment, manufacturing technology, organisational strategy and organisational design as antecedents. This chapter also elaborates the procedure by which various hypotheses are developed on the basis of the model developed for study.

3.2 Preliminary Theory Development

The identification of contextual variables in this study was drawn from the original structural contingency frameworks developed within organisational theory. To find a feasible solution to the research problem stated in the first chapter, a deductive (from general to specific) approach was followed to test the existing theory, duly modified in the Indian context and settings.

Traditionally, the management accounting research utilising contingency theory reflected and promoted the belief that decision making should be rational. Hence the management accounting information used by managers served as a quantitative terminology of organisational goals. However currently, accounting researchers have attempted to broaden the contingency arguments to embrace the relationships between firms' strategies and the design of their control systems (Covaleski et al., 1996). The earlier management accounting researchers focused on the impact of environment and technology on organisational structure (Otley, 1980; Waterhouse & Tiessen, 1978). According to Chenhall (2007), a new research stream was related to the role of strategy. It has been integrated in the traditional organisational model which suggested vital linkages with environment, technology, organisational structure and management accounting practices.

3.3 Explanation of Constructs

The theoretical framework for this study was developed on the strength of contingency theory perspectives explained under section 2.4 of the previous chapter. This approach was found suitable to capture the relationship between important variables that significantly improves Management Accounting Practices' (MAP) effectiveness and use in the Indian context. The reasoning behind such an assumption was that the contingency theory has better explanatory power when contextual parameters have greater importance. As Indian business environment undergoes noticeable changes due to various macro-economic factors, the role of contextual factors gathers more attention.

Further, the emerging changes in the Indian context creates a turbulent environment where valid decision making by practicing managers become complex. In this environment of complexities, contingency approach is ideal in developing a theory which explains relationships among critical variables that impacts Management Accounting Practices (MAP).

The important variables identified from prior literature to be included in the framework to explain Organisational Performance (OP) mediated through Management Accounting Practices (MAP) are as listed below.

1) Competitive Environment (CE)
2) Manufacturing Technology (MT)
3) Organisational Strategy (OS)
4) Organisational Design (OD)

Even though the above variables are introduced in the previous chapter and the conceptual underpinning behind each of the variable is narrated with the help of empirical studies conducted about the general behavior of the variables in an organisational context, the following sections will describe the same variables in a manner that will demonstrate the way these variables are used along with other variables in explaining the orgnanisational performance mediated through Management Accounting Practices (MAP).

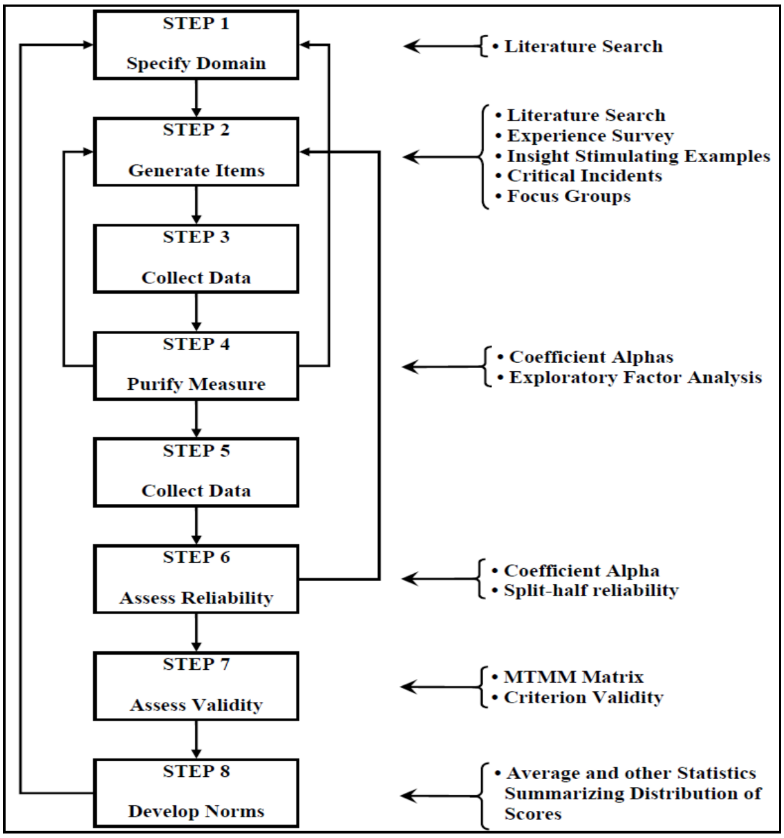
3.4 Scale Development Process

It is important to take into consideration the questions' format and appropriate scales in order to produce accurate and meaningful data. The scale development process is of critical importance in a study and hence specific steps need to be taken in order to construct a reliable and valid measure capable of drawing conclusions about the construct(s) measured. Previously validated instruments from Baines & Langfield-Smith (2003) and Tuan Mat (2010) were modified and adopted in this study to measure the construct variables in the Indian context and settings.

3.5 Measurement Procedure of Constructs

The classic scale development procedure for latent variables (ie variables which are not directly measured and hence measured using multiple indicators) involves a multistage process as proposed by Churchill (1979). The term "scale" is generally used to denote a measurement instrument developed for the purpose of measuring a theoretical phenomenon that cannot be readily observed or measured directly (DeVellis 2003). The procedure for scale development includes the following steps as illustrated in Figure 3.1.

Figure 3.1: Procedure for development of better measures*



***Source:** Churchill (1979)

As mentioned under Para 3.4, this study used the previously validated instruments from Baines & Lang field-Smith (2003) and Tuan Mat (2010). In consultation with experts, a modified instrument was developed by deleting one item, robotics, relating to Manufacturing Technology (MT), rewording one item, differentiation strategy to cost leadership strategy, related to Organisational Strategy (OS) to make it more contextually valid and including an item named statutory cost audit reporting under Management Accounting

Practices (MAP) to make these scales more relevant and valid in Indian context and settings.

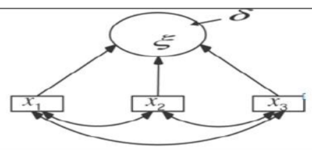
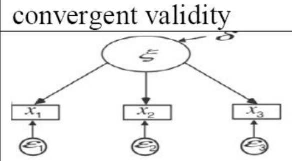
An event, category, behaviour, or attribute that expresses a construct and has different values depending on how it is used in a particular study are called variables. This study focused on analysis of relationships between variables which are abstract and not directly measurable. Hence the concept of latent variables was adopted to explain the variables of interest in this study. Latent variables (LV) can be considered as hypothetical constructs devised by the researcher for the purpose of understanding a research area (Bentler 1980). Since LVs are unobservable and cannot be directly measured, researchers use observable and empirically measurable indicator variables, also referred to as manifest variables (MVs) to estimate LVs in the model. Thus, the relationships can be analysed between theoretical constructs, such as competitive environment, manufacturing technology, organisational strategy, organisational design, management accounting practices and organisational performance, which are important to this study, as these variables are the constructs identified to explain phenomenon of interest in this study. The connections between the constructs and indicators or measures are referred to as epistemic relationships or “rules of correspondence” (Bagozzi 1984). There are two basic types of relationships exist in causal modelling namely:

1. Reflective
2. Formative

Constructs are usually viewed as causes of indicators, meaning that variation in a construct leads to variation in its indicators. Such indicators are termed ‘‘reflective’’ because they represent reflections, or manifestations, of a construct. The "formative" indicators are viewed as causes of constructs as construct is formed or induced by its indicators (Edwards & Bagozzi, 2000).

According to Chin (1998), the choice between measuring latent constructs with formative or reflective indicators should be based on the research objectives, the substantive theory for the latent construct, and the empirical conditions. Table 3.1 below explains the major difference between formative and reflective measurements.

Table 3.1: Differences Between Formative and Reflective Measurements*

Criteria	Formative Construct	Reflective Construct
Definition	A construct which consists of a composite of multiple measures	A construct which has observed measures that are affected by an underlying latent-unobservable variable
Characteristics of measurement items(indicators)	Un-correlated(Multi-dimensional)	Correlated/multi-collinear (uni-dimensional)
Relations between Construct and indicators	Indicator change leads to Construct change	Construct changes affect the indicators as they are reflections of underlying construct
Measurement error	At construct level	At indicator level
Mathematical equation	(Item)=Indicator weight*Construct+ Measurement error	Construct=factor loading 1*indicator1+ factor loading 2*indicator 2+….+measurement error1+measurement error2+…….so on
Effect when an indicator(s) removed	May affect Content Validity	May not affect Content Validity
Internal Consistency (Cronbach alpha)	Not required-prove nothing	Required to prove convergent validity
Path diagram (x1,x2,x3 are indicators)		

***Source:** Review on Construct development by Hisham Bin Md-Bashir, adopted from Rejikumar (2011)

3.6 Operational Definitions Used in the Study

The operational definitions of constructs used in the study are given in the following Table 3.2.

Table 3.2: Operational Definitions of Constructs

Sl No	Construct	Operational Definition
1	Organisational Performance	Defined as the perception of finance and control managers in the manufacturing sector about the importance of different performance measures that will measure organisational performance.
2	Management Accounting Practices	Defined as practices of sixteen management accounting techniques by the managers in the finance and control domain in the manufacturing sector, which would lead to better organisational performance.
3	Organisational Strategy	Defined as the perception of managers in the finance and control domain about the importance of various strategic inputs relating to each business unit in response to competition.
4	Organisation Design	Defined as the perception of managers in the finance and control domain about the importance of organisational structure including authority and reporting relationships, employee empowerment and cross-functional teams.
5	Manufacturing Technology	Defined as the perception of managers in the finance and control domain about the importance of manufacturing technology practices and philosophies such as total quality management or just-in-time management.
6	Competitive Environment	Defined as the perception of managers in the finance and control domain about the importance of competition in the industry.

It was assumed that a multi-dimensional structure may be prevalent in the case of Management Accounting Practices (MAP) and Organisational Performance (OP) whereas, all other constructs in the theoretical model were assumed as unidimensional having multiple indicators measuring the phenomena. In the case of constructs assumed as multidimensional, following ways of conceptualisation are possible (Jarvis, 2003). In this study, on theoretical grounds and further validated with the help of experts it was assumed that the constructs of Management Accounting Practices (MAP) and Organisational Performance (OP) are likely to exist in the form of a first order reflective and second order formative.

The details of all constructs, its nature and indicators are furnished below in the Table 3.3.

Table 3.3: Details of All Constructs and Indicators

Construct	Nature of Constructs	Indicators (No .of Indicators)
Competitive Environment(CE)	Reflective	Product Pricing, New Product Development, Marketing Distribution Channel, Product Costing, Competitive Actions, Market Share (6 Items)
Manufacturing Technology(MT)	Reflective	Flexible Manufacturing System, Computer Aided Manufacturing System, Computer Aided Design, Computer Aided Engineering, Computer Aided Production/Process Planning, Quality Testing Machines, Just-In-Time Practices, Direct Numerical Control, Distributed Numerical Control, Computer Integrated Manufacturing (10 Items)
Organisation Design(OD)	Reflective	Multiple Skills Of Workforce, Worker Training, Cross Functional Teams, Participative Culture, Management Training, Flattening Of Formal Reporting, Work Based Teams, Employee Empowerment, Manufacturing Excellence (9 Items)
Organisational Strategy(OS)	Reflective	On-Time Delivery Of Products, Cost Leadership, TQM, After Sales Service, Quick Changes In Designs, Customization Of Products, Product Availability, and Rapid Product Mix/Volume Changes (8 Items)
Management Accounting Practices (MAP)	Reflective/ Formative	Budgetary Control, Absorption Costing, CVP Analysis, Marginal Costing, Standard Costing, Quality Costing, Target Costing, Activity Based Costing, Product Life Cycle Costing, Value Chain Analysis, Activity Based Management, Benchmarking, Product Profitability Analysis, Economic Value Added And Statutory Cost Audit (16 Items)
Organisational Performance (OP)	Reflective/ Formative	Operating Income, Sales Growth, ROI, Operating Cash Flows, Revenue Share, Market Development, New Product Revenue, R&D, Cost Control/Reduction, HR Training & Development, Workplace Relations, Environment, Health And Safety (12 Items)

3.7 Formulation of Hypotheses

A hypothesis is a conjectural statement of the relation between two or more variables (Kerlinger, 1956). A hypothesis can be defined as a tentative explanation of the research problem, a possible outcome of the research, or an educated guess about the research outcome. (Sarantakos,1993). Hypotheses developed for this study were derived from the belief formulated during the literature review process and were proposed based on the conceptual model developed for the study.

The approach for this study is to consider a theory that explicitly examines different organisational factors (contingency theory). The contingency theory is adopted in this study to develop a framework for conceptualising management accounting and organisational factors (Burns & Scapens, 2000; Lapsley & Pallot, 2000; Smith et al., 2005). An organisation is often interpreted as a structure of different characteristics. Numerous dimensions of external contexts (such as environments, industries and technologies) and internal organisational characteristics (such as strategies, design, cultures, processes, practices and conclusions) have been said to cluster into configurations (Moores & Yuen, 2001). In a dynamic environment, markets have become more competitive, mainly in respect to an increased level of high quality and competitively priced products. Organisations may respond to this complexity caused by competition by reorganising their work processes through adopting organisational design and strategy that have a stronger customer focus. In order to compete, many organisations made considerable investments in advanced manufacturing technology such as computer-integrated manufacturing and just-in-time systems (Baines & Langfield-Smith, 2003), which in turn can increase quality, productivity, flexibility as well as reduction in cost.

Literature has identified that volatility in business environment surrounding an organisation cause organisational and management accounting practices to respond accordingly (Baines & Langfield-Smith, 2003; Chenhall & Morris, 1986; Chong & Chong, 1997; Libby & Waterhouse, 1996; Mia & Clarke, 1999; Pratt, 2004; Waweru et al., 2004). Hypotheses were formulated in this study using the contingent theoretic arguments that management accounting practices and internal organisational factors are contingent on the "fit" with the turbulence in the external environment that surrounds it. As mentioned earlier, this study focuses on the following six areas: the competitive environment, manufacturing technology, organisational design, organisational strategy, organisational performance, with respect to the use of management accounting practices on real time basis.

3.7.1 Competitive Environment (CE)

Environment can be broadly characterised as phenomena that are external to the organisation and have either potential or actual influence on the organisation (Macy & Arunachalam, 1995). The external environment may thus relate to competition, technology, law, politics, economics, society, culture and demographics. According to Chenhall (2007), environment refers to "particular attributes such as extreme price competition from existing or potential competitors". Volatile and uncertain environment, which is impacted from high competition, is an important contextual variable in contingency-based research.

Globalisation has drastically changed the external environmental factors in developing countries, which in turn would affect the internal processes of organisations as well as their management accounting practices. Competitive environment and new technology have largely been presumed in the literature, to influence the manufacturing business enterprises to adopt advanced management accounting practices, as well as restructure its organisational design and organisational strategies. However, there are not many empirical research studies conducted to support such associations, particularly in the context of developing countries. Greater than before, economic upheaval is the main cause of changes in management accounting practices (Luther & Longden, 2001). Mia & Clarke (1999) found a positive correlation between the intensity of market competition and the usefulness of management accounting information.

In this background, hypotheses were developed to examine how competitive environment and advanced manufacturing technology would influence organisational design, organisational strategy and management accounting practices. Hence the following hypotheses were proposed:

H1a - There exists a significant relation between competitive environment and manufacturing technology.

H1b - There exists a significant relation between competitive environment and organisational design.

H1c - There exists a significant relation between competitive environment and organisational strategy.

H1d - There exists a significant relation between competitive environment and management accounting practices.

H1e - There exists a significant relation between competitive environment and organisational performance.

3.7.2 Manufacturing Technology (MT)

It is evident that India is undergoing drastic changes in its competitive environment due to the impact of globalisation and changes in the socio-demographic characteristics of its population. In this background, an important variable every organisation concentrates for gaining competitive advantage becomes the technology adopted in the manufacturing sector. Therefore understanding the role of manufacturing technology demands an attention in every study related to Management Accounting Practices (MAP). Manufacturing and technology development are closely inter-connected as technologies become useful when they are converted into products through manufacturing and the feedback from manufacturing fosters continuing technology development. Therefore, the next variable considered in the study is Manufacturing Technology (MT).

Competitive environment and manufacturing technology would force organisations to adjust and modify their organisational design (Schwarz & Shulman, 2007). Horizontal (decentralised) structures like work-based teams have emerged (Cohen & Bailey, 1997) to mitigate the forces of competition and manufacturing technology. Hence the following Hypotheses were proposed:

H2a - There exists a significant relation between manufacturing technology and organisational strategy.

H2b - There exists a significant relation between manufacturing technology and organisational design.

H2c - There exists a significant relation between manufacturing technology and management accounting Practices.

H2d - There exists a significant relation between manufacturing technology and organisational performance.

3.7.3 Organisational Strategy (OS)

Increasing globalisation has resulted in dynamic changes in the nature of competition and technology. As a result, strategy development has also had to change (Shields, 1997). In intense and aggressive competition with increased customer demands and a shorter product life cycle, a proper link between strategy and manufacturing operations, are all keys to developing sustainable competitive advantage (Porter, 1996). Customer-focused strategies are of particular interest in many studies and it is a form of product differentiation strategy (Hyvönen, 2007). Recently, customer focus has been identified as an important aspect of the strategy of the firm (Hyvönen, 2007; Kaplan & Norton, 1992). This form of strategy provides potential for firms to effectively differentiate their products or services from competitors by satisfying customer demands for product features or for timely and reliable delivery and after sales service (Hyvönen, 2007). In a country like India, offering world class products at affordable prices is a challenge for many organisations (Prahalad, 2009).

Since the middle of 1980's, there has been growing interest in researching the way that manufacturing strategies can be used to gain competitive advantage (Langfield-Smith, 1997). The dynamic nature of competition is intensifying due to the increasing speed of knowledge developed through information technology. As a result, strategy development has had to change from a process of conception to a process of learning (Feurer & Chaharbaghi, 1995). The strategy an organisation adopts constitutes the logic underlying its interactions with its environment.

Hambrick, (1980) viewed strategy as a pattern of important decision that guides the organisation in its relationship with its environment, affects the internal structure and processes of the organisation and centrally affects the organisation's performance. Formulation of appropriate organisational strategies and implement them most effectively to beat the turbulence and uncertainty in the external environment have been considered as a prime consideration for better performance of every organisation.

Literature suggests different strategy typologies (Miles & Snow, 1978) such as: prospector, defender, analyser and reactor. Another perspective (Porter, 1980) proposed three different types of generic strategies, i.e., low cost, product differentiation and focus strategies. However, selection of appropriate strategy among various alternatives was always a hard decision for practicing managers.

Empirical evidence indicates that strategies to defend/ cost leadership do not require sophisticated information systems, while those of prospect/product differentiate do (Chenhall, 2003; Langfield-Smith, 1997). But there is another view that when the companies strive hard to control/reduce their costs, they would need detailed cost management systems (Anderson & Lanen,1999). As mentioned earlier this study is trying to explore the possibility to capture the perception of Finance and Accounting (F&A) managers in the Indian manufacturing sector whether their organisations follow a cost leadership strategy which is more suitable for developing economies where affordability is a major consideration for business profitability and sustainability. Increasing globalisation has resulted in intense and aggressive competition, increased customer demands and shorter product life cycles (Shields, 1997). A proper link between strategy and manufacturing operations is the key to developing sustainable competitive advantage (Porter, 1996). One way in which organisations can respond to increasing customer demands of quality, flexibility and dependability of supply is through the adoption of latest manufacturing technology and advanced management accounting practices for real time quality information for better organisational performance.

According to Davenport (2000), organisations that do not have their information systems aligned with their strategic objectives are less successful than organisations that have aligned their information systems with strategy. Schroeder & Congden (2000), in a study of small to medium-sized manufacturers, found the most financially successful firms were those which demonstrated a tight alignment between strategy and technology, while Kotha & Swamidass (2000) found that for firms competing on the basis of quality, customer service, delivery reliability, product features and flexibility and investment in advanced manufacturing technology resulted in superior growth.

The effect of all the above causal variables is expected to result in improved organisational performance. The construct of organisational performance was used in various studies related to Management Accounting Practices (MAP) and therefore, this study also attempts to explore this variable with its antecedents under the belief that a better picture about the role of MAP in the Indian context will emerge from such an effort.

Many companies seek to gain competitive advantage by applying customer-focused strategy, and a customer focus ideology is rooted in many management philosophies, i.e. in total quality management, just-in-time or flexible manufacturing. As mentioned earlier, Baines &Langfield-Smith (2003), Chenhall & Langfield-Smith (2003), Harris (1996), and DeLisi (1990) show that firms facing a more competitive environment and technology advancement will adopt a differentiation strategy. In addition, Fuchs & Mifflin (2000) found that successful firms aligned key elements of strategy with the environment. Value innovation, the cornerstone of blue ocean strategy, is the simultaneous pursuit of differentiation and low cost, creating a leap in value for both buyers and the companies (Kim& Mauborgne, 2005). From the insights drawn from the works of Prahalad (2009) and Kim & Mauborgne (2005), the cost leadership strategy along with differentiation as proposed by strategy guru M.Porter (1980) is considered to be more appropriate in the Indian context. Hence, the following hypotheses were proposed:

H3a - There exists a significant relation between organisational strategy and organisational performance.

H3b - There exists a significant relation between organisational strategy and management accounting Practices.

H3c - There exists a significant relation between organisational strategy and organisational design.

3.7.4 Organisational Design (OD)

It is argued that the use of decentralised structures in a competitive environment and advanced technological development would enable organisations not only to improve their speed and flexibility of response, but also to improve the quality of that response. For example, Choe (2004), DeLisi (1990) and Harris (1996) agree that the successful implementation of information technology and computer networks in an organisation, as well as the use of automation and computer -aided technology in the manufacturing system, often require the blending of technological and social skill, which can be best achieved through the adoption of work-based teams.

Organisation as a design has been summarised in the axiom, structure follows strategy (Ulrich et.al.,1999). According to Chenhall (2008) the term “horizontal organisation” has evolved to reflect practices followed in enterprises that integrate activities across the value-chain to support a customer-focused strategy. In horizontal organisations, decisions are made by cross-functional management teams, including management accountants (Baines & Langfield-Smith, 2003; Naranjo-Gil &Hartmann, 2007; Scott & Tiessen, 1999).

The contingency theory literature specifies that factors such as technology and the environment affect the design and functioning of the organisation. The past decade has also seen the development of several models of technology-enabled structural adjustments (Dibrell & Miller, 2002). According to Khandwalla (1974), adopting new technologies may require adjustments in organisational structures and work processes to better suit the capabilities of improved technology. Thus, for better performance, there is a need for making necessary changes in the organisational structure fostered by advanced technology applications.

Organisational design symbolises the patterns and relationships that exist among organisation or work unit elements (Macy & Arunachalam, 1995). A change in structure can be in the form of new organisation structure, departmentalisation, centralisation, decentralisation and size (Burns & Scapens, 2000; Smith et al., 2005; Waweru et al., 2004). Organisation structures are the product not only of coordinative demands imposed by complex technologies, but also of rationalised norms legitimising adoption of appropriate structural models (Schwarz & Shulman ,2007).

Adopting new technologies may require changes in organisational structures to better suit the know-hows of that technology. Dibrell & Miller (2002), and Lucas & Baroudi (1994) suggest that advances in technology have enabled managers to adapt existing forms and create new models of organisational design that better fit the requirements of a dynamic environment. The successful implementation of information technology and computer networks in an organisation as well as the use of high degree automation and computer aided technology in production systems (Choe, 2004; DeLisi, 1990; Harris, 1996), often require to combine the technological and social skills, which can be best achieved through the adoption of work-based teams or manufacturing cells. A team may manage the complete processing of products, with each employee performing several functions. Thus, it is argued that the use of team-based structures in a competitive environment, together with greater use of advanced technology, enables organisations not only to improve their speed and flexibility of response, but also to improve the quality of that response.

Hence, the following hypotheses were proposed:

H4a - There exists a significant relation between organisational design and management accounting practices.

H4b - There exists a significant relation between organisational design and organisational performance.

3.7.5 Management Accounting Practices (MAP) and Organisational Performance (OP)

As presented earlier, organisational performance may be considered as an outcome factor of management accounting practices. Prior studies show that there exists a strong link between Organisational Performance (OP) and Management Accounting Practices (MAP). Low financial performance is said to be one of the reasons for the firm to review its management accounting practices and internal organisational factors to improve performance (Laitinen, 2006; Granlund, 2001). The contingency theory of management accounting suggests that if organisations adopt Management Accounting Practices (MAP) that suit their organisational and environmental factors, they are likely to perform better (Chenhall, 2003; Otley, 1980). This approach asserts that neither the MAP, nor the organisational configuration will affect performance; it is the fit between MAP and its contextual variables which is the most important determinant of performance (Jermias & Gani, 2002). Thus, this study investigates whether the organisational factors and MAP actually help firms to improve performance.

Hoque (2005) used non-financial performance measures in evaluating organisational performance operating in an uncertain environment. He argued that traditional performance measures are unable to satisfactorily reflect firm performance affected by today's changing business environment. Traditional measures which focus mainly on financial criteria such as return on investment or net earnings are narrow in focus, historical in nature and in many cases are incomplete (Hoque et al., 2001). It is argued that non-financial performance measures may enable a firm to adjust to its environment by clearly monitoring core competencies of the organisational process as well as creating greater efficiency throughout the organisation and help managers to assess changes in their business environment, determine and evaluate progress towards the firm's goals, and encourage achievement of performance (Kaplan & Norton, 1998). This argument is supported by findings from Baines & Langfield-Smith (2003) which indicate that organisational performance is significantly associated with an increased reliance on non-financial information.

Hoque et al., (2001) suggest that in today's environment of computerised manufacturing and fierce competition, organisations need a multidimensional performance measurement system that should provide continuous signals as to what is most important in their day-to-day activities and where efforts must be directed. Thus, for this study, multiple performance measures are used to measure performance in manufacturing companies because the use of traditional performance measurement alone is not enough to measure performance for organisations operating in highly competitive and advanced manufacturing technology environments.

There is strong empirical support for the association between management accounting practices and performance, with an increased use of non-financial information. For example, Chenhall & Langfield-Smith (1998b) found greater use of advanced management accounting practices, such as quality improvement programs & cost of quality, benchmarking and activity-based management, in firms that placed a strong emphasis on product differentiation strategies, ultimately resulting in high performance. Perera et al., (1997) found a positive association between the emphasis placed on various forms of management accounting practices in an environment of manufacturing flexibility, and the use of non-financial measures such as defect rates, on time delivery and machine utilisation. Ittner & Larcker (1995) and Mia & Clarke (1999) found an indirect association between the intensity of market competition and business unit performance through the use of management accounting information. Hence the following hypothesis was proposed.

H5 - There exists a significant relation between management accounting practices and organisational performance.

All the above mentioned hypotheses developed for this study are summarised in the Table 3.4 below.

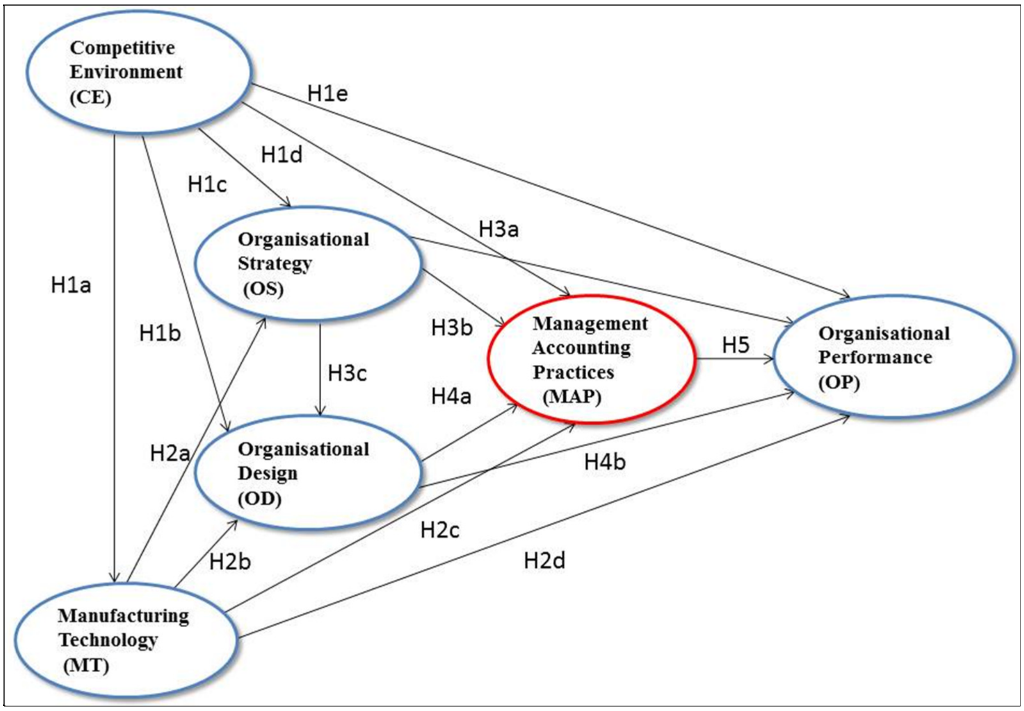
Table 3.4: Summary of Hypotheses for the study

Sl.No	Hypotheses	Description of Hypotheses
1	H1a	There exists a significant relation between competitive environment and manufacturing technology.
2	H1b	There exists a significant relation between competitive environment and organisational design.
3	H1c	There exists a significant relation between competitive environment and organisational strategy
4	H1d	There exists a significant relation between competitive environment and management accounting practices
5	H1e	There exists a significant relation between competitive environment and organisational performance
6	H2a	There exists a significant relation between manufacturing technology and organisational strategy
7	H2b	There exists a significant relation between manufacturing technology and organisational design.
8	H2c	There exists a significant relation between manufacturing technology and management accounting Practices.
9	H2d	There exists a significant relation between manufacturing technology and organisational performance.
10	H3a	There exists a significant relation between organisational strategy and organisational performance.
11	H3b	There exists a significant relation between organisational strategy and management accounting practices.
12	H3c	There exists a significant relation between organisational strategy and organisational design.
13	H4a	There exists a significant relation between organisational design and management accounting practices.
14	H4b	There exists a significant relation between organisational design and organisational performance.
15	H5	There exists a significant relation between management accounting practices and organisational performance.

3.8 Research Model

The research model explaining all the hypotheses proposed in the study as presented in the Table 3.4 above, are illustrated in the Figure 3.2 shown below.

Figure 3.2: Research Model explaining Hypotheses proposed in the study*



3.9 Conclusions to the Chapter

This chapter provides a concise discussion of the development of hypotheses for this study. Along with the support from the literature, findings from the pilot study together provide a strong basis in developing these hypotheses. The hypothesised model presented in the above Figure 3.2 summarises the hypotheses developed for this study. This chapter also narrated the logical foundation behind proposing each of the hypothesis to be tested in the study. An important modification introduced in the theoretical framework in comparison with previous studies was in conceptualisation of the MAP construct. In all the previous studies MAP was conceptualised as having multiple dimensions with multiple indicators capable of measuring them. The indicators were adopted from the domain of the MAP variable in tune with its behaviour in a manufacturing context. In this attempt, the indicator pertaining to the statutory cost audit reporting was not considered by previous researchers in the Indian context, but in framing theory for this study, the regulatory framework of statutory cost audit reporting of core industries being an important concept in the Indian context, was also taken into account. Statutory cost audit reporting is not prevalent in other countries. Business sustainability depends greatly on cost competitiveness.

In a liberalised and growing economy, effective use of productive resources is the main challenge. The survival and growth of an organisation depends on the competing edge of various parameters like cost, adaptability, technology, quality, timeliness etc. and the most important among them is cost. In a liberal economy, the consumers are vulnerable to practices such as monopoly or predatory pricing. Curbing these practices requires harmonised and authentic cost data. If all the players are charging exorbitant prices, will it be justified as market driven? Cost audit helps to detect such practices for protection of consumers' rights (www.icmap.com).

Statutory cost audit, by insisting on maintenance of elaborate cost accounting records and proper auditing thereof, by qualified Cost and Management Accountants, ensures the efficiency in the use of resources, promotes competitiveness of industries as well as economic development of the nation as a whole (Manoj,2008). Cost audit would apparently mean an examination of cost books, cost accounts, cost statements and subsidiary and prime documents with a view to satisfying the auditor that these represent a fair and true view of the cost of production. This will naturally mean an examination of the appropriateness of the cost accounting system adopted by the business and effectiveness of its implementation (Kumar, 2010). Further, in conceptualising constructs into formative or reflective ones, theoretical justifications were sought and the rationale behind such a decision was narrated in this chapter.

Apart from the above, there are only a few published studies that have integrated the relationships between these selected critical variables and their impact on organisational performance into a single research project by using a Structural Equation Modelling (SEM) approach. Thus this study attempts to bridge this apparent gap in prior research by contributing to the understanding of management accounting and organisational factors, particularly in the Indian context. In addition, the literature on the adaptation of advanced management accounting practices in the developing countries is limited; the findings from this study may throw light on the role of management accounting practices in the companies in other developing economies undergoing rapid change. The core argument of this study is that with the ever increasing force of globalisation, the business environment in which organisations function in the developing countries witness intensified competition and innovative technological advancement. Organisations must therefore, ensure that their organisational design and strategies match with their environmental settings and adoption of appropriate management accounting practices would improve the quality of decisions which would lead to enhanced organisational performance.

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Chapter

4 RESEARCH METHODOLOGY

Contents

4.1 Introduction

Following the review of relevant literature in Chapter-2 and explaining the theoretical framework for this study under Chapter-3,this chapter would discuss the research methodology adopted for exploring the framework and the relationships between the variables shown in Figure 3.2 in the previous Chapter. Research comprises of all activities related to an inquiry or investigation aimed at the discovery and interpretation of facts, revision of accepted theories in the light of new facts, or practical application of such new or revised theories. To achieve this goal, at first, the research objectives set in this study as mentioned in Chapter-1 is revisited. Afterwards, the research design chosen for this study is explained. Following this, the data collection process is described and the process of validating the survey instrument used in the study is stated. To conclude this chapter, the methodology followed is explained to show the process of ensuring reliability and validity in this research.

This study is conducted using an online survey method to capture the perceptions of Finance & Accounting (F&A) Managers in the manufacturing sector in India. The overall objective of this thesis was to develop a theoretical framework to explain the linkages of Competitive Environment (CE), Manufacturing Technology (MT), Organisational Strategy (OS) and Organisational Design (OD) leading to Organisational Performance (OP), mediated through Management Accounting Practices (MAP). To achieve this, following objectives are set for this research study:

1. To explore the type, nature and use of Management Accounting Practices (MAP) followed in the manufacturing business enterprises in India.
2. To examine the structure and composition of critical variables adopted in the study that lead to Organisational Performance (OP) under Management Accounting Practices (MAP) in the national context relevant to manufacturing sector.
3. To contribute to the understanding of MAP among Indian companies in the manufacturing sector.
4. To examine the linkages among the critical variables on MAP leading to better organisational performance by estimating the structural model.

The estimation of the theoretical model as shown under Section 3.8 of the previous Chapter using appropriate statistical tools will reveal the linkages among various constructs considered in the study. This chapter will outline the development of tools while standardising them and scientifically establishing validity and reliability for appropriate measurement of the phenomenon under enquiry. Quantitative analysis of data was done using statistical tools wherever applicable. This aspect of the empirical study is based on a review of

Management Accounting Practices (MAP) and Organisational Performance (OP) literature.

This chapter further elaborates on the research design used in the present study including details of sampling strategy, development of research tools, and validation of instruments, data collection procedure and the statistical techniques employed for data analysis. A survey is used as the method for data collection in order to investigate how the external environmental factors, as well as the internal organisational factors influence the management accounting practices in Indian manufacturing companies. A structured online survey questionnaire was designed to cover the six major areas as mentioned earlier, within the conceptual model and the formulated hypotheses. This chapter is divided into various sections which would discuss about the choice of survey as a data collection method, sampling and data collection procedures, questionnaire design as well as instrument development. In succeeding chapters, data analysis and results of the study are presented.

4.2 Qualitative Vs. Quantitative Research

Qualitative research involves analysis of data such as words (e.g., from interviews), pictures (e.g., video), or objects (e.g., an artefact). It attempts to get an in-depth opinion from participants. Qualitative Research is collecting, analysing, and interpreting data by observing what people do and say. According to Domegan et al., (2007), "Qualitative research aims to explore and to discover issues about the problem in hand, because very little is known about the problem. Qualitative research is much more subjective than quantitative research and uses very different methods of collecting information, mainly individual, in-depth interviews and focus groups (Myers, 2009).

Both qualitative and quantitative approaches were adopted at different stages of research process in this study. The rationale for adopting both methods was justifiable on following observations. The objective of the research was to identify certain dimensions capable of capturing the domain of management accounting practices and its relationship with organisational performance in a localised setting that was not explored in detail in prior studies.Being deductive, this study adopts a quantitative approach based upon formulating research hypotheses and verifying them empirically on a set of data.

4.2.1 Justification for the use of Quantitative Approach in the Study

The quantitative method is appropriate for this study due to a number of reasons. The most important element to decide about a suitable research approach for a study is the nature of the research topic (Saunders et al., 2007; Creswell, 2003). For a literature- rich topic, the deductive approach would be more suitable, whereas for a new topic with little or no existing literature, it may be more suitable to use an inductive approach (Leftesi, 2008). The research topic selected for this study is not new and as there is an extensive literature exists, a deductive (quantitative) approach is suitable for this study. This study tests specified hypotheses, which suggests relationship between variables. Quantitative tools fit hypotheses testing (Merriam, 1988). Quantitative methods as a deductive approach enable the testing of theory and prove generalisations about a phenomenon (Deshpande, 1983). Moreover, the quantitative phase cannot be eliminated in this study for the simple reason that validation of the scale and estimation of the theoretical model demands statistical procedures. Also generalisability of findings emerged from the study can be analysed only through checking the significant levels, that presupposes sufficient sample size, randomness and related statistical considerations. An overview of the methodological approaches used in the prior studies is presented in the following Table 4.1.

Table 4.1: Methodological Precedence in Prior Studies on MAP

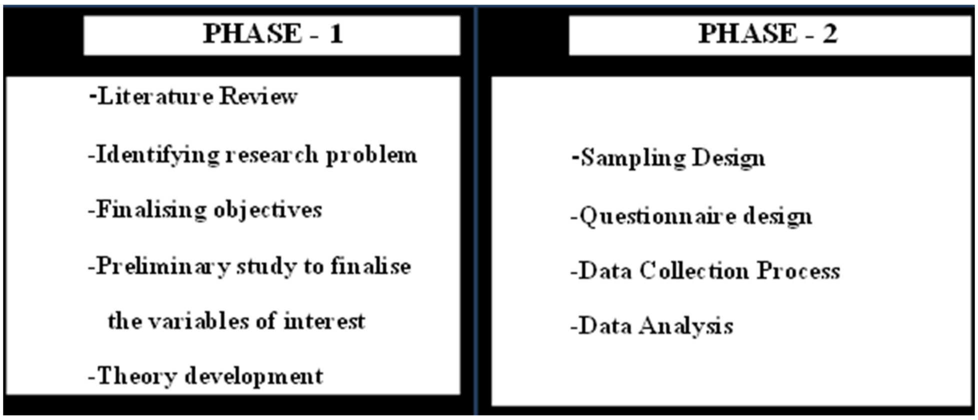
Sl.No.	Studies	MAP	Year of study	Context	Methodological Approach
1	Ojra, Jafar	MAP	2014	Palestinian companies	Questionnaire survey – 235 responses
2	Anh	MAP	2012	Vietnamese companies	Interviews & Questionnaire survey – 39 responses
3	Abugalia,S. Muftah	MAP	2011	Libyan companies	Questionnaire survey – 123 responses
4	Tuan Mat	MAP	2010	Malaysian manufacturing companies	Questionnaire survey - 212 responses
5	Nimtrakoon & Tayles	MAP	2010	Thailand manufacturing & non-manufacturing companies	Questionnaire survey involving 135 responses from accounting managers -
6	Leftesi	MAP	2008	Libyan companies	Questionnaires followed by interviews – 81 responses
7	Wu et al.	MAP	2007	Joint ventures (JVs) and State Owned Enterprises (SOE) in China	Questionnaires -64 JVs and 115 SOES
8	Löfsten & Lindelöf	MAP	2005	Swedish Technology-based companies	Questionnaire survey involving 183 NTBFs
9	O'Connor et al.	MAP	2004	China's State Owned Enterprises (SOE)	Interviews followed by Questionnaires
11	Waweru et al.	MAP	2004	South African retail companies	Interviews and questionnaire
12	Haldma &Laats	MAP	2002	Estonian Manufacturing companies	Questionnaire survey involving 62 responses
13	Luther & Longden	MAP	2001	South African firms	Questionnaire survey involving 139 responses
14	Joshi	MAP	2001	Indian companies	Questionnaires-60 firms
15	Anderson & Lanen	MAP	1999	Indian companies	Interviews and questionnaire -14 companies
16	Firth	MAP	1996	Chinese companies	Questionnaire survey

MAP = Management Accounting Practices

4.3 Research Process

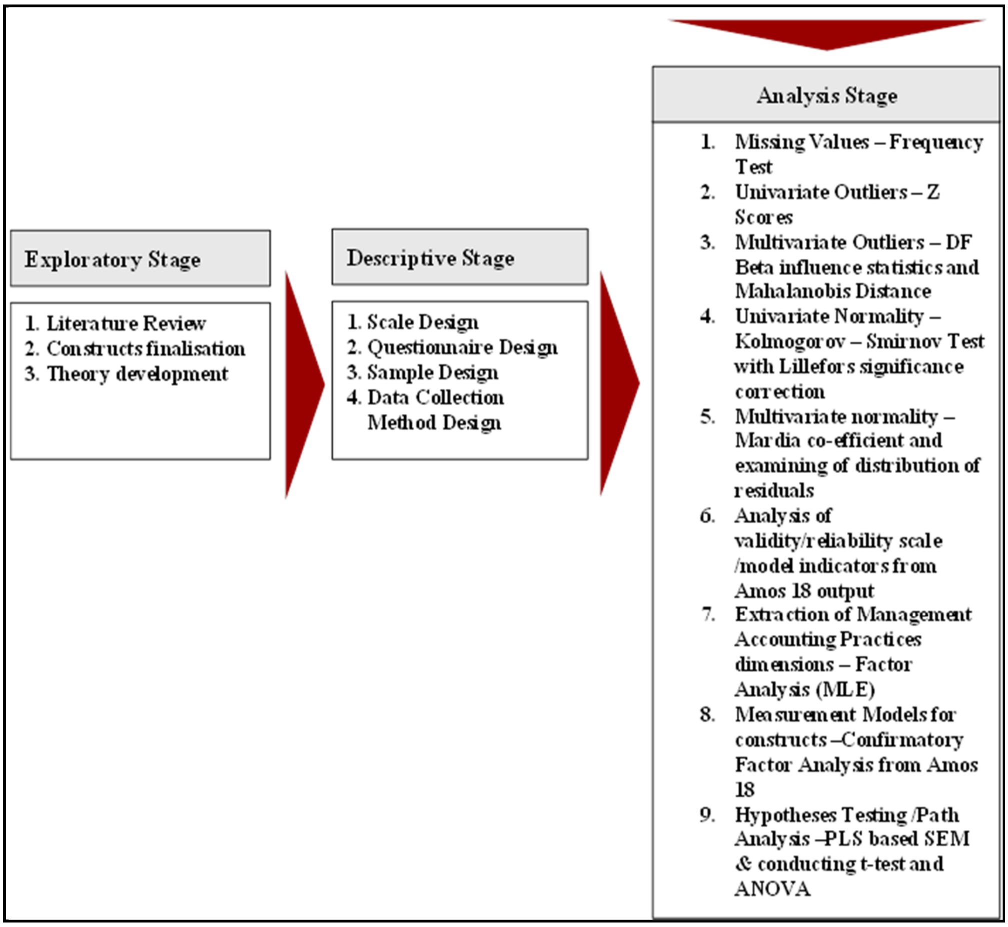
The research process involved two phases in this study. Phase one included steps such as literature review, finalisation of objectives, and identification of variables and development of theory. Defining the goals and objectives of a research was one of the most important steps in the research process. Clearly stated objectives provided correct direction to the research process. The process of finalising objectives was done by an exploratory research (e.g., literature reviews, talking to stakeholders, and focus groups) being the mostly adopted procedure. The literature review provided an opportunity to build on others' work and impart clarity to the problem to be addressed in the study. Phase two included sampling design, questionnaire design, data collection and data analysis. The research process adopted in the study is shown in Figure 4.1 below.

Figure 4.1: Research Process Adopted for the Study



Research process adopted for this study included a set of advanced decisions that made the master plan specifying the methods and procedures for collecting and analysing the needed information. The research process for this study included stages such as exploratory, descriptive and causal researches. Firstly an exploratory research was conducted where the researcher attempted to find the nature of data required for the research and tried to define the problem more precisely. The researcher also attempted to identify the associations between variables under study to develop the theory to be tested in the study in this stage. In the descriptive stage the details regarding research design was finalised. Causal research was conducted to examine the cause –effect relationship between variables under study in the analysis stage. The stages of research process adopted are explained in Figure 4.2.

Figure 4.2: Stages in Research Process



4.3.1 Exploratory Study

Exploratory study forms the foundation of a good research (Churchill & Iacobuci 2004) and it has to be normally flexible, unstructured and qualitative (Aaker et al., 2001, Burns & Bush 2002) and serves as an input to further research (Malhotra &Bricks,1999). Exploratory research in this study was mostly by way of reviewing available literature, qualitative approaches such as informal discussions with practicing managers and academicians, followed by more formal approaches through in-depth interviews with experts followed by a pilot study for testing the survey instrument.

4.3.2 Preliminary Study

A preliminary study to tap the knowledge of those familiar with the topic of research was conducted by way of discussions with focus groups to identify the relevant dimensions to be considered for measuring variables considered for the study. In this study, individual interviews with 24 senior level Finance & Accounting (F&A) Managers with more than 10 years of experience in the manufacturing sector was conducted by the researcher to identify the exact nature of the problem and dimensions to be considered while developing an instrument to measure competition, manufacturing technology, organisational design, organisational strategy, management accounting practices and organisational performance. These interviews were conducted during the annual conferences on Total Cost Management (TCM) organised by the Confederation of Indian Industry (CII) during the period 2009 to 2014. The literature review produced an elaborative list of appropriate indicators. The list was given to the experts and was requested to mark the indicators that they feel important in contemporary Indian context. The results of the preliminary study helped to finalise relevant constructs and their measurements specific to the contextual setting used in the study.

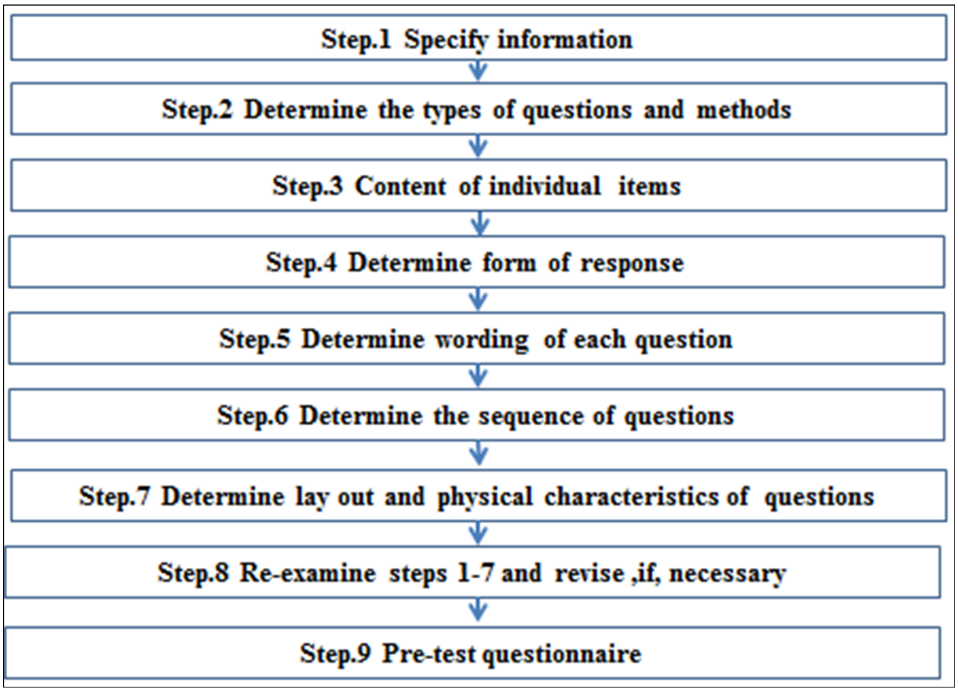
4.3.3 Descriptive Study

Having obtained some primary knowledge of the subject matter from the exploratory study, descriptive research was conducted. Contrary to an exploratory research, a descriptive study is more rigid, pre-planned and structured, and is typically based on a large sample (Churchill & Iacobucci, 2004; Hair et al., 2003; Malhotra &Bricks,1999). Descriptive research designs are basically quantitative in nature (Burns & Bush 2002; Churchill & Iacobucci, 2004; Hair et al., 2003). There are two basic techniques of descriptive research namely cross-sectional and longitudinal. Cross-sectional studies collect information from a given sample of the population at only one point in time, while the latter deals with the same sample units of population over a period of time (Burns & Bush 2002; Malhotra &Bricks,1999). The cross-sectional study is also referred to as a sample survey in which selected individuals are asked to respond to a set of standardised and structured questions about what they think, feel and do (Hair et al., 2003). For the purpose of this study, a cross-sectional study was the appropriate technique as opposed to a longitudinal study. According to Bryman & Bell (2003), because of time and cost involvement, longitudinal designs are relatively little used in business and management research. Even though a longitudinal study would have provided better information, the lack of time and money and the possibility of unforeseen changes in the unit of analysis or sampling elements and the research background prohibited the use of this design. It was suggested that survey research may also contribute to greater confidence in the generalisability of the results which is an essential purpose of this study. The next stage in the research process was finalisation of questionnaire, scale for marking responses, sampling design and data collection strategy.

4.3.4 Questionnaire Design

Many scholars had suggested numerous steps for questionnaire development. Questionnaire design process involve such as item wording or phrasing and the order of questions (Oppenheim, 2000; Chisnall, 2001). Following Churchill & Iacobucci (2002), the questionnaire development process for this study involved a 9-step procedure as shown in the following Figure 4.3.

Figure 4.3: Questionnaire development process*



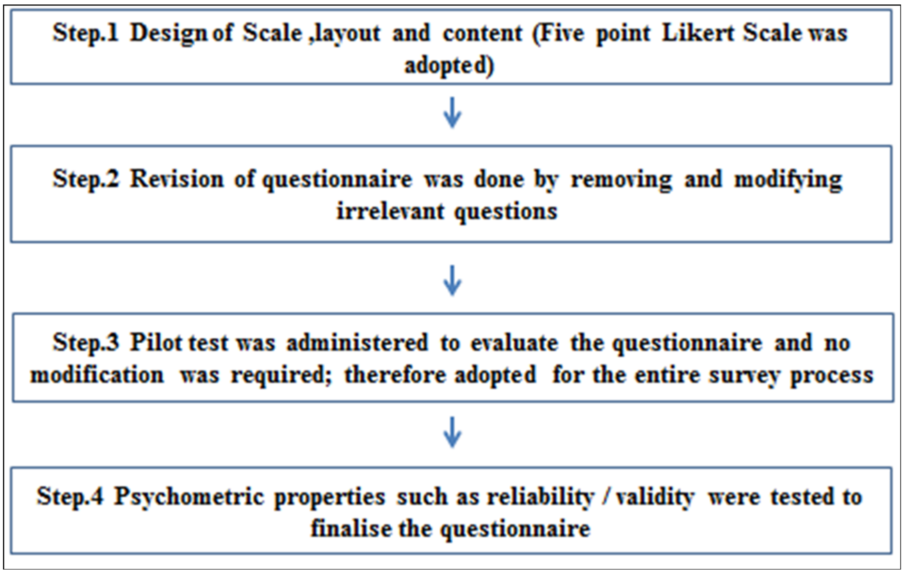
***Source:** Churchill & Iacobucci (2002)

This step involved selecting appropriate measurement scales, question wording and content, response format and finally the sequence of questions. The literature review and preliminary study in the form of in- depth interviews with the focus group have given a clear idea of the contents to be included in the questionnaire. Keeping the above guidelines in view, the stages followed in questionnaire designing for this study are shown in Figure 4.4. The questionnaire in this study was designed as closed - end questions where the respondents have to make their response in a 5 point Likert scale varying from “Strongly disagree” to “Strongly agree”. This scale was adopted based on the following reasons (Kassim et al.,2003;Allen & Seaman, 2007):

1. It yields higher reliability coefficients with fewer items than the scales developed using other methods (Hayes, 1998)

2. This scale is widely used in market research and has been extensively tested in both marketing and social science (Garland, 1991).
3. It offers a high likelihood of responses that accurately reflect respondent opinion under study (Burns & Bush, 2002; Zikmund, 2000).
4. It helps to increase the spread of variance of responses, which in turn provide stronger measures of association (Aaker et al., 2000).

Figure 4.4: Questionnaire design stages*



With regard to the content and wordings, the questions were designed to be short, simple and comprehensible, avoiding ambiguous, double barrelled and presumptuous questions (Kassim et al., 2003). Use of negatively worded questions is avoided to prevent confusion to respondents in answering the questions. The questionnaire contained questions related to all the indicator variables related to the constructs used for the study.

The structured questionnaire was developed from existing instruments to enhance the validity and reliability of the measures. Besides the demographic information, sections in the questionnaire covered all the six areas within the conceptual model. They are:

1. Competitive environment.
2. Advanced manufacturing technology.
3. Organisation design
4. Organisational strategy
5. Management accounting practices
6. Organisational performance.

Even if the variables and the measures used were generated from previous research and had been modified to suit this study, there are certain differences in the business environment in India as compared to developed countries and many other developing countries. Therefore, the applicability of these variables in the Indian context and setting was first confirmed through a pilot study of 62 manufacturing companies in India. In designing the questionnaire, several factors were taken into consideration, notably, time taken to complete the questionnaire, appropriate person to answer the questionnaire and the wording used in the questionnaire. The pilot test was required to address these issues. As suggested by Smith (2003), time taken to complete the questionnaire should be less than 20 minutes in order to maintain interest and motivation of the respondent.The questionnaire was used in three stages; pre-testing, pilot study and the actual survey. The survey questionnaire covered five segments as shown in the following Table 4.2.

Table 4.2: Five segments of survey questionnaire

Segment 1	General demographic information about respondents and the organisation.	
Segment 2	Information on Environmental (External) factors - Competitive Environment and Manufacturing Technology	6+10 =16 scale items
Segment 3	Information on Organisational (Internal) factors- Organisational Design and Organisational Strategy	9+8=17 scale items
Segment 4	Information on Management Accounting Practices	16 scale items
Segment 5	Information on Organisational Performance	12 scale items

4.3.5 Pre-testing

It is customary in the research process to pre-test the survey questions to assess whether they can be correctly understood and can easily be answered by respondents (Van der Stede et al. (2007). Thus, the content and face validation of the questionnaire was done through selected Finance & Accounting (F&A) Managers from the CII Total Cost Management (TCM) Group and from F&A managers of manufacturing companies in the State of Kerala, business school academicians and SAP-FICO consultants (Appendix-4). It was also tested whether respondents can understand the wording of the questions, the time taken to complete the questionnaire and if they had difficulties in completing the questionnaire through them. Certain items were deleted and certain items were included based on their suggestions. The pre-testing exercise provided an opportunity to detect and rectify the potential problems and also to modify certain questions in the data collection instrument, before proceeding with the pilot study.

The problems faced included:

1. Questions that respondents don't understand
2. Ambiguous questions
3. Questions that combine two or more issues in a single question (Double-barrelled questions)
4. Questions that make respondents uncomfortable

In this pre-testing stage, one question was deleted, another question was modified and yet another one question was added to the 61 scale items short listed by the experts, as these questions were found irrelevant in the Indian context by the respondents. One item from Segment-2 was deleted and another one from Segment-3 was modified and yet another one was included under Segmment-4 which is particularly relevant in the Indian context to finalise the questionnaire (Appendix-1) that was ultimately used in the pilot study.

4.3.6 Pilot Study

Besides the pre-test, the questionnaire was tested in a pilot study on prospective respondents which included potential users of the data (Finance and Accounting Managers) in the manufacturing sector in India. Among the suggestions received during pre-testing from those participants, there were concerns about the wordings used in the questionnaire which might cause bias. The questionnaire was revised in response to these concerns. The objectives of the pilot study were to confirm the applicability of the variables in the Indian context and also to explore the potential association of the business environment with Management Accounting Practices (MAP) and organisational factors.

During the pilot study, the online questionnaire that contained the required items cleared after the pre-test was ground tested by administering to a randomly selected (lot method) sample of 248 respondents from the target population of 1248 obtained from the data base of the Institute of Cost Accountants of India. Responses were received from 62 respondents at this stage and the collected data was tested for reliability analysis and was found to be reliable with Cronbach's alpha values above the threshold limit of 0.70. The external validity of the questionnaire was also assessed at this stage from the observation that none of the respondents raised any query related to the questionnaire and did not find any difficulty in understanding the content and meaning of the questions used in the questionnaire. Hence it was assumed that the respondents understood the questions in the manner the researcher was expecting the respondents to understand and the chances of making biased and ambiguous responses were nullified. Having verified the data for various quality criteria as mentioned under Table 4.7, it was found to have adequate validity and reliability. Hence the same instrument was administered for conducting the actual survey, without any further modifications. The results from the pilot study as shown in Appendix -5 were also used as a guideline in hypotheses formulation.

4.4 Survey Method – Concept and Background

The review of management accounting and organisational performance literature confirmed that a case or field study was adopted as a common research method. As reported by Van der Stede et al. (2007), only 30% of all published empirical management accounting research had used the mail survey method, over the past 20 years (Tuan Mat, 2010). This study targets to achieve an extensive investigation of Management Accounting Practices (MAP) and its impact on organisational performance, using contingency theory framework. To achieve this, the survey method was found to be more appropriate relative to other methods, i.e., case and field study, which relies more on context and process. This choice is supported by Van der Stede et al. (2007), who pointed out that the survey method is commonly used for theory testing in management accounting research.

The present study utilises Structural Equation Modelling (SEM) to test the theoretical model of management accounting practices and organisational performance and its causal association with competitive environment and manufacturing technology, as well as organisational strategy and design. It is essentially a quantitative research framework and therefore a well-designed survey is critical in order to draw valid conclusions about the relationships between variables of interest under investigation. Hence the survey for this study was designed based on the framework suggested by Van der Stede et al., (2007).

4.5 Data Collection Process

A research design would give the details of methods of investigation, the nature of the research instrument, the sampling plan and the types of data (Chisnall, 2005). In the following sections the quantitative data collection method is explained, justifying its appropriateness, and also detailing out the instrument validation process. Subsequent to that, the actual survey is explained, giving full details on how the research instrument was generated.

In this study, Finance & Accounting (F&A) Managers who are providers of management accounting information in the manufacturing sector in India were considered as population for the study. The elements of population were found in the directory of Institute of Cost Accountants of India (ICAI). The managers of Finance & Accounting (F&A) department were chosen because they are better versed with management accounting practices in manufacturing companies (Smith et al., 2008, Anderson, 1999, Joshi, 2001). As highlighted by Baines & Langfield-Smith (2003), managers' perceptions were considered appropriate in this situation, compared to the use of more objective measures because:

1. It is managers' perception of the environment which is of interest, as these perceptions will influence decisions with respect to the choice of strategy and other organisational and management accounting variables.
2. It is difficult to measure "variables" such as the intensity of competitive environment, or strategic emphasis.

3. It has been argued that individuals have sufficient understanding of their decision process to give relatively reliable information.

Anything which is built in this world is built twice; first it is built in the mind of the individual and then physically created it.

Among sampling methods, probability sample is important, since most of the statistical tests fit on to this type of sampling method and also representativeness and generalisability will be achieved well with probability samples from a population. As mentioned earlier, the target population was one thousand two hundred and forty eight managers from the Finance & Accounting (F&A) function from the manufacturing sector in India. These are the companies which were covered under the statutory cost audit as on 31st March 2014 as per the data made available. ICAI-CMA is the professional body of Management Accountants in India. Out of the 1248 companies, 248 were chosen for pilot study and 62 responses were received. From the pilot test, it was anticipated that a response rate of 25 per cent could be achieved.

As mentioned earlier, this study used Structural Equation Modelling (SEM) as the main data analysis technique, which requires a minimum sample size of 100 as a suggested rule of thumb. However, it has also been suggested that a sample size of 200 may be required to generate valid fit measures and to avoid drawing inaccurate inferences (Smith, 2003). According to Cooper & Schindler (2001), online surveys with a return of about 30% are often considered satisfactory. However, Smith (2003) suggested that response rates of less than 25% are common in accounting research. Thus keeping in view of the observations of Smith (2003) and Cooper & Schindler (2001), as mentioned above, with an expectation to obtain a target response rate of at least 25%, questionnaires were sent online to the rest of the 1,000 companies constituting the target population. In the light of the above observations of the scholars, such a response rate was considered sufficient for statistical analysis and ultimately for accomplishing the objectives of this research.

According to Van der Stede et al. (2007), management accounting surveys are usually designed to make estimates about relationships among multiple variables, thus, making it unlikely to be able to specify a desired level of precision. The details of research design are illustrated in the Table 4.3 below.

Table 4.3: Details of Research Design

RESEARCH DESIGN	
Type of study	Cross sectional
Area of study	National
Unit of observation	Finance & Accounting Managers
Target Population	Finance and Accounting managers in the Manufacturing companies in India adopting Management Accounting Practices (MAP)
Data Collection Method	Census
Responses Received	315
Type of analysis	Multivariate in nature and correlational in approach
Primary data collection	Structured online questionnaire

A two stage approach was used to complete the survey. For collecting the data, online questionnaires were sent to the respondents. To enhance the response rate, a reminder letter was sent by email to the whole population (even if they had already responded) as a follow up procedure. The review of the pilot study revealed that the instruments were applicable to Indian manufacturing companies. Therefore, the balance of 1000 questionnaires out of 1248 questionnaires was sent out on 01/08/2014 to constitute the actual survey. The online questionnaire which consists of 10 pages was sent as a link with a covering letter explaining the purpose of the study and how to respond. The covering letter also emphasised that the information would be treated in the strictest confidence and that only aggregated findings would be reported in this study. Within three weeks of the mailing of the initial questionnaire, 235 members had responded, which gave a 23.50% percentage response rate. A follow-up email was sent to all respondents after one month (on 05/09/2014) thanking those who had already responded and gently reminding the rest about the questionnaire and seeking their co-operation in completing the online survey. Within three weeks after sending the first follow-up letter, another 80 members had responded, which gave a total response rate of 31.50 percentage. Thus, the total number of responses received was 315, which was confirmed as the sample size for this study.

Statistical estimations demand data to be randomly drawn, independent in nature and follow a normal distribution. It was recommended that higher sample size is likely to generate data satisfying these conditions (Savin & White, 1977; Loehlin, 1998). Hence the adequacy of a sample size can only be confirmed if the data satisfies the assumptions related to above conditions. In this study, the randomness was tested using Runs Test, followed by the Test of Independence using Durbin -Watson statistics which confirmed the adequacy of 315 responses as suitable sample size for this study. This rate was considered sufficient for statistical analysis and inferences as the generally accepted standards were achieved. The summary of the data collection process is presented in Table 4.4.

Table 4.4: Summary of data collection

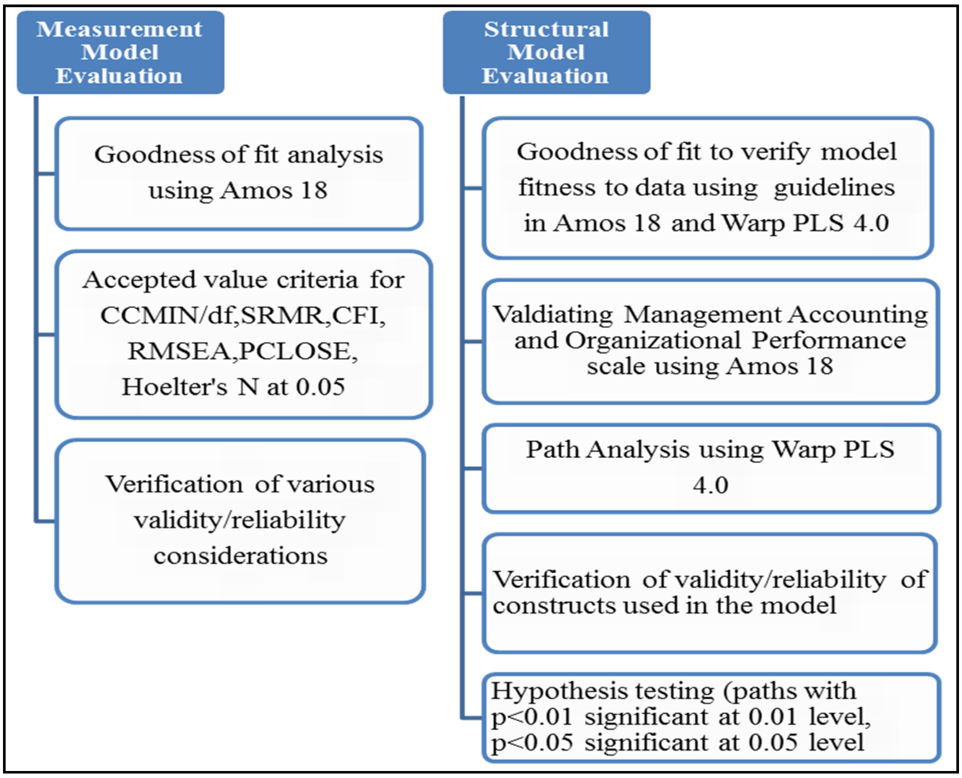
Mailing Date	Number of Questionnaires sent	Reply received	Response Rate (%)
Pilot Study (2nd May 2014)	248	62	25.00
Actual Survey(1st August 2014)	1000	235	23.50
Follow up (5th September 2014)		80	8.00
Total	1000	315	31.50

4.6 Data Analysis Procedure

Subsequent to the descriptive study, causal research was conducted. Descriptive studies may show that two variables are related but are insufficient for examining cause and effect relationships (Malhotra & Bricks, 1999). Causal research is most appropriate when the functional relationship between the causal factors and the effect predicted on the performance variable is under investigation (Hair et al., 2003). This study was concerned with the causal relationships between competitive environment, manufacturing technology, organisational design, organisational strategy, management accounting practices and organisational performance. Hence, a causal experiment was appropriate to generate the type of evidences necessary to make causal inferences about relationships between research variables. A three level approach was adopted to analyse the data after screening the data for outliers, normality, and satisfying with important assumptions related to randomness, independence of observation etc.to confirm that the collected responses follow randomness needed for statistical estimations.

The first attempt was to identify the existence of any distinct factor structure by performing an exploratory factor analysis with regard to Management Accounting Practices (MAP) construct of 16 indicators and Organisational Performance (OP) construct of 12 indicators which were used for measurement. The analysis confirmed existence of three factors with respect to MAP and no indicator variables were eliminated for poor loading. The second attempt was to develop measurement models for all latent constructs considered for the study. Using Confirmatory Factor Analysis (CFA) and by testing the goodness of fit, measurement models were developed and final indicators capable of measuring the constructs were finalised. The structural model for Management Accounting Practices (MAP) construct was found to represent data with fifteen indicators belonging to three distinct dimensions. Organisational Performance (OP) construct was found to represent the data with ten indicators belonging to two distinct dimensions based on goodness of fit criteria as shown in Figure 4.5.

Figure 4.5: Model Evaluation stages



Scale so confirmed was then tested for common methods variance, convergent validity and discriminant validity for checking applicability to the assumed population. Thirdly, the structural model (final) with all the constructs which are measured as reflective/formative were tested for its ability to represent the data as per guidelines for testing using warp PLS 4.0. To assess the model fit with the data, it was recommended that the p-values for both the Average Path Coefficient (APC) and the Average R-Squared (ARS) be both lower than .05. In addition, it was also recommended that the Average Variance

Inflation Factor (AVIF) be lower than 5 (Kock, 2009). The significant paths in the model are utilised for drawing various conclusions in the study.

4.7 Structural Equation Modelling (SEM)

The purpose of many research projects is to analyse causal relationships between variables. SEM is a statistical technique for testing and estimating those causal relationships based on statistical data and qualitative causal assumptions. SEM is a confirmatory technique used to determine whether the model developed for the research is valid for data and it is a combination of factor analysis and multiple regressions. The variables in SEM are measured (observed, manifest) variables (indicators) and factors (latent variables). The SEM can be divided into two parts. The measurement model is the part which relates measured variables to latent variables. The structural model is the part that relates latent variables to one another. Since this study required the hypothesised model to be tested for the best-fit of the data, SEM seemed to be the appropriate analysis method as it produces more comprehensive overall goodness-of-fit. Two complementary schools have come to the fore in the field of Structural Equation Modelling namely covariance-based SEM and component-based SEM (Rejikumar, 2011).

The first school developed around Karl Jöreskog which was considered as covariance-based and is usually used with an objective of model validation and needs a large sample (what is large varies from one author to another: more than 100 subjects and preferably more than 200 subjects are often mentioned). The various methods of estimation used for covariance-based SEM, like Maximum Likelihood (ML) or Un-weighted Least Squares (ULS), are full information methods. There are various software developed for performing this type of SEM like AMOS, LISREL, EQS etc.

The second school developed by Herman Wold under the name "PLS" (Partial Least Squares). It is a partial information method. It is a two-step method:

1) Latent variables scores are computed using the PLS algorithm and

2) OLS regressions are carried out on the LV scores for estimating the structural equations.

There are various software packages developed for performing this type of SEM like PLS-Graph, Smart PLS, warp PLS etc.

Another approach to SEM as proposed by Hwang & Takane (2004), is a full information method optimising a global criterion and named Generalised Structured Component Analysis (GSCA). This new school can be considered as a generalisation of principal component analysis to the case of several data tables connected by causal links. The method was implemented into a software program. Visual GSCA 1.0 PLS was considered ideal, if the conditions relating to sample size, independence, or normal distribution are not met, and if prediction is more important than parameter estimation (Rejikumar,2011). In this study, the first two approaches are used in different stages of analysis.

For Confirmatory Factor Analysis (CFA) of the Management Accounting Practices (MAP) construct and Organisational Performance (OP) construct, Covariance Based SEM (CBSEM) based software AMOS 18.0 was used and for the analysis related to conceptual model representing all the constructs (full model estimation), PLS based software warp PLS 4.0 was used. The choice of PLS was justified from four aspects. The first aspect was that PLS can accommodate both reflective and formative scales easily compared to covariance structure analysis. Although the inclusion of formative measures in

CBSEM has been well documented analysts usually encounter identification problems (Joreskog & Long, 1993). The second aspect was that PLS does not require any priori distributional assumptions and relatively small sample size is acceptable (Chin et al.,2003). Thirdly, the theory which speaks about the linkages between these variables already exists. Lastly, the measurement models were done by a full estimation tool AMOS 18.0 and hence the theoretical support behind the role of each of the items in the measurement of the latent constructs was empirically tested beyond doubt.

4.7.1 Covariance Based Structural Equation Modelling (CBSEM)

There are five distinct steps involved in analysing a data set using Covariance Based SEM. They are:

1. Model specification;
2. Model identification;
3. Measure selection, data cleaning and preparation;
4. Model analysis and evaluation; and
5. Model re-specification (Kline 2005).

Model specification involves mathematically or diagrammatically expressing hypothesised relationships amongst a set of variables (Kline, 2005). A model is theoretically identifiable if there is a unique solution possible for it and each of its parameters. If a model is not identifiable, then it has no unique solution and SEM software will fail to converge. Such models need to be re-specified to be identifiable (Kline, 2005). The next step involves many sub steps such as measure selection, data cleaning and data preparation. To measure each latent construct at least two observed variables are needed (Joreskog &

Wold,1982). In this stage it is examined whether sufficient observed variables are there to measure all the latent variables under study. Maximum Likelihood (ML) estimation is the preferred estimation procedure for SEM. The outliers, normality, missing variables etc. should be identified and properly treated at this stage.

In model evaluation using AMOS software involves the use of significance tests to assess the adequacy of model fit. Fit refers to the ability of a model to reproduce the data (i.e., usually the variance-covariance matrix). The fit measures generated by AMOS output can be classified as shown in the following Table 4.5. There is wide disagreement among researches as to which fit indices to report. Jaccard & Wan (1996), recommend use of at least three fit tests, one from each of the first three categories, so as to reflect diverse criteria. Kline (2005) recommended the use of at least four tests, such as chi-square; GFI, NFI, or CFI; NNFI; and SRMR. Many indices are affected by sample size and for this reason CMIN, GFI and AGFI are no longer the preferred measures of goodness of fit.

The Parsimonious Fit Measures are used primarily to compare models on the basis of some criteria that take parsimony (in the sense of number of parameters to be estimated). It is suggested that other goodness of fit measures are used to assess acceptable models and parsimony measures are used to select among the set of acceptable models. Hence they are not used in this study where the primary aim was to develop a model which fit the data well. As the indices placed in the same group in above table measure about the same aspect of the model fit, it is decided to adopt most accepted fit indices from each of these sets. Thus the following fit indices as shown in Table 4.5 are considered ideal for the study.

Table 4.5: Model Fit Measures

Consideration	Fit Indices
Absolute Fit Measure (reference to other models relevant in the situation)	CMIN,CMIN/df, RMR, SRMR, GFI, AGFI, PGFI
Relative fit measures (reference to an explicit basis model though unrealistic)	NFI,RFI,IFI,TLI
Parsimony measures (introduced by penalizing for lack of parsimony)	P-RATIO,PNFI,PCFI
Fit measures based on non-central chi-square distribution	NCP,FMIN,FO,RMSEA
Information theoretic fit measures (to choose among several realistic but different models)	AIC,BIC,BCC,ECVI
Fit measures based on sample size	HOELTER

Garson (1998) recommends reporting chi-square (CMIN), RMSEA, and one of the baseline fit measures (NFI, RFI, IFI, TLI, CFI); and if there is model comparison, also report one of the parsimony measures (PNFI, PCFI) and one of the information theory measures (AIC, BIC, CAIC,BCC, ECVI, MECVI).

Relative chi-square, also called normal or normed chi-square, is the chi-square fit index divided by degrees of freedom, in an attempt to make it less dependent on sample size. Kline (2005) says 3 or less is acceptable. Some researchers allow values as high as 5 to consider a model adequate fit (Schumacker & Lomax, 2004), while others insist relative chi-square be 2 or less. Less than 1.0 is poor model fit. AMOS lists relative Chi-square as CMIN/df. Standardised Root Mean Square Residual or Standardised RMR is the average difference between the predicted and observed variances and covariance in the model, based on standardised residuals. As mentioned earlier, standardised residuals are fitted residuals, divided by the standard error of the residual (this assumes a large enough sample to assume stability of the standard error). The smaller the SRMR, the better the model fit. SRMR = 0 indicates perfect fit. A value less than .05 is widely considered good fit and below .08 adequate fit. The Comparative Fit Index, CFI, also known as the Bentler Comparative Fit Index compares the existing model fit with a null model which assumes the indicator variables (and hence also the latent variables) in the model are uncorrelated (the "independence model"). CFI and RMSEA are among the measures least affected by sample size (Fan et al., 1999). CFI varies from 0 to 1 (if outside this range it is reset to 0 or 1). CFI close to 1 indicates a very good fit. By convention, CFI should be equal to or greater than 0.90 to accept the model.

Root Mean Square Error of Approximation, RMSEA, is also called RMS or RMSE or discrepancy per degree of freedom. By convention (Schumacker &Lomax ,2004) there is good model fit if RMSEA is less than or equal to .05. There is adequate fit if RMSEA is less than or equal to .08. More recently, Hu & Bentler (1999) have suggested RMSEA 0 .06 as the cut-off for a good model fit. RMSEA is a popular measure of fit, partly because it does not require comparison with a null model and thus does not require the author posit as plausible a model in which there is complete independence of the latent variables as does, for instance, CFI. In a well-fitting model, the lower 90% confidence limit is very close to 0, while the upper limit is less than .08.

PCLOSE tests the null hypothesis that RMSEA is not greater than .05. If PCLOSE is less than .05, we reject the null hypothesis and conclude that the computed RMSEA is greater than .05, indicating lack of a close fit. Hoelter's critical N is used to judge if sample size is adequate. By convention, sample size is adequate if Hoelter's N > 200. The following Table 4.6 gives the accepted values for each of the above indices as considered for the study.

Table 4.6: Accepted values for each of indices considered in the study

Sl.No	Fit Indices	Accepted Value
1	Normed chi-square (CMIN/df)	< 3
2	Standardized RMR (SRMR)	< 0.08
3	Comparative Fit Index (CFI)	> 0.9
4	Root Mean Square Error of Approximation (RMSEA)	< 0.08
5	PCLOSE	> 0.05
6	Hoelter's critical N	>200

The model re-specification is required when goodness of fit is not achieved in the initial evaluation. Re-specification is done on the basis of modification indices to finalise a good-fitting model. The re-specification of bad-fitting models was done by (Saurina & Coenders, 2002):

1. Dropping loadings which are not substantively interpretable.
2. Adding loadings which are both interpretable and statistically significant.
3. Splitting dimensions for which interpretable clusters of positive residual correlations appear.
4. Adding error correlations which are both interpretable and statistically significant.
5. Dropping items which would load on nearly all dimensions.
6. Merging dimensions whose correlation is close to unity.
7. Dropping non-significant regression coefficients among latent variables.

4.7.2 Partial Least Square Based Structural Equation Modelling (PLS Based SEM)

A structural equation model with all constructs used in the study was analysed using warp PLS 4.0 for identifying significant relations between variables of interest in the study. The term structural equation model is used to refer to both the structural and measurement models together.

In a Structural Equation Modelling (SEM) analysis, the inner model is the part of the model that describes the relationships between the latent variables considered in the model. The outer model is the part of the model that describes the relationships between the latent variables and their indicators. The inner and outer models are also frequently referred to as the structural and measurement models, respectively. Therefore the path coefficients are inner model parameter estimates whereas weights and loading are measurement model parameter estimates depending on whether the measurement model is formative or reflective. Warp PLS 4.0 estimates enables evaluation of measurement model as well as structural model simultaneously. However, when second order constructs are used, measurement model for first order constructs is to be evaluated separately. For analysis of second order constructs using warp PLS 4.0, it is required to calculate the latent variable scores (factor scores) at first by creating models with Latent Variables (LV) and indicators without linking. These LV scores are used to define the second order construct in the final model.

The most important feature of warp PLS 4.0 as found different from other PLS based software is the inclusion of model fit indices. For assessing the model fit with the data, it is recommended that the p values for both the APC and ARS be both lower than .05; that is, significant at the .05 level. Also it is recommended that the AVIF < 5. Validity Criterion for various constructs in warp PLS are explained in Table 4.7.

As the correlations between formative indicators may be positive, negative or zero (Bollen, 1984; Diamantopoulos & Winklhofer, 2001), reliability as a measure of internal consistency sense is not meaningful for formative indicators (Bagozzi, 1984; Hulland, 1996).

Table 4.7: Validity / Reliability guidelines in warp PLS 4.0

Sl No	Consideration	Guideline Warp PLS 4.0	
		Reflective Constructs	Formative Constructs
1	Cronbach Alpha co-efficient	>0.7	NA
2	Composite Reliability	>0.7	NA
3	Average Variance Extracted	>0.5	>0.5
4	Convergent Validity	p values associated with the loadings be < .05; and that the loadings be equal to or > 0.5	VIF <5,all indicator weights should be with p <0.05
5	Discriminant Validity	The square root of the average variance extracted should be higher than any of the correlations involving that latent variable	The square root of the average variance extracted should be higher than any of the correlations involving that latent variable

4.8 Validity and Reliability

The two most important and fundamental characteristics of any measurement procedure are reliability and validity. Patton (2001) opined that validity and reliability are two factors which any qualitative researcher should be concerned about while designing, analysing results and judging the quality of the study.

4.8.1 Validity

According to Davis & Cosenza (1993), a measurement scale is valid if it does what it is supposed to do and measures what it is supposed to measure.According to Hardy & Bryman (2004), there are three types of validity- Face/content validity, Criterion-related validity and Construct validity.

Content validity ensures that the measures include an adequate and representative set of items and the clarity of the definition and concept used. A major threat to content validity is ill-defined terms and concepts. The variable measurements in the study were consistent with prior studies and hence there did not seem to have any threat to content validity. The pre-test was concluded by elimination of one item from Segment -2 and modifying one from Segment -3 and addition of a new item under Segment-4. In this study, a pilot study was conducted to determine whether any alterations or rewording of questionnaire was necessary due to any jargon, inconsistencies or leading questions.

Criterion-related validity deals with the instrument's ability to measure an item accurately and analyse it. Scale used in the study was mainly five-point Likert scale. This is a popular scaling technique and is used widely in management research. To ensure criterion validity throughout the questionnaire a common scale is used for measurement.

Construct validity explains how well the results obtained from the use of the measure fit in the theories around which the test was designed. This was assessed through convergent and discriminant validity. Convergent validity is established when the scores obtained with two different instruments measuring the same concept are highly correlated. Discriminant validity is established when based on theory two variables are predicted to be uncorrelated and the scores obtained by measuring them are indeed empirically found to be so.

4.8.2 Reliability

Reliability is the extent to which measurements of the particular test are repeatable. In other words, the measuring procedure should yield consistent results on repeated tests. The more consistent the results given by repeated measurements, the higher the reliability of measurement procedures.

Kirk & Miller (1986) identify three types of reliability referred to in quantitative research, which relate to: (1) the degree to which a measurement, given repeatedly, remains the same; (2) the stability of a measurement over time; and (3) the similarity of measurements within a given time period in order to test reliability. There are two aspects of the reliability issue: external and internal reliability. According to Hardy & Bryman (2004), external reliability means that the studied variable does not fluctuate greatly over time which means that it is stable. This kind of reliability can be tested through test-retest reliability, which means measuring the same scale twice in different time frames and see to what extent the two sets of data have yielded the same replies of the respondents. This method of measuring the reliability is time-consuming and tedious and will not be applied in the underlying study. Furthermore, according to Hardy & Bryman (2004), internal reliability means that all the constituent indicators of a variable are measuring the same thing which means that the variable is coherent. One of the most popular methods for estimating internal reliability, also applied in this thesis, is Cronbach's Alpha (R) Test of Reliability. In this study, Cronbach coefficient alpha value was above 0.7 showing scale reliability for all reflective constructs but for formative constructs reliability may not be a correct criterion as the indicators are not correlated each other.

4.9 Conclusions to the Chapter

This chapter has explained the methodological design for exploring the conceptualised research framework. The various methods adopted to conduct the study were narrated. The rationale for each decision regarding data collection strategy, sample size, questionnaire design and analysis methods were explained in detail. An online survey was chosen in this study due to the fact that the emphasis is on producing a result based on real-world observations. In order to ensure a high quality of the survey design, this study used a framework suggested by Van der Stede et al. (2007); which includes questionnaire design, the use of pre-testing, pilot study and follow-up procedures. This procedure helped in finalising the theory and items for measurement of the constructs of interest in the study. The proposed analysis strategy was finalised and rationale for using each procedure was elaborated. In the next chapter, the methodological backgrounds defined would be transported and applied to the data collected for this study and will present the statistical evidence that underlines the validity and reliability aspects of this research ,the results of hypotheses testing and other analyses done with the data collected.

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Chapter

5

DATA ANALYSIS

• Contents •

5.1 Introduction

The Chapter - 4 had explained the methodological steps taken towards examining the hypothesised relationships between the 'exogenous' and 'endogenous' variables as conceptualised in the framework shown in Figure 3.2. In this chapter, the focus is to present the statistical evidence that justifies the validity and reliability of this research. The results of the data analysis and hypotheses testing are also presented here. The first and foremost procedure in the data analysis stage was to verify the quality of collected data for finalising the tools required for further analysis. The data analysis was carried out in three phases after removing outliers and testing normality. In the first phase the existence of distinct factors were identified with regard to Management Accounting Practices (MAP) and Organisational Performance (OP) constructs with sixteen indicators and twelve indicators respectively by performing Exploratory Factor Analysis (EFA) using SPSS 20.0. The second phase was to develop measurement models for all latent variables of interest considered in the study. The final indicators capable of measuring the latent variables were finalised and the factor structures were confirmed using Confirmatory Factor Analysis (CFA) with AMOS 18.0. The scales were then tested for reliability, convergent validity, discriminant validity and goodness of fit. In the third phase, the full model estimation with all the variables was done by Structural Equation Modelling (SEM) with the tool warp PLS 4.0 for understanding the linkages among various latent constructs and to test the hypotheses.

This study has adopted the following analyses to test the hypotheses proposed.

1. Checking various assumptions regarding quality of data and specific assumptions for performing above analyses.
2. Independent samples t-test and ANOVA to understand the perceptional differences among selected demographic profiles of the respondents towards critical variables under study using SPSS 20.0.
3. Exploratory Factor Analysis and Confirmatory Factor Analysis to understand and confirm the factor structure of Management Accounting Practices (MAP) and Organisational Performance (OP) using SPSS 20.0 and AMOS 18.0.
4. Estimation of research model by variance based SEM approach using warp PLS 4.0.

The following section narrates various assumptions that need to be verified before proceeding with analysis listed in 1 to 4 above.

5.2 Analysis of Underlying Assumptions and Verification of Data Quality

The first portion of the section explains the procedure adopted to examine the fulfilment of underlying assumptions behind each of the analysis performed. As the data was collected using an online survey, possibility of having missing values was absent. On physical verification also no missing responses could be detected.

5.2.1 Independent Sample t- Test

Independent group t-test is appropriate when different participants have performed in each of the different conditions, in other words, when the participants in one condition are different from the participants in the other condition. This is commonly referred to as a between-subjects design. The independent group t-test has two additional assumptions:

1) Independence of groups: Participants should appear only in one group and these groups are unrelated.
2) Homogeneity of variance: the group should come from populations with equal variances. To test for homogeneity of variance, SPSS uses the Levene's test for equality of variances. If this test is significant ($p < 0.05$), then the null hypothesis is rejected, and accept the alternative hypothesis, that the variances are unequal.

Assumption 1 is a matter of research design while assumption 2 is tested in the independent group analysis.

5.2.2 ANOVA

To conduct an ANOVA test, the data should satisfy the following the first 4 criteria mentioned below:

1. **Independence of observations:** Durbin- Watson statistic was used to confirm the existence of independence among observations. The allowable range was observed as between 1.5 to 2.5 when performed the analysis in SPSS 20.0 proving the independence between observations.

2. **Outliers:** Absence of significant outliers was verified using standardised Z scores obtained from 'descriptive' menu of SPSS 20.0. Observation of Z scores less than cut off limit of +/- 4 (Hair et al.,1998) confirms absence of significant outliers which can create error in estimation.

3. **Normality of data:** The most fundamental assumption in multivariate analysis is the normality of distribution (Field, 2005; Hair et al., 1998). Normality is the degree to which the distribution of the sample data corresponds to a normal distribution (Hair et al., 1998). To ensure the appropriateness of parametric analysis (Field, 2005), data was examined for normality of distribution. All parametric analysis requires the data to follow normal distribution. With multivariate statistics, the assumption is that the combination of variables follows a multivariate normal distribution. Since there is no direct test for multivariate normality, we generally test each variable individually and assume that they are multivariate normal if they are individually normal, though this may not necessarily be the case. However, even if the distribution of the individual observations is not normal, the distribution of the sample means will be normally distributed if the sample size is about

30 or larger. This is due to the "central limit theorem" that shows that even when a population is non-normally distributed, the distribution of the "sample means" will be normally distributed when the sample size is 30 or more.

In SEM model, estimation and testing are usually based on the validity of multivariate normality assumption, and lack of normality will adversely affect goodness-of-fit indices and standard errors (Baumgartner & Homburg 1996; Hulland et al., 1996; Kassim et al., 2003). To assess normality, skewness and kurtosis are commonly used by the statisticians. Skewness refers to the symmetry of a distribution whereas kurtosis relates to the peakedness of a distribution. A distribution is said to be normal when the values of skewness and kurtosis are equal to zero (Tabachnick & Fidell,2001). However, there are few clear guidelines about how much non-normality is problematic. It is suggested that absolute values of univariate skewness indices greater than 3.0 seem to describe extremely skewed data sets (Chou & Bentler, 1995). Regarding kurtosis, there appears that kurtosis index greater than 10 may suggest a problem. Analysis for univariate normality was done using Kolomogorov-Smirnov test with Lillefors significance correction revealed that some of the variables are normally distributed. Skewness values within the range of –1 to +1 and Kurtosis values within the range of –3 to +3 are acceptable. (Hair et al., 1998, 2003). However skewness was between -0.9 and 0.1 range showing most of the data was moderately skewed. Non-normality of the data was anticipated as most of the respondents preferred to agree or strongly agree to the survey dimensions indicating bulk of the values (including the median) lie to the right of the mean. In this study, all the variables fall under the kurtosis value of 3, inferring kurtosis was not problematic in this research.

AMOS 18.0 provides normality checks for data including skewness, kurtosis indices and Mardia's coefficient which is a test of multivariate normality. Critical ratios provided by AMOS output as attached to kurtosis represents Mardia's normalised estimate of multivariate kurtosis. Bentler & Chou (2005), has suggested that, in practice, values > 5.00 are indicative of data that are non-normally distributed. To correct for non-normality in the underlying database, use of Bollen-Stine bootstrap and the associated *p* value was considered in this study. For all constructs to moderate the effect of multivariate non-normality, the Maximum Likelihood Estimation (MLE), which is relatively robust against departures from multivariate normality even in a small manner (Anderson & Gerbing 1988; Sweeney et al.,1997; Tabachnick & Fidell, 2001), was applied with Bollen-Stine bootstrap procedure. The boot strap sample of 1000 was adopted in this study.

4. **Homogeneity of variance:** ANOVA tests demand equal variance among different populations subjected to comparison. Levene's test of homogeneity of variance using SPSS 20.0 was used to check the existence of homogeneity.

5. **Absence of multicollinearity:** This was verified by using Variation Inflation Factor (VIF) which can be estimated in SPSS 20.0 or using warp PLS 4.0. Muticollinearity can be tested using Variance Inflation Factor (VIF). The guidelines applied in this regard were as follows:

   a. VIF should be less than 3.3 (Diamantopoulos & Siguaw, 2006).

   b. If VIF is less than 10 explains the absence of Collinearity (Hair et al., 1998).

5.3 Validity and Reliability of Data

In undertaking a statistical analysis, unidimensionality should be always assessed first, prior to examining reliability and validity (Hair et al., 2006). This step reduces the possibility of misspecifications (Gerbing & Anderson, 1988), because the analysis of reliability and validity is based on the assumption of unidimensionality (Nunnally & Bernstein, 1994). Validity determines whether the scale truly measures what it was intended to measure. Testing the reliability of survey data is the pre-requisite for data analysis and inference. Reliability analysis tests whether a scale consistently reflects the subset it measures (Churchill,1979; Nunnally & Bernstein,1994). By consistency it is firstly meant that a respondent should score questionnaire the same way at different times. Secondly, two respondents with the same attitude towards Management Accounting Practices (MAP) should identically score the survey. According to Field (2005), values between 0.7 and 0.8 of Cronbach's alpha are acceptable values of consistency. In reliability analysis reverse scored items make a difference and in extreme cases they can lead to a negative Cronbach's alpha (Field, 2005). In this study reverse scored items were not included as it may lead to problems in reliability of the data if the respondents answer without proper understanding of the question.

In this study both reflective and formative measures were used. The approaches to test reliability of these constructs are different. The reliability of reflective constructs was ascertained using the above criterion. As formative constructs are composed of different aspects of a construct, their indicators are not necessary to correlate with each other. Diamantopoulos & Winklhofer (2001) stated that "it is not clear that reliability is a concept that applies well to formative constructs". This statement was also supported by Rossiter (2002) and hence concluded that no reliability test are mandatory for formative indicators. Reliability evaluation for formative constructs is in ascertaining the absence of multicollinearity (Diamantopoulos & Siguaw, 2006). Muticollinearity can be tested using Variance Inflation Factor (VIF) as explained earlier.

The various considerations used for testing the soundness of the measures observed from various reliability/validity considerations are explained in Table 5.1 below. As mentioned before, this study has adopted Confirmatory Factor Analysis (CFA) using AMOS 18.0 for validating the scales developed for measuring perceived organisational performance construct. Also to evaluate the research model structural equation modelling analysis using warp PLS 4.0 was adopted. The verification of the results obtained after above procedures with regard to certain parameters indicated various validity and reliability considerations.

Table 5.1: Various Validity/Reliability Considerations

Sl No	Consideration	Guideline (Checking with AMOS 18 output used for Confirmatory Analysis)	Guideline (Warp PLS 4.0) Reflective/Formative
1	Unidimensionality	Comparative Fit Index (CFI) >0.9 (Suresh Chandar et al., 2001)	NA
2	Common Method Variance (CMV)	Exist if first factor on exploratory factor analysis explains for more than 50% of the variance in the variables (Podsakoff and Organ 1986)	NA
3	Cronbach alpha co-efficient	>0.7	
4	Composite Reliability	>0.7.Composite reliability is considered high if "squared multiple correlation" greater than 0.5; moderate if between 0.3 and 0.5; and poor if less than 0.3 (Holmes-Smith 2001,Byrne 2001)	>0.7/Nil
5	Average Variance Extracted (AVE)	>.5 to indicate reliable factors (Hair et al., 1995, Holmes-Smith 2001)	>0.5/>0.5
6	Convergent Validity	Critical Ratio of Measurement items >1.96	P >0.001/VIF <3.3,all indicator weights should be with p<.05
7	Discriminant Validity	All AVE > squared inter-construct correlations	The square root of the average variance extracted should be higher than any of the correlations involving that latent variable/ AVE >0.5
8	Construct Validity	Assumed if Sl.Nos. 3,4,5 and 6 are satisfied	
9	Squared multiple correlation	Shows ability of indicators to measure the latent dimension,>0.5 is good,>0.3 and <0.5 moderate	

The next step in the analysis procedure was to explore the Management Accounting Practices (MAP) construct and confirm the existence of various dimensions by which it was assumed to be formed. This was done in two stages (1) Exploratory Factor Analysis using SPSS 20.0 and (2) Confirmatory Factor Analysis using AMOS 18.0.

To achieve a clear demarcation of the factors for this study, the conceptualised constructs were examined in two phases. In the first phase, all the six constructs under the study were examined by using Exploratory Factor Analysis (EFA), to identify if the measurement items load into the conceptualised themes of each of the constructs and to identify their factor structures. In the second phase, those contingency constructs were examined using the Confirmatory Factor Analysis (CFA), to confirm the core factor structure thus identified under the exploratory factor analysis. EFA was performed by using SPSS 20.0 and CFA was performed like Structural Equation Modelling (SEM) using AMOS 18.0. The Exploratory Factor Analysis (EFA) and the Confirmatory Factor Analysis (CFA) adopted in this study are explained in the following sections.

5.4 Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis (EFA) could be described as orderly simplification of interrelated measures. EFA, traditionally, has been used to explore the possible underlying factor structure of a set of observed variables without imposing a preconceived structure on the outcome (Child, 1990). By performing EFA, the underlying factor structure was identified.

The various assumptions to be verified for conducting exploratory factor analysis are as follows:

1. Interval or ratio level of measurement

2. Random sampling
3. Relationship between observed variables is linear
4. A normal distribution (each observed variable)
5. A bivariate normal distribution (each pair of observed variables)
6. Multivariate normality (Suhr, 2006)

Exploratory Factor Analysis (EFA) is designed for the situation where links between observed and Latent Variables (LV) are unknown or uncertain. The analysis thus proceeds in an exploratory mode to determine how and to what extent the observed variables are linked to their underlying factors. Typically, the researcher wishes to identify the minimal number of factors that underlie (or account for) covariation among the observed variables (Byrne, 2001). Even though this study is being conducted by using a previously adopted scale in measuring the Latent Variables, EFA is carried out as it is in a different context and setting.

EFA is a method of data reduction which infers presence of latent factors which are responsible for the shared variance in a set of observed variables / items. EFA is by definition 'exploratory' and the researcher does not specify a structure, and assumes each item/ variable could be related to each latent factor. Exploratory Factor Analysis was conducted using SPSS 20.0 using Maximum Likelihood Estimate (MLE) with varimax rotation.

5.4.1 Exploratory Factor Analysis of Management Accounting Practices Dimension

The indicator variables related to Management Accounting Practices (MAP) construct were subjected to an exploratory factor analysis to identify the underlying factors and to test whether the factors extracted are similar to the dimensions proposed in the study. The analysis was conducted by SPSS 20.

Sixteen scale items were used to measure the management accounting practices in the manufacturing context as explained in the previous chapters. In order to identify the naturally occurring dimensions of management accounting practices, all sixteen items were subjected to a factor analysis. This approach was recommended in the literature as a means of identifying actual, rather than perceived, factor groupings (Rosen & Surprenant, 1998).The role of factor analysis is to identify the components or factors that derive from a set of variables, i.e. to identify the subset of correlated variables that form a subset which is reasonably uncorrelated with other subsets (Hair et.al., 1998; Tabachnick & Fidell, 2001).

Exploratory Maximum Likelihood Estimation (MLE) factor analysis with varimax rotation was performed as it incorporates common, specific and error variance and was appropriate when the objective was to identify the minimum number of factors associated with the maximum explanation of variance (Hair et al., 1998). The items that load higher than 0.45 are retained while low loading items are dropped. In general, higher factor loading is considered better, and typically loadings below 0.30 are not interpreted. As a general rule of thumb, loadings above 0.71 are excellent, 0.63 very good, 0.55 good, 0.45 fair, and 0.32 poor (Tabachnick & Fidell, 2007). The output of Exploratory Factor Analysis (EFA) with respect to Management Accounting Practices (MAP) is presented in the following Table 5.2.

The exploratory maximum likelihood estimation (MLE) factor analysis identified three components with an Eigen value greater than 1, which together explained over 64.06 percentage of the variance. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.9 and the Bartlett Test of Sphericity was significant ($p<0.001$) with a Chi Square value of 2104 with 120 degrees of freedom which was considered to be good for further analysis and provided support of data adequacy for the factorisation as shown in the Table 5.2 below.

Table 5.2: Exploratory Factor Analysis (EFA) of Management Accounting Practices (MAP)

Variable and Indicators	Factor Loadings		
MAP	1	2	3
MAP1		0.556	
MAP2		0.564	
MAP3		0.792	
MAP4		0.726	
MAP13		0.653	
MAP5	0.542		
MAP7	0.674		
MAP8	0.687		
MAP10	0.766		
MAP12	0.688		
MAP14	0.577		
MAP15	0.629		
MAP16	0.466		
MAP9			0.448
MAP11			0.495
MAP6			0.793
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.90		
Bartlett's Test of Sphericity	.000		
Cronbach's alpha	0.89		

(Likert Scale of 1 to 5; 1=Strongly Disagree and 5 = Strongly Agree)

The outputs of EFA reveal the following insights about MAP construct:

1. The practicing managers perceive effectiveness of Management Accounting Practices (MAP) through three distinct dimensions. These dimensions were named in alignment with the theme of the items

included in the classification as MAP-Traditional, MAP-Advanced and MAP-Activity Based Management (ABM).

2. The items behaved in the similar manner as conceptualised and significant cross-loadings were not noticed among indicators.
3. The reliability statistics of each of the above explored factors were found above the threshold limit of 0.7 in the cases of MAP-Traditional and MAP- Advanced. In the case of MAP-ABM it was found at 0.7 as shown in Table 5.3 below:

Table 5.3: Reliability Statistics of MAP Dimension

Sl.No	Factor Name	No.of items	Reliability Estimate
1	MAP – Traditional	5	0.839
2	MAP – Advanced	8	0.859
3	MAP - ABM	3	0.700

4. The output of Exploratory Factor Analysis (EFA) provided evidence against unidimensionality as the first factor was found to capture only 28.7 % of the variance which is less than 50% to doubt unidimensionality. The observations also confirm absence of common method variance**.**

Table 5.2 above provides the details of each factor along with items contributing to it with component loadings for each item. The total number of items for Management Accounting Practices (MAP) construct was sixteen in factor extraction.

The following conclusions were drawn from the exploratory factor analysis conducted:

1. There existed three underlying factors which represent the management accounting practices construct in the manufacturing industry context in India.
2. Each item was related to only one factor and no cross loading was shown by any of the indicators.
3. None of the observed variables had shown a loading of less than 0.40.

The next step was to conduct a confirmatory factor analysis for the Management Accounting Practices (MAP) factor structures thus identified under exploratory factor analysis.

5.4.2 Exploratory Factor Analysis (EFA) of Organisational Performance (OP) Dimension

The next step in the analysis procedure was to explore the Organisational Performance (OP) construct and confirm the existence of various dimensions by which it was assumed to be formed. The steps undertaken under section 5.4.1 for Management Accounting Practices (MAP) are also followed in the case of Organisational Performance (OP) dimension.

The exploratory maximum likelihood estimation (MLE) factor analysis identified two components with an Eigen value greater than 1, which together explained over 62.31 percentage of the variance. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.9 and the Bartlett Test of Sphericity was significant ($p<0.001$) with a Chi Square value of 1714 with 66 degrees of freedom which was considered to be good for further analysis and provided support of data adequacy for the factorisation as shown in the Table 5.4 below.

Table 5.4: Exploratory Factor Analysis (EFA) of Organisational Performance (OP)

Variable and Indicators	**Factor Loadings**	
OP	**1**	**2**
OP1	0.75	
OP2	0.66	
OP3	0.76	
OP4	0.73	
OP7	0.51	
OP9	0.53	
OP5		0.55
OP6		0.57
OP8		0.51
OP10		0.67
OP11		0.73
OP12		0.76
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.90	
Bartlett's Test of Sphericity	0.000	
Cronbach's alpha	0.89	

(Likert Scale of 1 to 5; 1=Strongly Disagree and 5 = Strongly Agree)

The outputs of EFA reveal the following insights about OP construct:

1. The practicing managers perceive Organisational Performance (OP) through two distinct dimensions. These dimensions were named in alignment with the theme of the items included in the classification as OP-Financial and OP-Non Financial.

2. The items behaved in the similar manner as conceptualised and significant cross-loadings were not noticed among indicators.

3. The reliability statistics of each of the above explored factors were found above the threshold limit of 0.7 as shown in Table 5.5 below**:**

Table 5.5: Reliability Statistics of OP Dimension

Sl.No	Factor Name	No.of items	Reliability Estimate
1	OP-Financial	6	0.853
2	OP-Non Financial	6	0.848

5.5 Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM)

In the study both covariance based and variance based SEM are used in different stages of analysis. Confirmatory Factor Analysis (CFA) was conducted for confirming the factor structures of Management Accounting Practices and Organisational Performance using covariance based Structural Equation Modelling (SEM) for which the assumptions are very much similar to the assumptions for Exploratory Factor Analysis (EFA) which are explained in the following section. Structural equation modelling is a flexible and powerful extension of the general linear model. Like any statistical method, it features a number of assumptions. These assumptions which are outlined below should be met or at least approximated to ensure trustworthy results.

5.5.1 Sample Size Adequacy

According to Stevens (2012), in applied multivariate statistics for social sciences, a good rule of thumb is 15 cases per predictor in a standard ordinary least squares multiple regression analysis. Since SEM is closely related to multiple regression in some respects, 15 cases per measured variable is reasonable in SEM. Bentler & Chou (1987) note that researchers may go as low as five cases per parameter estimate in SEM analyses, but only if the data are perfectly well-behaved (i.e., normally distributed, no missing data or outlying cases, etc.). It is to be noticed that Bentler & Chou (1987) mention five cases per parameter estimate rather than per measured variable. Measured variables typically have at least one path coefficient associated with another variable in the analysis, plus a residual term or variance estimate, so it is important to recognise that the Bentler & Chou (1987) and Stevens (2012) recommendations dovetail at approximately 15 cases per measured variable. More generally, Loehlin (1998) reports the results of Monte Carlo simulation studies using confirmatory factor analysis models. After reviewing the literature, he concludes that for this class of model with two to four factors, the investigator should plan on collecting at least 100 cases, with 200 being better (if possible).

5.5.2 Distribution of Data

Structural Equation Modelling (SEM) programs assume that dependent and mediating variables (so-called endogenous or downstream variables in SEM parlance) are continuously distributed, with normally distributed residuals. In fact, residuals from a SEM analysis are not only expected to be univariate normally distributed, their joint distribution is expected to be Joint Multi Variate Normal (JMVN) as well. However, this assumption is never completely met in practice. SEM specialists have developed a number of methods to deal with non-normally distributed variables. These methods are designed for variables that are assumed to have an underlying continuous distribution and non-normally distributed data (Loehlin, 1998).

5.5.3 Model Identification

Structural Equation Modelling (SEM) programs require an adequate number of known correlations or covariances as inputs in order to generate a sensible set of results. An additional requirement is that each equation be properly identified. Identification refers to the idea that there is at least one unique solution for each parameter estimate in a SEM model. Models in which there is only one possible solution for each parameter estimate are said to be just-identified. Models for which there are an infinite number of possible parameter estimate values are said to be underidentified. Finally, models that have more than one possible solution (but one best or optimal solution) for each parameter estimate are considered overidentified. An overidentified model occurs when every parameter is identified and at least one parameter is overidentified (i.e., it can be solved for in more than one way). Typically, most people who use structural equation modelling prefers to work with models that are overidentified (Loehlin, 1998). A number of rules can be used to assess the identification level of your models, but these rules are not perfect, and they are very difficult (almost impossible, in fact) to evaluate by hand, especially for complex models. Structural equation modeling (SEM) software programs such as AMOS perform identification checks as part of the model fitting process. They usually provide reasonable warnings about underidentification conditions (Loehlin, 1998).

5.5.4 Theoretical Basis for Model Specification and Causality

SEM models can never be accepted; they can only fail to be rejected. This leads researchers to provisionally accept a given model. SEM researchers recognise that in most instances there are equivalent models that fit equally as well as their own provisionally accepted model. Any of these models may be "correct" because they fit the data as well as the preferred model. Researchers do their best to eliminate alternative models, and by extension alternative explanations, but this is not always possible. The use of SEM thus entails some uncertainty, particularly with cross-sectional data that are not collected under controlled conditions (Bentler & Chou, 1987).

5.5.5 Confirmatory Factor Analysis (CFA)

This study has adopted Confirmatory Factor Analysis (CFA) using AMOS 18.0 for validating the scales developed for measuring the constructs. CFA was conducted to confirm the measurement scale properties. As two of the constructs consisted of sub-dimensions, a Structural Equation Modelling (SEM) approach which requires a two-stage estimation was carried out before testing the measurement model properties of the whole proposed model. A separate confirmatory factor analysis was required to perform on each sub-dimension of the two constructs - Management Accounting Practices (MAP) and Organisational Performance (OP), to check the reliability and validity of the indicators. The observed variables that were grouped together in the Exploratory Factor Analysis (EFA) were utilised to perform the Confirmatory Factor Analysis (CFA).

After assessing the unidimensionality of each of the sub-dimensions individually, a measurement model for each of the constructs was estimated by combining them. Thus the overall measurement fitness of the construct was tested by the Confirmatory Factor Analysis (CFA).

Table 5.6: Confirmatory Factor Analysis (CFA): Key terms and Fit Measures

MODEL FIT MEASURES : Key terms explained
Standard Root Mean Square Residual RMR (SRMR): SRMR is the average difference between the predicted and observed variances and covariance in the model, based on standardised residuals. Standardised residuals are fitted residuals divided by the standard error of the residual (this assumes a large enough sample size to assume stability of the standard error).
The Comparative Fit Index (CFI): Also known as the Bentler Comparative Fit Index. CFI compares the existing model fit with a null model which assumes the observed variables (and hence also the unobserved or latent variables) in the model are uncorrelated ("the independence model"). CFI and RMSEA (Root Mean Square Error Approximation) are among the measures least affected by sample size (Fan et al., 1999).
PCLOSE: Tests the null hypothesis that RMSEA is not greater than 0.05. If PCLOSE is less than 0.05, we reject the null hypothesis and conclude that the computed RMSEA is greater than 0.05, indicating lack of a close fit. RMSEA is also called RMS or RMSE or discrepancy per degree of freedom.
HOELTER's Critical N: Is used to judge the sample size adequacy. By convention, sample size is adequate if HOELTER's N is greater than 200.

5.5.6 Confirmatory Factor Analysis (CFA) - Management Accounting Practices Dimension

The primary objective of conducting Confirmatory Factor Analysis (CFA) was to determine the ability of a pre-defined factor model to fit an observed set of data. It provides estimates for each parameter of the measurement model. The various parameters used for evaluation of the model are shown in Table 5.7 below.

Table 5.7: Various Parameters to be considered for Model Evaluation

Sl No	Parameter
1	Factor loadings
2	Factor Variances
3	Covariance
4	Indicator Error Variances
5	Error Covariance

Confirmatory Factor Analysis (CFA) is useful in

1. Testing the significance of a specific factor loading.
2. Testing the relationship between two or more factor loadings.
3. Testing whether a set of factors are correlated or uncorrelated.
4. Assessing the convergent and discriminant validity of a set of measures.

Confirmatory Factor Analysis (CFA) has strong links to Structural Equation Modelling (SEM) and hence the procedures involved are as explained under heading 4.7 of the previous chapter. Prior to validating the full structural model with all latent variables, it was required to validate each of the measurement models as a preliminary step. The measurement model is the part of Structural Equation Modelling (SEM) that deals with the latent variables and their indicators. The measurement model was evaluated for validity, like any other SEM, using goodness of fit measures. The major data considerations to be addressed before conducting Confirmatory Factor Analysis (CFA) are shown in the following Table 5.8.

Table 5.8: Various Data Considerations

Sl.No	Data Considerations
1	Absence of missing values
2	Absence of outliers
3	Adequacy of sample size
4	Analysis of Normality
4	Existence of univariate and multivariate normality

The data were found free from missing values and outliers as explained under Section 5.2. Unfortunately, there is no easy way to determine the sample size needed for CFA. There are some very rough guidelines for sample sizes: less than 100 is considered "small" and may only be appropriate for very simple models; 100 to 200 is “medium” and may be an acceptable minimum sample size if the model is not too complex; and greater than 200 is “large”, which is probably acceptable for most models (Kline, 2005).

Analysis of normality was done in the univariate level and multivariate level as explained in the heading 5.2.2. Maximum Likelihood (ML) estimation method was used in all analysis using AMOS 18.0. Maximum likelihood “aims to find the parameter values that make the observed data most likely (or conversely maximise the likelihood of the parameters given the data)” (Brown, 2006). It has several desirable statistical properties:

1. it provides standard errors (SEs) for each parameter estimate, which are used to calculate *p* values (levels of significance) and
2. it provides confidence intervals, and it’s fitting function is used to calculate many goodness-of-fit indices.

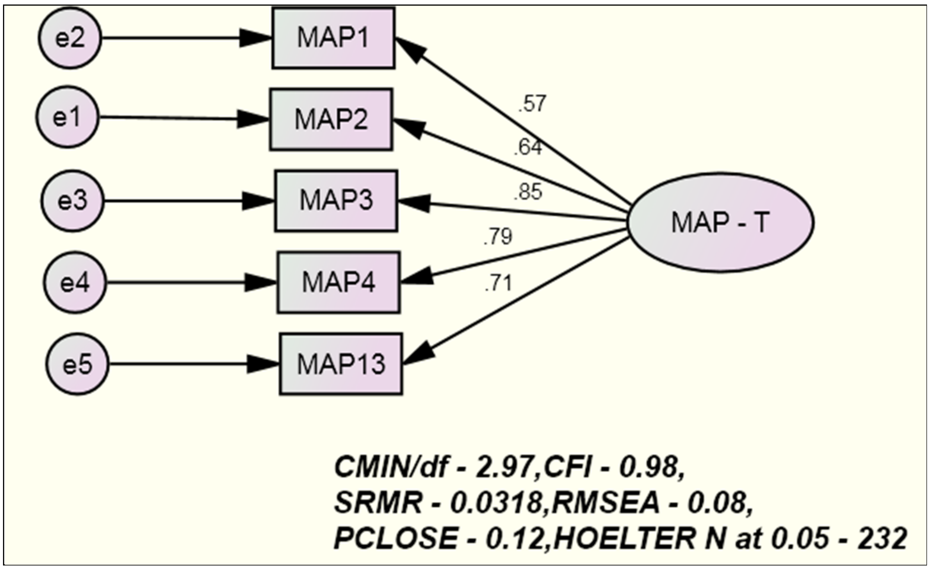
5.5.7 Measurement Models for “Management Accounting Practices (MAP)” Dimension

The Management Accounting Practices (MAP) construct consisted of MAP- Traditional, MAP-Advanced and MAP- ABM Sub-constructs. Results of the confirmatory factor analysis of the measurement models and the structural model of management accounting practices dimension are given below. The normed alpha, RMSEA and CFI were above the threshold limits. The resulting models were found to be having good fit with the recommended indices as illustrated in Table 4.6 above.

5.5.8 Measurement Model for "Management Accounting Practices - Traditional (MAP-T)" Sub-dimension

The five indicator variable model related to "Management Accounting Practices - Traditional (MAP-T)" Sub-dimension was suggesting a good fitting model in the first estimate itself. The normed alpha, RMSEA and CFI were within the threshold limits as shown in the Figure 5.1 below:

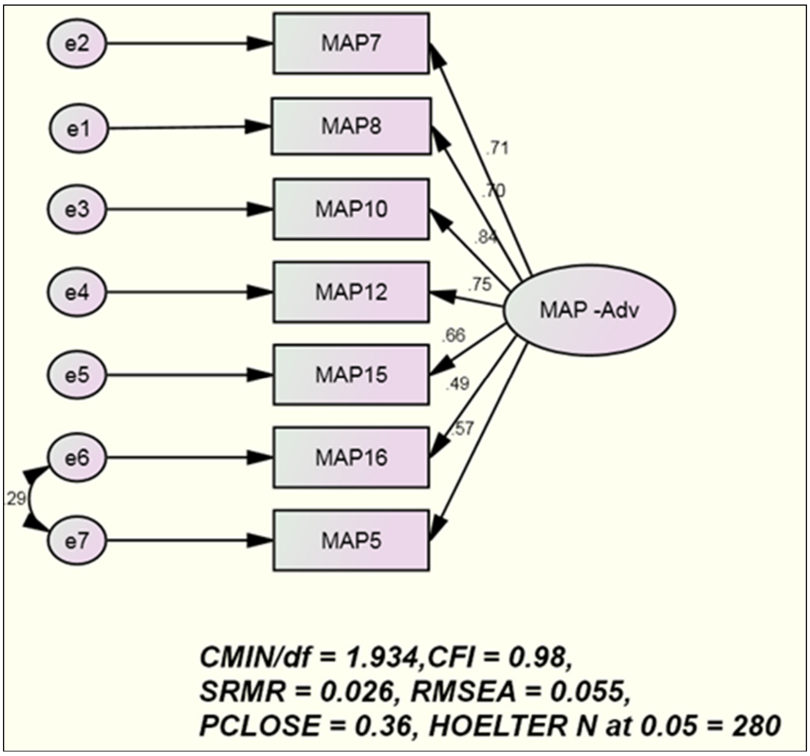
Figure 5.1: Measurement Model for Management Accounting Practices - Traditional Sub-dimension



5.5.9 Measurement Model for "Management Accounting Practices -Advanced (MAP-Adv)" Sub-dimension

The eight indicator variable model related to Management Accounting Practices -Advanced (MAP-Adv) Sub-dimension was suggesting poor fitting model in the first estimate. The normed alpha, RMSEA and CFI were above the permissible limits. On verification of model fit indices, it was found that the indicator MAP-14 was showing cross loadings to many other variables and was found to be a major cause of poor fit and hence was removed. The remaining seven indicator variable dimension was also suggesting a poor fitting model. In order to improve the fitness; one error correlation was added between two indicator variables (MAP -5 and MAP-16) considering the theoretical grounds. All the paths shown in the model are significant as critical ratio was above 1.96. The re-specified model is illustrated in the following Figure 5.2.

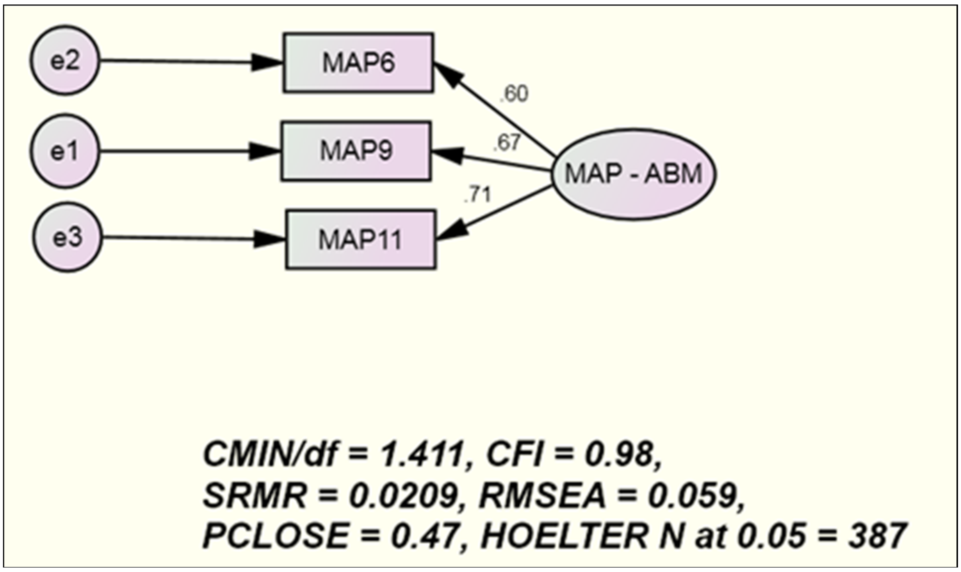
Figure 5.2: Measurement Model for Management Accounting Practices -Advanced Dimension



5.5.10 Measurement Model for "Management Accounting Practices –Activity Based Management (MAP-ABM)" Sub-dimension

The three indicator variable model related to Management Accounting Practices –Activity Based Management (MAP-ABM)" Sub-dimension was suggesting a good fitting model in the first estimate itself. The normed alpha, RMSEA and CFI were within the threshold limits as shown in the Figure 5.3 below:

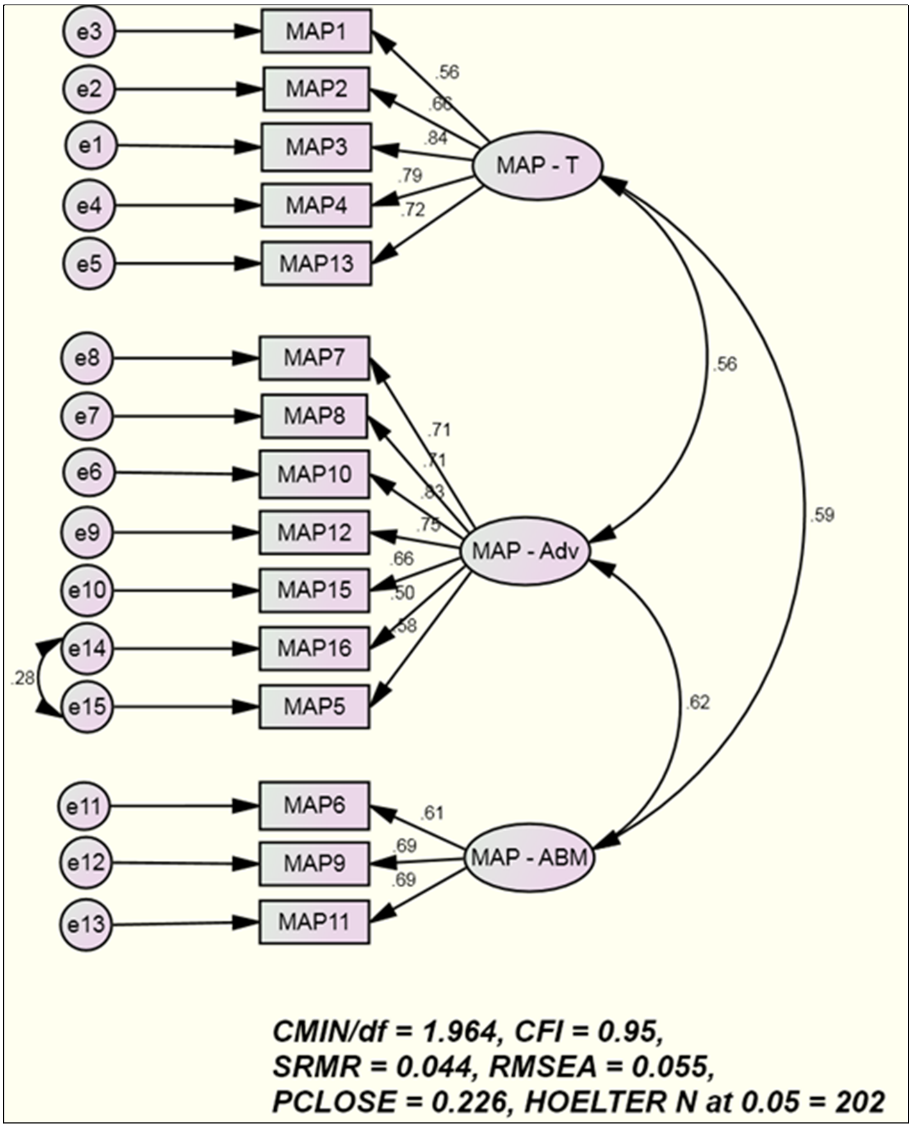
Figure 5.3: Measurement Model for "Management Accounting Practices –Activity Based Management (MAP-ABM)" Dimension



5.5.11 Confirmed Model for "Management Accounting Practices (MAP)" Dimension

The sixteen indicator variable model of "MAP" dimension was suggesting poor fitting model in the first estimate. The normed alpha, RMSEA and CFI were not within the permissible level. On verification of modification indices, one indicator variable "MAP-14"was showing cross loadings to many other variables and was found to be a major cause for poor fit and hence was removed, as mentioned under section 5.5.9. The resulting model was found to be good fitting model with recommended indices as illustrated in Figure 5.4. All the paths shown in the model are significant as critical ratios were above 1.96.

Figure 5.4: Confirmed Model for "Management Accounting Practices" Dimension



5.5.12 Measurement of Indicators and Reliability Statistics

The confirmed model for MAP was having three distinct dimensions measured by using a total of fifteen reflective indicators. The details regarding indicators measuring each dimension and corresponding reliability statistics are presented in the Tables 5.9 to 5.11 below:

Table 5.9 Reliability Statistics of MAP-Traditional Sub-dimension

Cronbach's alpha	Cronbach's alpha based on standardised Items	No. of items
.840	.839	5

Table 5.10 Reliability Statistics of MAP-Advanced Sub-dimension

Cronbach's alpha	Cronbach's alpha based on standardised items	No. of Items
.856	.859	7

Table 5.11 Reliability Statistics of MAP – ABM Sub-dimension

Cronbach's alpha	Cronbach's alpha based on standardised items	No. of items
.799	.792	3

For further analysis Management Accounting Practices (MAP) construct was assumed as formed (formative construct) from three first order dimensions of MAP-Traditional, MAP-Advanced and MAP-ABM, each measured using reflective indicators.

5.5.13 Confirmatory Factor Analysis of Organisational Performance (OP) Dimension

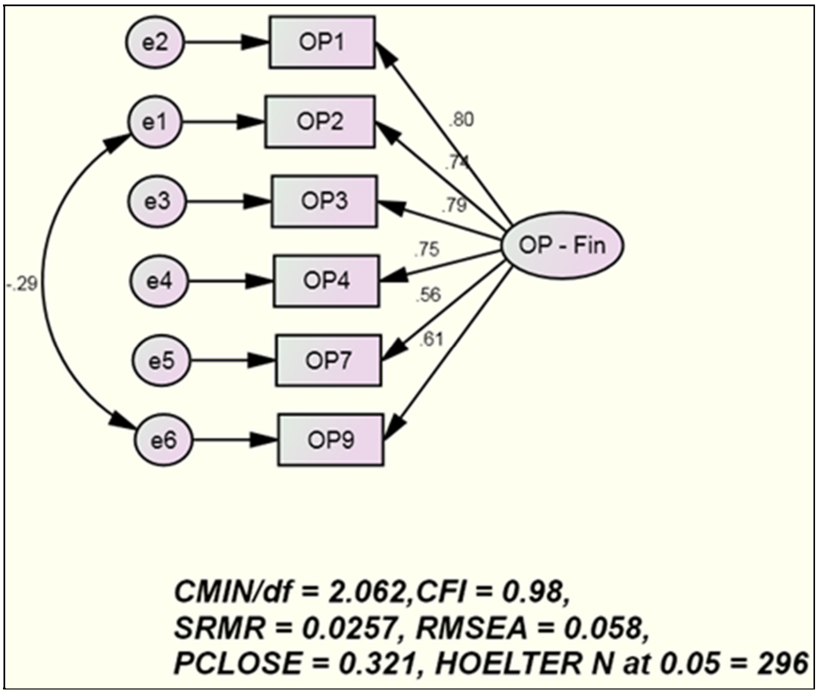
Organisational Performance (OP) construct was identified as a two factor one from the EFA as explained in Section 5.4.2 above. These factors were named as OP-Fin and OP-Non-Fin on the basis of the characteristics of indicators in the classification. The first step in developing a confirmatory factor model for OP was developing measurement models for both the above dimensions.

5.5.14 Measurement Models for Organisational Performance (OP) Dimension

The Organisational Performance (OP) construct is consisted of OP-Financial and OP- Non-Financial Sub-constructs. Results of the confirmatory factor analysis of the measurement models and the structural model of Organisational Performance (OP) dimension are given below. The normed alpha, RMSEA and CFI were within the threshold limits. The resulting models were found to be having good fit with recommended indices as illustrated earlier in Tables 4.6 & 5.6.

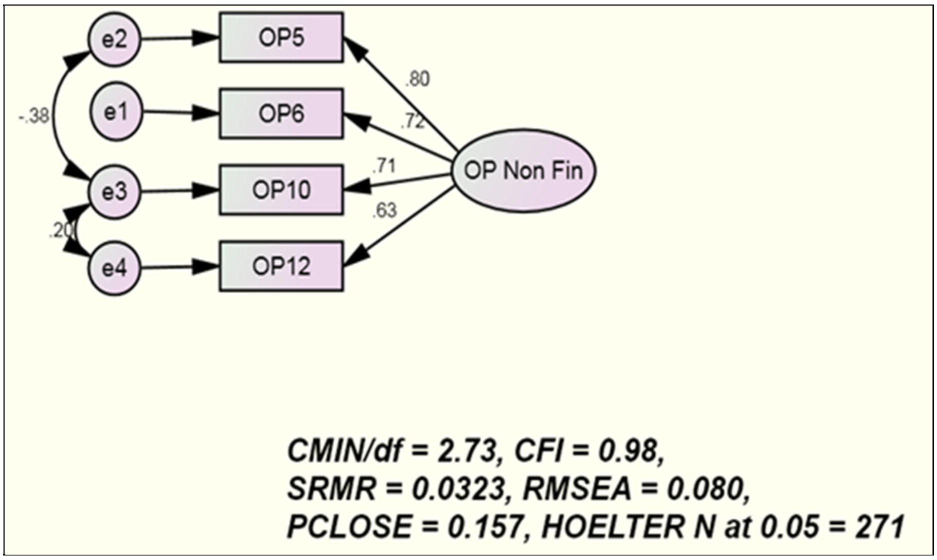
5.5.15 Measurement Model for "Organisational Performance - Financial (OP- Fin)" Sub-dimension

Figure 5.5: Measurement Model for Organisational Performance -Financial Dimension



5.5.16 Measurement Model for "Organisational Performance Non-Financial (OP- Non-Fin)" Sub-dimension

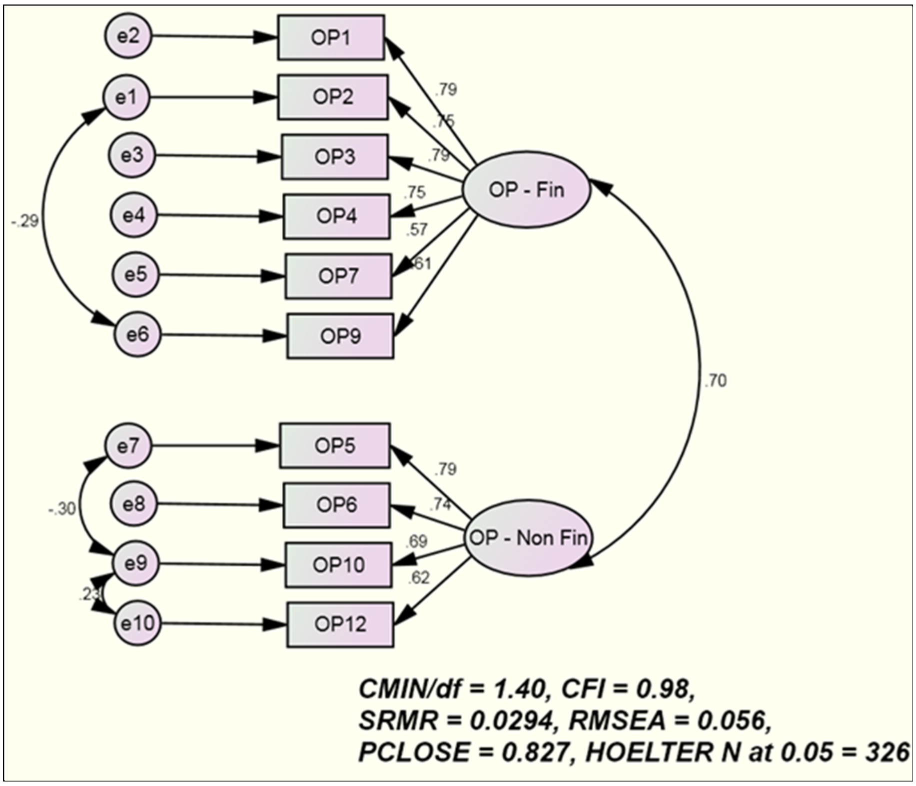
Figure 5.6: Measurement Model for "Organisational Performance Non-financial (OP-Non Fin)" Sub-dimension



5.5.17 Confirmed Model for "Organisational Performance (OP)" Dimension

The twelve indicators variable model of "OP" dimension was suggesting poor fitting model in the first estimate. The normed alpha, RMSEA, and NFI were not within the permissible levels. On verification of modification indicators, indicator variables "OP-8" & "OP-11" were showing cross loadings to many other variables and were found to be a major cause for poor fit and hence both indicator variables were removed. The resulting model was found to be good fitting model with recommended indices as illustrated in Figure 5.7 below. All the paths shown in the model are significant as critical ratio were above 1.96.

Figure 5.7: Confirmed Model for Organisational Performance Dimension



The confirmed model for Organisational Performance (OP) was having two distinct dimensions measured using a total of ten reflective indicators. The details regarding indicators measuring each dimension and corresponding reliability statistics are presented in the Tables 5.12 and 5.13 below:

Table 5.12 Reliability Statistics of OP - Financial Sub-dimension

Cronbach's alpha	Cronbach's alpha based on standardised items	No. of items
.853	.853	6

Table 5.13 Reliability Statistics of OP – Non-financial Sub-dimension

Cronbach's alpha	Cronbach's alpha based on standardised items	No. of items
.796	.800	4

5.5.18 Measurement Model for "Competitive Environment (CE)" Dimension

The six indicator variable model related to Competitive Environment (CE) construct was suggesting poor fitting model in the first estimate. The normed alpha, RMSEA and CFI were not within the permissible level. As per modification indices, an error correlation was added between indicator variables CE-1 & CE-2, considering the theoretical grounds. Subsequently, an error correlation was added between indicator variables CE-5 & CE-6 to develop a good-fit and significant model. All the paths shown in the model are significant as critical ratio was above 1.96. The re-specified model is shown in Figure 5.8 below.

Figure 5.8: Measurement Model for Competitive Environment Dimension

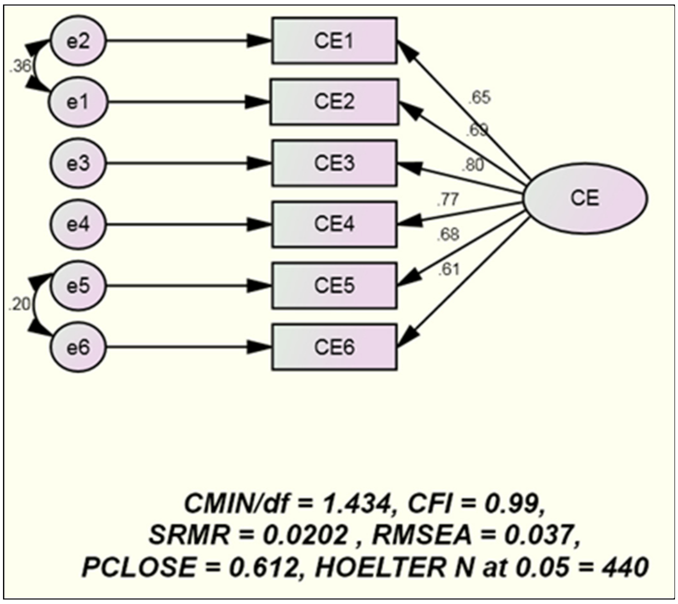


Table 5.14 Reliability statistics of CE dimension

Cronbach's alpha	Cronbach's alpha based on standardised items	No. of items
.847	.862	6

5.5.19 Measurement Model for "Manufacturing Technology (MT)" Dimension

The ten indicators variable model of "Manufacturing Technology" dimension was suggesting poor fitting model in the first estimate. The normed alpha and RMSEA were not within the permissible level. The indicator variables "MT-8" & "MT-10" were removed from further analysis due to poor loading to get a well fit model with all indices considered within the desired level and with significant paths as illustrated in Figure 5.9. Subsequently, as per modification indices, error correlations were added between indicator variables "MT-3" & "MT-4 & "MT-6" & "MT-7" based on theoretical grounds. Theoretically, there is a chance for the error variables to have correlation. All the paths shown in the model are significant as the critical ratio was above 1.96.

Figure 5.9: Measurement Model for Manufacturing Technology Dimension

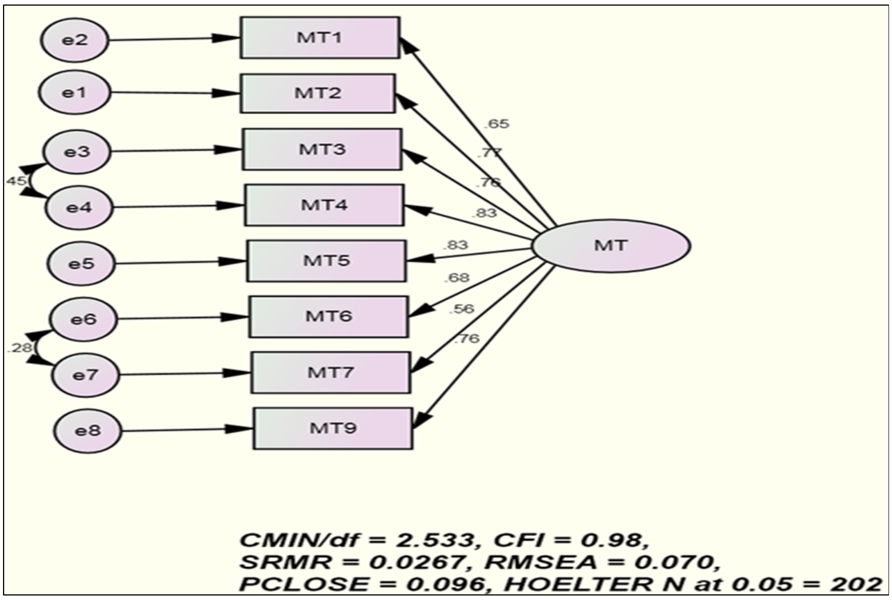


Table 5.15 Reliability statistics of MT dimension

Cronbach's alpha	Cronbach's alpha based on standardised items	No. of Items
.905	.906	8

5.5.20 Measurement Model for "Organisational Design (OD)" Dimension

The initial nine indicator variable model related to Organisational Design (OD) dimension was suggesting poor fitting model in the first estimate. The normed alpha, RMSEA and CFI were not within the permissible level. Error correlations were added between OD-1 & OD-2, OD-3& OD-4, OD-5&OD-6, OD-6&OD-7 and OD-8&OD-9 to capture and retain the perceptions of the Finance &Accounting (F&A) Managers as illustrated in the Figure 5.10 below. All the paths shown in the model are significant as critical ratio were above 1.96.

Figure 5.10: Measurement Model for Organisational Design (OD) Dimension

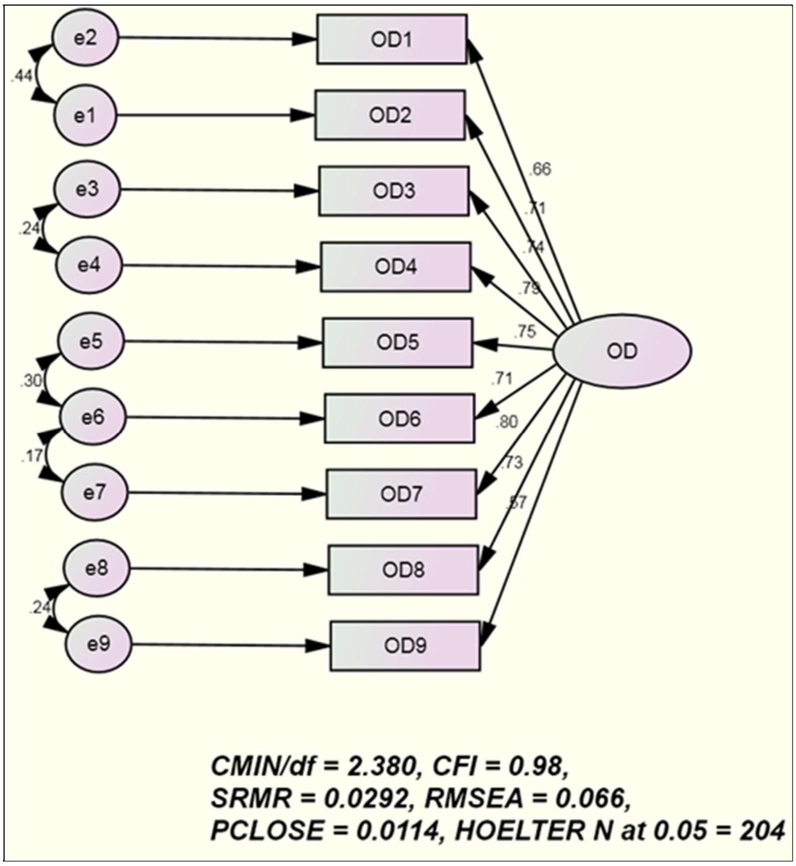


Table 5.16 Reliability statistics of OD dimension

Cronbach's alpha	Cronbach's alpha based on standardised items	No. of items
.911	.912	9

5.5.21 Measurement model for "Organisational Strategy (OS)" Dimension

The eight indicators variable model related to Organisational Strategy was found to be good fitting model with recommended indices as illustrated in Figure 5.11. All the paths shown in the model are significant as critical ratio were above 1.96.

Figure 5.11: Measurement Model for Organisational Strategy (OS) Dimension

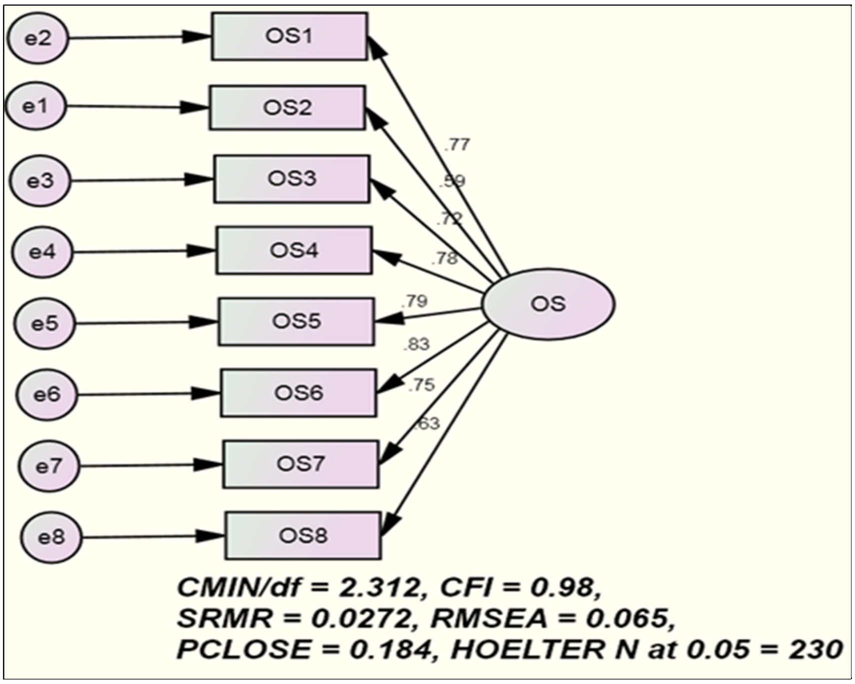


Table 5.17 Reliability Statistics of OS dimension

Cronbach's alpha	Cronbach's alpha based on standardised items	No. of items
.902	.901	8

5.6 Hypotheses Testing – Research Model (Full Model) Analysis

For the analysis of the thesis model, instead of Covariance Based Structural Equation Modelling (CBSEM), a variance based or component based Partial Least Square (PLS) approach was adopted in this study. PLS-based SEM has several key advantages over Covariance Based SEM, including the following:

1. it always yields a solution, even in complex models
2. it does not require variables to meet parametric analysis criteria, such as multivariate normality and large sample sizes
3. it enables the estimation of parameters in models with formative as well as reflective Latent Variables (LVs) and doesn't give rise to identification problems as in the case of AMOS 18.0.

Most relationships between variables describing natural and behavioural phenomena seem to be nonlinear, with U-curve and S-curve relationships being particularly common (Kock, 2009). Warp PLS 1.0 introduced in 2009 identifies nonlinear (or "warped", hence the name of the software) relationships among Latent Variables (LVs) and corrects the values of path coefficients accordingly. Hence in this study warp PLS 4.0 (current version) was used for analysis of relationships among latent variables.

The main features of warp PLS 4.0 are

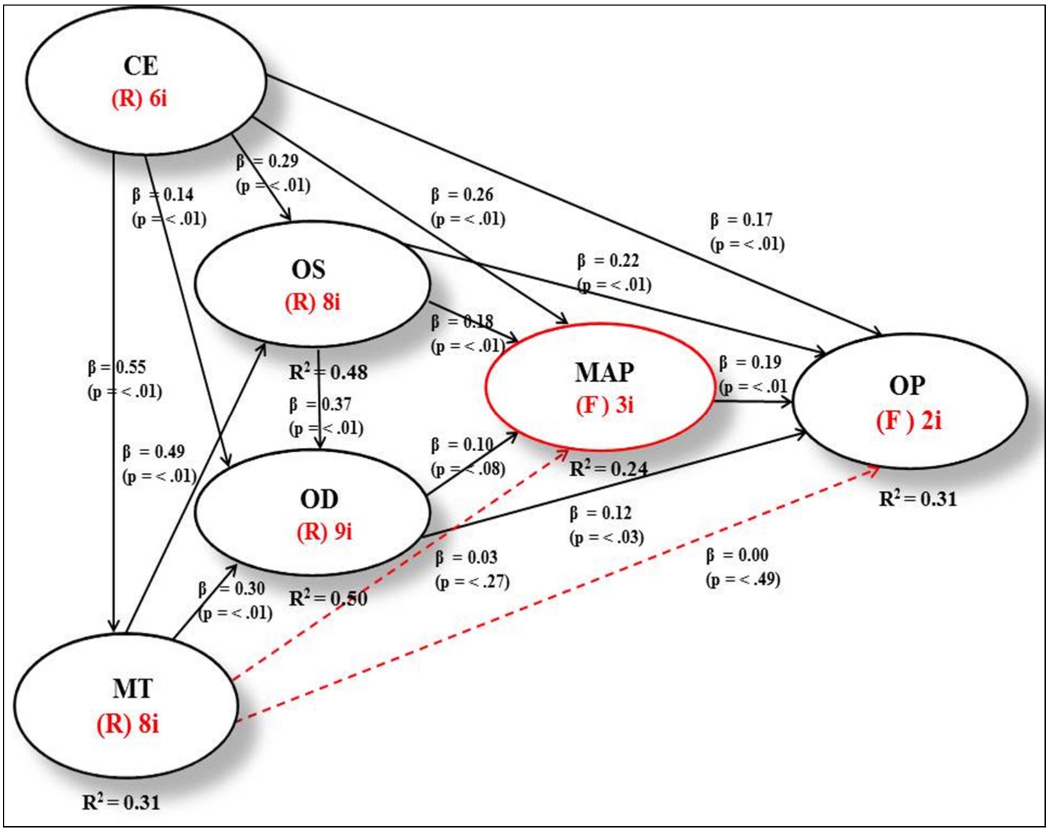
1. It estimates *p* values for path coefficients automatically and hence significance can be easily established.
2. It estimates several model fit indices for checking whether data is well represented by the model.

3. It enables evaluation of measurement model as well as structural model simultaneously.
4. The software allows users to view scatter plots of each of the relationships among Latent Variables (LVs) together with the regression curves that best approximate those relationships.
5. It calculates Variance Inflation Factor (VIF) coefficients for Latent Variable (LV) predictors associated with each LV criterion.
6. It pre-processes the data before SEM analysis and hence makes it easy to correct problems with the data, such as identical column names, columns with zero variance, and missing values.

In this study, two constructs namely Management Accounting Practices (MAP) and Organisational Performance (OP) were conceptualised as second order constructs. For analysis of second order constructs using warp PLS 4.0, it is required to calculate the Latent Variable (LV) scores at first by creating models with latent variables and indicators without linking. These LV scores are used to define the second order construct in the final model. The Path coefficients and associated *p* values are obtained by running warp PLS 4.0 with a bootstrapping procedure. Boot strapping method of re-sampling was adopted due to the reason it tends to generate more stable path coefficients with samples sizes more than 100 (Nevitt & Hancock, 2001). Various analysis algorithms used by warp PLS are warp3 PLS Regression, Warp2 PLS Regression, PLS Regression, and Robust Path Analysis. In this study warp2 PLS Regression algorithm was used for analysis.

The estimated model with path co-efficients and corresponding p values are provided in Figure 5.12 below. A pre-condition for accepting the estimated model for further interpretation was that the model should fit with the data. Similarly the various validity and reliability criterion should be met. A model possessing required reliability and validity conclude that the levels of measurement errors in the data are relatively less and the results of analysis credibly tests the hypotheses proposed in the study.

Figure 5.12: Estimated Research Model



The estimated research model emerged as a well fit model with all the reported fit indices within the threshold limits as explained in the Table 5.18 below.

5.6.1 Model Fit and Quality Indices

Table 5.18: Model fit and quality indices

Average path coefficient (APC)=0.229, P<0.001
Average R-squared (ARS)=0.367, P<0.001
Average adjusted R-squared (AARS)=0.361, P<0.001
Average full collinearity VIF (AFVIF)=1.830, acceptable if <= 5, ideally <= 3.3
Tenenhaus GoF (GoF)=0.485, small >= 0.1, medium >= 0.25, large >= 0.36
Sympson's paradox ratio (SPR)=1.000, acceptable if >= 0.7, ideally = 1
R-squared contribution ratio (RSCR)=1.000, acceptable if >= 0.9, ideally = 1
Statistical suppression ratio (SSR)=1.000, acceptable if >= 0.7
Nonlinear bivariate causality direction ratio (NLBCDR)=1.000, acceptable if >= 0.7

The above Table 5.18 gives the relevant fit indices with its threshold limits for assessing the model fitness with the data. As all the model fit indices were within the permissible threshold limits, it can be concluded that the model adequately represents the data collected and can be used for verifying the significance of proposed hypothesis.

5.6.2 Latent Variable Coefficients

All the constructs considered for the study found reliable and valid since various quality criteria such as composite reliability co-efficient, Cronbach’s alpha, the Average Variance Extracted (AVE) and Full collinearity VIFs obtained after the estimation of the model were within or above the threshold limits as shown in the Table 5.19 below. The model emerged as one having adequate predictive validity as the R squared co-efficient for OP construct was above 0.31.

Table 5.19: Latent Variable Co-efficients of the Variables in the Model

	CE	MT	OD	OS	MAP	OP
R-squared coefficients		0.306	0.500	0.479	0.235	0.314
Adjusted R-squared coefficients		0.304	0.495	0.475	0.226	0.303
Composite reliability coefficients	0.897	0.925	0.928	0.923	0.852	0.893
Cronbach's alpha coefficients	0.862	0.906	0.912	0.904	0.740	0.760
Average Variances Extracted	0.593	0.607	0.588	0.600	0.658	0.806
Full collinearity VIFs	1.758	2.077	2.040	2.304	1.353	1.447

5.6.3 Assessment of Structural Model Validity

Tables 5.9 showed the results of factor loadings, AVE and Cronbach's alpha for all constructs. The correlations among the latent variables in the model are considered as the determinants of discriminant validity of the latent variables/constructs. If the square root of the Average Variance Extracted (AVE) to be higher than any of the correlations involving that latent variable (the values on the diagonal latent variable correlation should be higher than any of the values above or below them, in the same column) as shown in the following Table 5.20.

Table 5.20: Correlations Among Latent Variables with Square Roots of AVEs*

	CE	MT	OD	OS	MAP	OP
CE	(0.770)	0.551	0.514	0.558	0.423	0.436
MT	0.551	(0.779)	0.622	0.647	0.343	0.382
OD	0.514	0.622	(0.767)	0.646	0.369	0.428
OS	0.558	0.647	0.646	(0.774)	0.411	0.475
MAP	0.423	0.343	0.369	0.411	(0.811)	0.401
OP	0.436	0.382	0.428	0.475	0.401	(0.898)

*Square roots of Average Variances Extracted (AVEs) shown on diagonal.

From the above observations, it was confirmed that the scale adopted was having adequate psychometric soundness for measuring management accounting practices and organisational performance in India.

5.7 Assessment of Mediation Effects of Management Accounting Practices (MAP) on Organisational Performance (OP)

To examine the mediating effect of Management Accounting Practices (MAP) construct on causation of Organisational Performance (OP), sub-models were developed and estimated to assess the mediation effect of Management Accounting Practices (MAP) on Organisational Performance (OP). It was statistically proved that Management Accounting Practices (MAP) partially mediates Organisational Performance (OP). Similarly, the mediation effect of Competitive Environment (CE) on Organisational Performance (OP), Manufacturing Technology (MT) on Organisational Performance (OP), Organisational Strategy (OS) on Organisational Performance (OP) and Organisational Design (OD) on Organisational Performance (OP) mediated through Management Accounting Practices (MAP) were also tested and statistically confirmed the existence of partial mediation of these variables on OP to support the theory, by following Baron & Kenny's (1986) procedures for testing various mediation hypotheses. The findings are reported in the following tables which clearly show the direct and mediation effects demonstrating the partial mediation effect of Management Accounting Practices (MAP) with clear indication of increase in the predictive power (R^2).

Table 5.21: Direct Effect of Variables on Organisational Performance

Direct Effect			
	B	P value	R^2
CE→OP	0.43	≤ 0.01	0.19
MT→OP	0.39	≤ 0.01	0.15
OS→OP	0.48	≤ 0.01	0.23
OD→OP	0.44	≤ 0.01	0.19

Table 5.22: Mediation effect of Management Accounting Practices on Organisational Performance

Mediation Effect			
	B	P value	R^2
CE⟶MAP	0.42	≤ 0.01	0.18
MAP⟶OP	0.25	≤ 0.01	0.24
MT⟶MAP	0.35	≤ 0.01	0.12
MAP⟶OP	0.31	≤ 0.01	0.24
OS⟶MAP	0.41	≤ 0.01	0.16
MAP⟶OP	0.22	≤ 0.01	0.28
OD⟶MAP	0.37	≤ 0.01	0.14
MAP⟶OP	0.26	≤ 0.01	0.25

The research interest in this study was only in the mediation effects of Management Accounting Practices (MAP) on Organisational Performance (OP) particularly between Organisational Strategy (OS) and Organisational Performance (OP) dimensions, as conceived in the theory. This study could statistically prove beyond doubt that MAP has partial mediation effect on OP.

5.8 Demographic Data Analysis

The summaries of demographic data with respect to the study are given in the following sections.

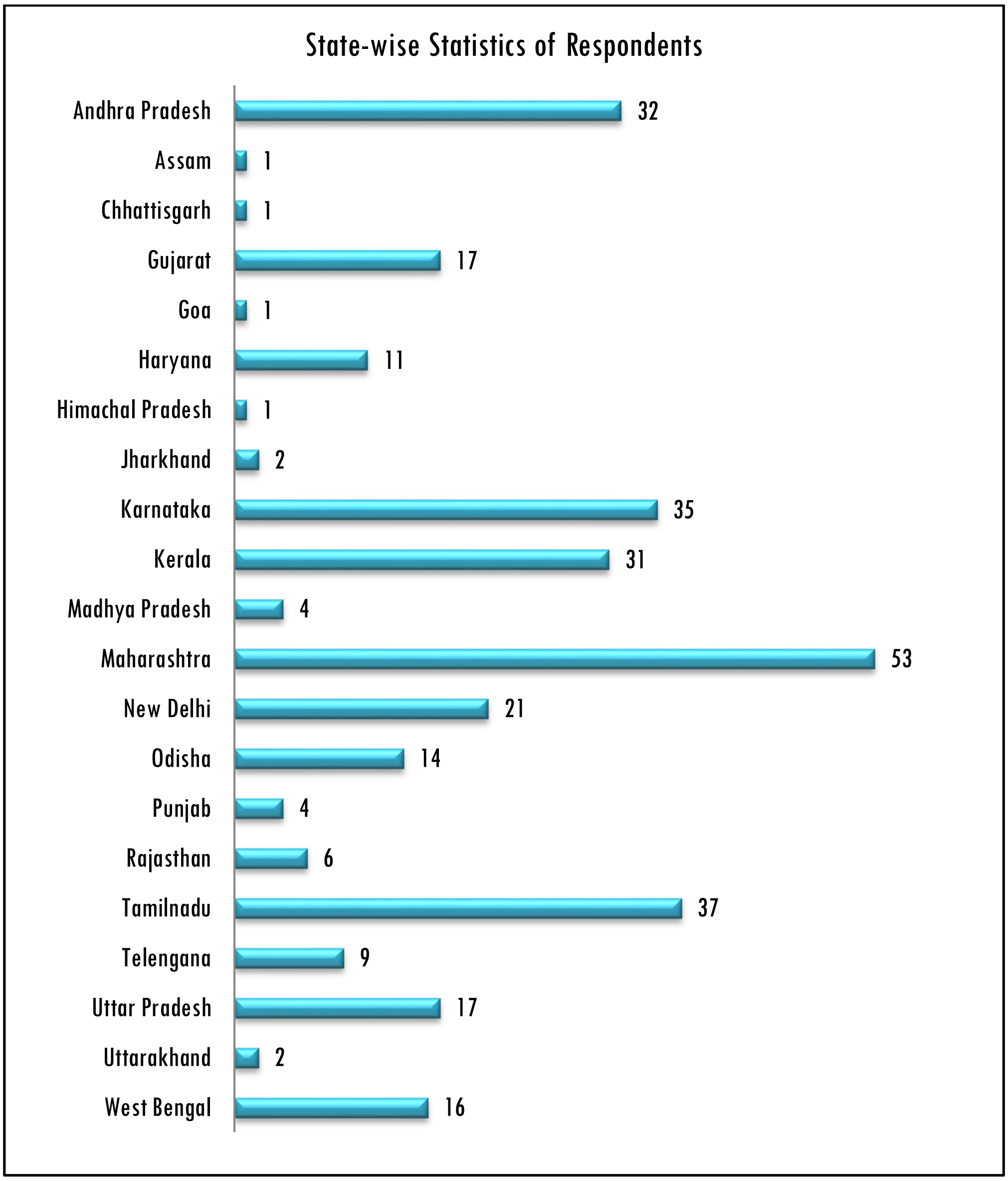
5.8.1 State-wise Geographical Statistics of Respondents

The three hundred and fifteen responses received represent 21 states of India. This data shows the true representative nature of the responses at the national level. Out of 29 states of the country, responses were received from 21 states except the 7 North-Eastern states of Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Arunachal Pradesh and Jammu & Kashmir. The total number of respondents was 315 which are spread over 21 states of India and as listed in the Table 5.23 and shown in the Figure 5.13 below.

Table 5.23: State-wise Number of Respondents

Sl.No.	Name of the State	Number of Respondents
1	Andhra Pradesh	32
2	Assam	1
3	Chhattisgarh	1
4	Goa	1
5	Gujarat	17
6	Haryana	11
7	Himachal Pradesh	1
8	Jharkhand	2
9	Karnataka	35
10	Kerala	31
11	Madhya Pradesh	4
12	Maharashtra	53
13	New Delhi	21
14	Odisha	14
15	Punjab	4
16	Rajasthan	6
17	Tamilnadu	37
18	Telengana	9
19	Uttar Pradesh	17
20	Uttarakhand	2
21	West Bengal	16

Figure 5.13: State-wise Statistics of Respondents



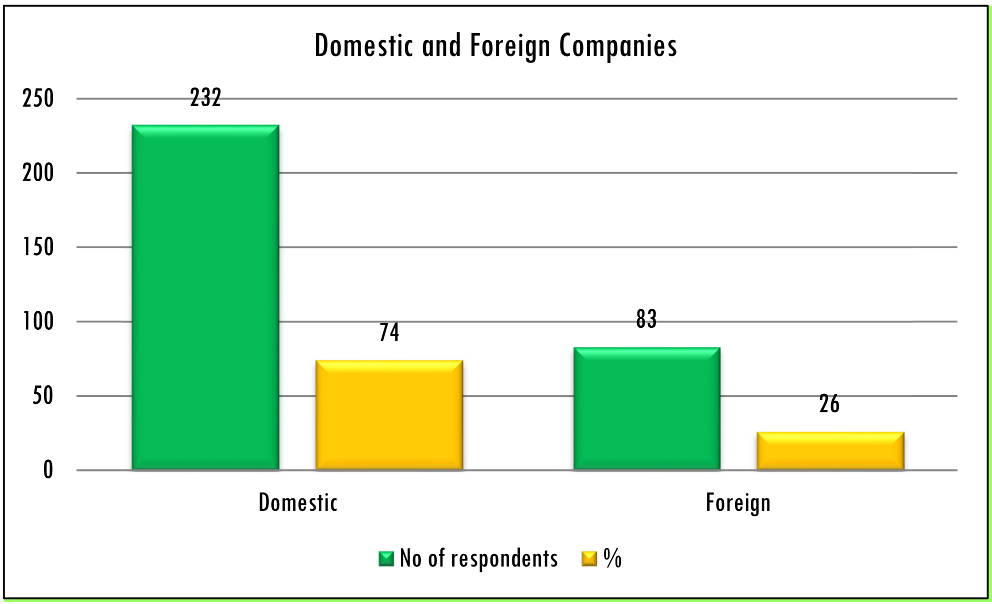
5.8.2 Categorisation Based on Type of Companies

Out of the total 315 respondents, 232 are from domestic companies and 83 of them are from foreign companies operating in India as shown in the Table 5.24 and Figure 5.14 below.

Table 5.24: Details of Respondents from Domestic and Foreign Companies

	Domestic	Foreign
No of respondents	232	83
%	74	26

Figure 5.14: Domestic and Foreign Companies



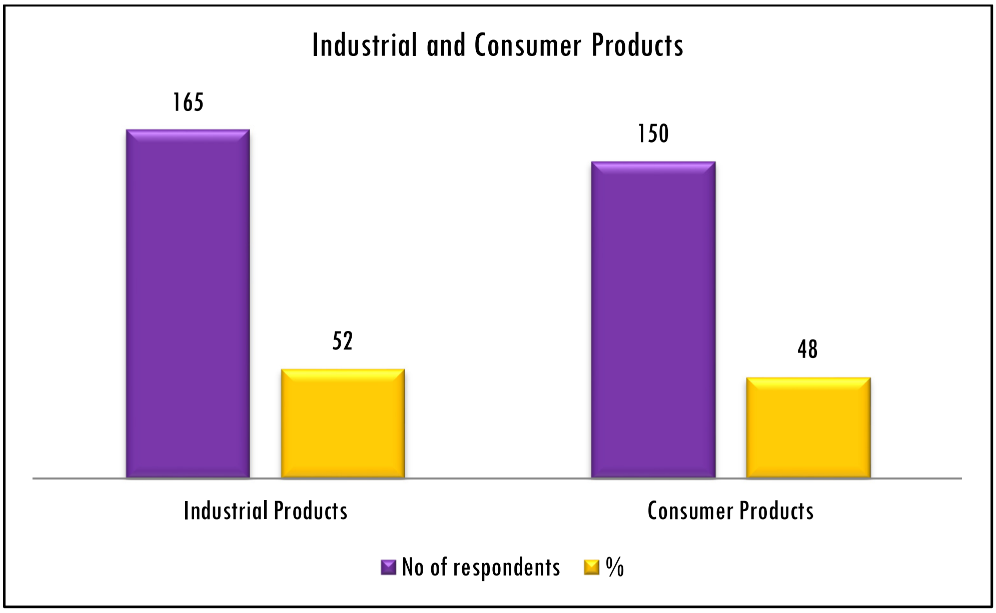
5.8.3 Categorisation of Companies Based on Type of Products

Out of the total 315 respondents, 165 are from industrial products manufacturing and 150 are consumer products manufacturing companies operating in India as shown in the Table 5.25 and Figure 5.15 below.

Table 5.25: Details of Respondents from Industrial and Consumer Product Companies

	Industrial	Consumer
No of respondents	165	150
%	52	48

Figure 5.15: Industrial and Consumer Products



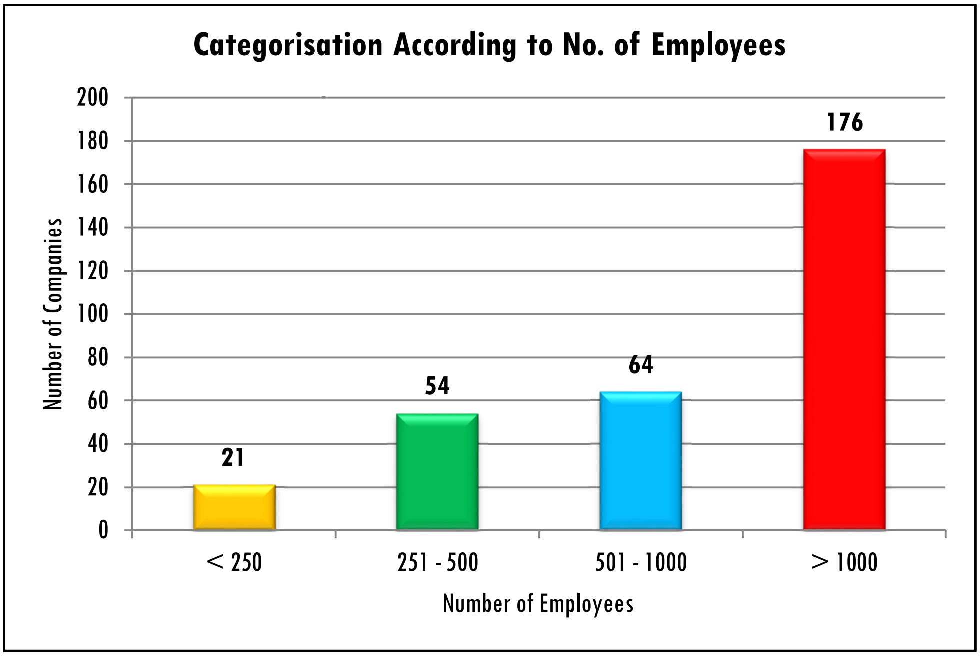
5.8.4 Categorisation of Companies Based on the Number of Employees

The details of the number of employees in the respondent firms are given in the following Table 5.26 and Figure 5.16 below.

Table 5.26: Details of Number of Employees

Number of Employees	Number of Companies
< 250	21
251 – 500	54
501 – 1000	64
> 1000	176

Figure 5.16: Number of Employees-wise Categorisation of the Respondent Companies



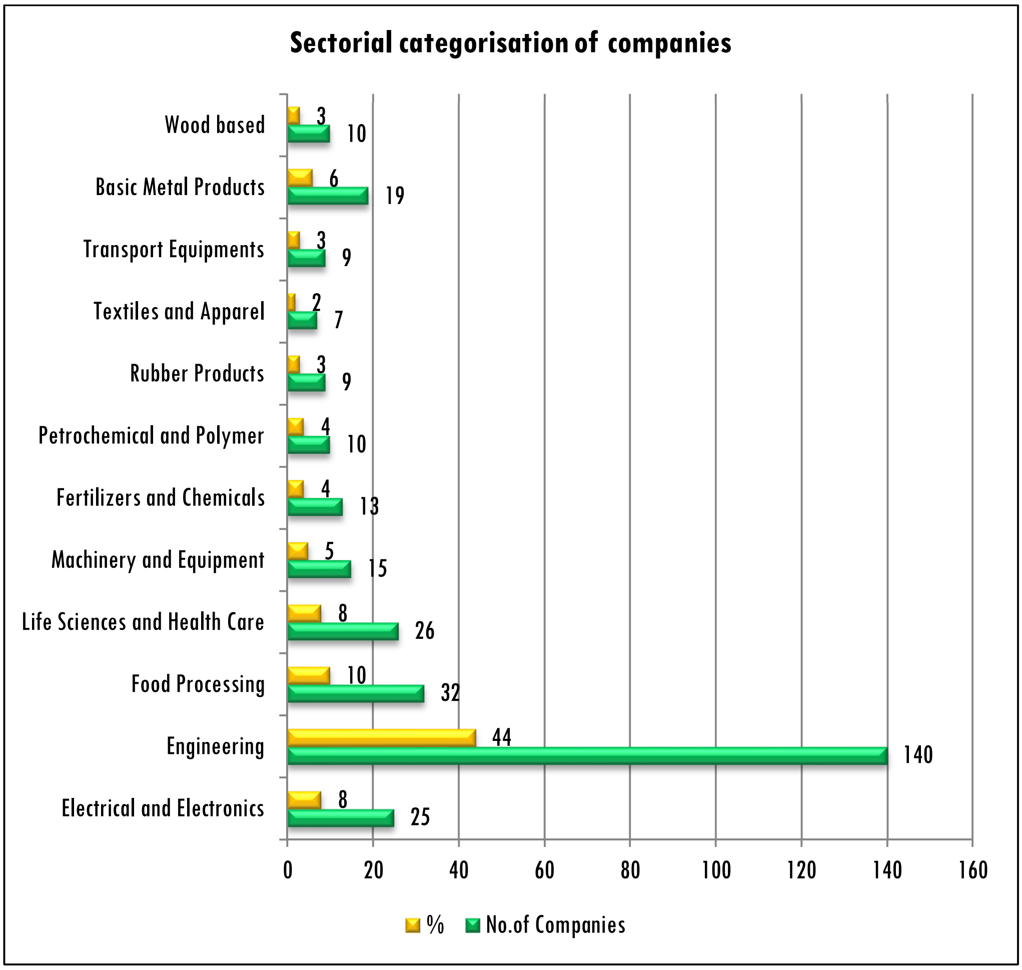
5.8.5 Categorisation According to the Industrial Sectors

The industries covered in the study were divided into 12 categories. The following Table 5.27 and Figure 5.17 will give the details of no. of respondents from each sector.

Table 5.27: Sector-wise Details of Respondent Companies

Sl.No.	Industrial Sector	Number of Companies	%
1	Basic Metal Products	19	6
2	Electrical and Electronics	25	8
3	Engineering Goods	140	44
4	Fertilizers and Chemicals	13	4
5	Food Processing	32	10
6	Life Sciences and Health Care	26	8
7	Machinery and Equipment	15	5
8	Petrochemical and Polymer	10	4
9	Rubber Products	9	3
10	Textiles and Apparel	7	2
11	Transport Equipments	9	3
12	Wood based	10	3

Figure 5.17: Sectoral Categorisation of the Respondent Companies



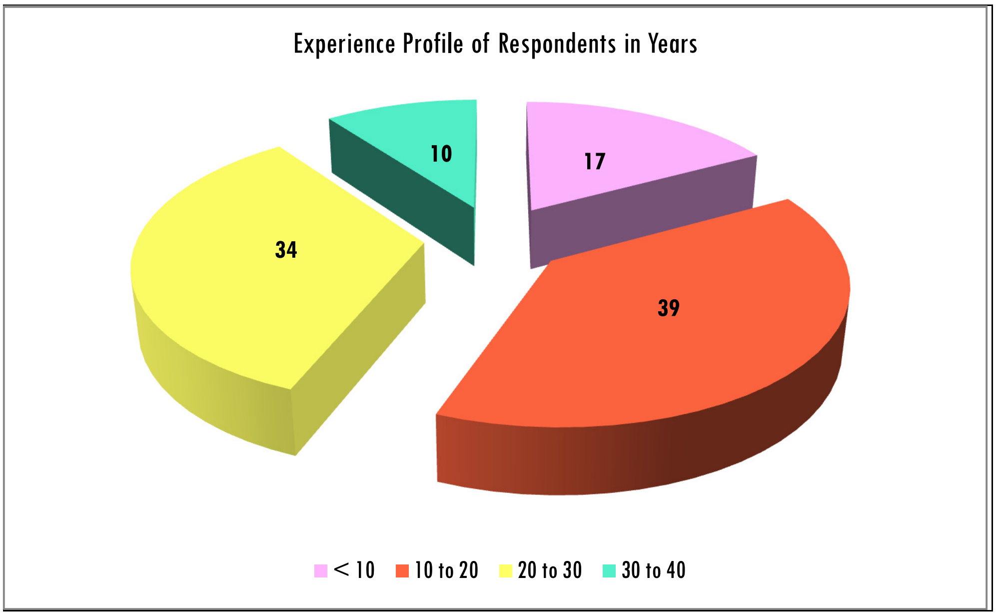
5.8.6 Categorisation According to the Experience Profile of Respondents

The following Table 5.28 and Figure 5.18 will give the experience profile of the respondents. The average experience of the respondents is 20 years and the experience profile is also shown in the form of a chart in the following Figure 5.18.

Table 5.28: Experience Profile of the Respondents

Sl.No.	Years of Experience	Number of Respondents	%
1	< 10	54	17
2	10 to 20	122	39
3	20 to 30	107	34
4	30 to 40	32	10

Figure 5.18: Experience (in no. of years) Profile of Respondents



5.8.7 Categorisation of Companies Based on the ERP Systems Used

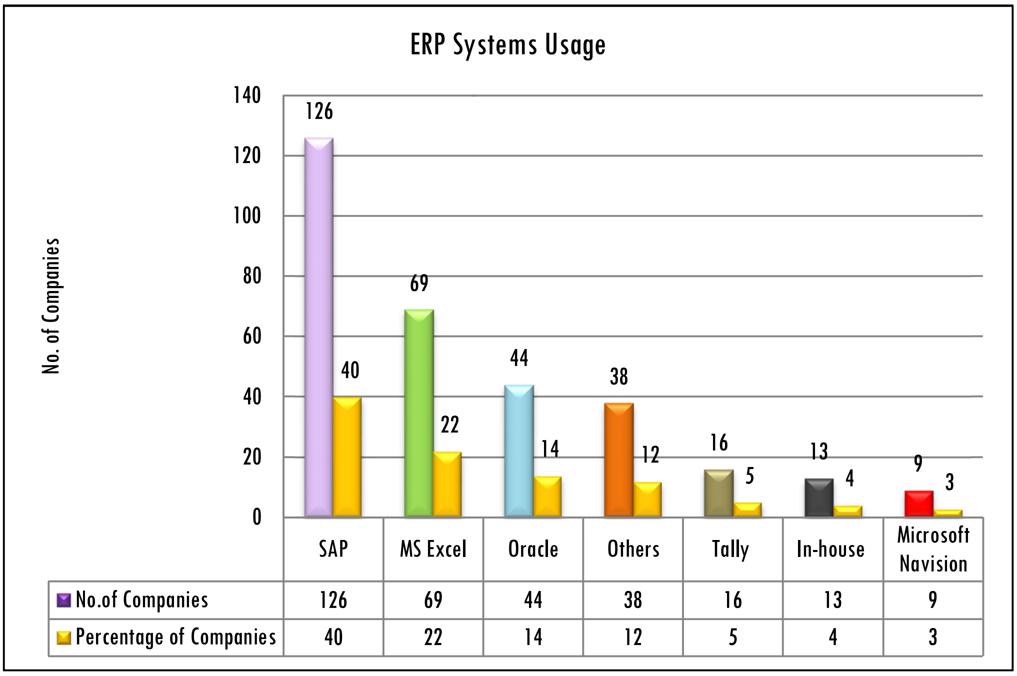
As the application of Management Accounting Practices (MAP) require the support of Enterprise Resource Planning (ERP) Systems for timely generation of information an attempt was made by the researcher to understand the ERP systems followed in the respondent companies. Since the early 2000, the interaction between ERP systems and management accounting has constituted a research topic of particular interest and there is a growing body of literature in this area (Vakalfotis et al., 2011). Although ERP systems are generally designed and introduced by non-accountants, they are closely connected with the accounting processes (Chapman, 1997). Some of the most ordinary accounting processes, which are incorporated in an ERP system, include: general ledger, accounts receivable, accounts payable, financial control, asset management, funds flow, cost centres, profit centres, profitability analysis, order and project accounting, product cost accounting and performance analysis (Sadagopan,2003). The following Table 5.29 and Figure 5.19 will give the details of no. of respondents using different ERP systems.

Table 5.29: ERP Systems Used by the Respondent Companies

Sl. No.	ERP System Used	Number of Companies	%
1	SAP	126	40
2	MS Excel	69	22
3	Oracle	44	14
4	Tally	16	12
5	In-house	13	5
6	Microsoft Navision	9	4
7	Others	38	3

The Figure 5.19 below will give an overview of the same.

Figure 5.19: Categorisation of Companies Based on the ERP Systems Used



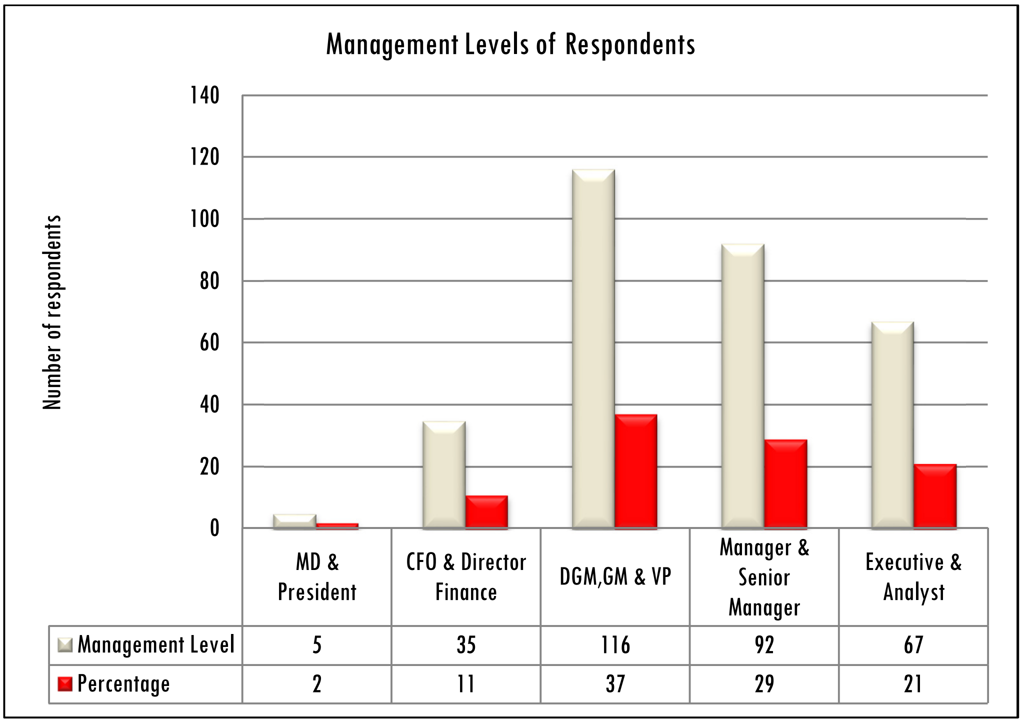
5.8.8 Categorisation of Respondents Based on Management Levels

The respondent category of different management levels were also captured through this research study.21% of the respondents were from the executive/analyst category.29% of them were at the levels of manager/senior manager.37% of the respondents were from the General Manager/Assistant General Manager/Vice-President category.11% of them were from the category of Director Finance/Chief Finance Officer and 2% of them were right from the top most positions of the organisations, Managing Director/President level. The following Table 5.30 will give the details of respondents at various levels and the Figure 5.20 will provide an overview of the same graphically.

Table 5.30: Management Levels of the Respondents

Sl. No.	Management Levels	Number of Respondents	%
1	MD & President	5	2
2	CFO & Director Finance	35	11
3	DGM,GM & VP	116	37
4	Manager & Senior Manager	92	29
5	Executive and Analyst	67	21

Figure 5.20: Categorisation of Respondents Based on Management Levels



5.9 Analysis of Paths -Testing of Hypotheses

The next step of data analysis involved examining the structural model in order to test various hypotheses (H1 to H5) proposed for the study. Particular emphasis is placed on the estimated parameters for the structural associations;

because they provide direct empirical evidence relating to the hypothesised relationships depicted in the structural model (Hair et al., 2006). The process of establishing the structural model's validity is based on the GoF values.

All the paths in the model except two were found significant. The hypotheses found insignificant were, H2c-Manufacturing Technology & Management Accounting Practices and H2d-Manufacturing Technology & Organisational Performance. The abstract of hypotheses tested are provided in Table 5.31. The identification of the linkages among various constructs used in the study was thus satisfied. Except two, all other hypotheses proposed were found significant and all the paths from indicators to corresponding constructs were also found significant in this study. All the indicators irrespective of formative or reflective were found significant and thus confirmed content validity of the theory adopted.

5.10 Result of Hypotheses Testing

From the table 5.31 below, it can be seen that the proposed first set of hypotheses have found significant relationships ($p \leq .01$) between Competitive Environment and Manufacturing Technology (H1a), Competitive Environment and Organisational Design (H1b), Competitive Environment and Organisational Strategy (H1c), Competitive Environment & Management Accounting Practices (H1d) and Competitive Environment & Organisational Performance (H1e).

In the second set of hypotheses, significant positive relationships ($p \leq .01$) were found between Manufacturing Technology & Organisational Strategy (H2a) and Manufacturing Technology & Organisational Design (H2b). It can also be seen that no significant relationship was found between Manufacturing

Technology & Management Accounting Practices (H2c) and Manufacturing Technology & Organisational Performance (H2d). Therefore these hypotheses are rejected.

The third set of hypotheses also found significant relationship ($p \leq .01$) between Organisational Strategy & Organisational Performance (H3a), Organisational Strategy & Management Accounting Practices (H3b) and Organisational Strategy &Organisational Design (H3c).

The fourth set of hypotheses examined the relationship between Organisational Design & Management Accounting Practices (4a) and between Organisational Design & Organisational Performance (4b). Hypothesis (4a) was found significant at 90% confidence level ($p \leq 0.08$) and hypothesis (4b) was found significant at 95% confidence level ($p \leq 0.03$).

The fifth set of hypothesis examined the relationship between Management Accounting Practices and Organisational Performance (H5) and was found significant ($p \leq 0.01$).

A review of the structural model also reveals an interesting picture of the indirect relationships between the variables of interest. Rather than hypothesised direct impact of strategy on performance, the effect was indirect through MAP. These findings will be discussed in greater detail in the next chapter.

Table 5.31: Result of Hypotheses Testing

Sl.No/ LVs	Hypothesis	Path Coefficient	P-Value	Significance	Remarks
LV-1	**Competitive Environment**				
1	H1a Competition →Technology	0.55	0.01***	Yes	**(Refer to**
2	H1b Competition →Design	0.14	0.01***	Yes	**Figure**
3	H1c Competition →Strategy	0.29	0.01***	Yes	**5.12 &**
4	H1d Competition →MAP	0.26	0.01***	Yes	**Appendix**
5	H1e Competition →Performance	0.17	0.01***	Yes	**3**
LV-2	**Manufacturing Technology**				**Showing**
6	H2a Technology →Strategy	0.49	0.01***	Yes	**Indicator**
7	H2b Technology →Design	0.30	0.01***	Yes	**Weights**
8	H2c Technology →MAP	0.03	0.27	No	**And**
9	H2d Technology →Performance	0.00	0.49	No	**P values)**
LV-3	**Organisational Strategy**				
10	H3a Strategy →Performance	0.22	0.01***	Yes	
11	H3b Strategy →MAP	0.18	0.01***	Yes	
12	H3c Strategy →Design	0.37	0.01***	Yes	
LV-4	**Organisational Design**				
13	H4a Design →MAP	0.10	0.08*	Yes	
14	H4b Design →Performance	0.12	0.03**	Yes	
LV-5	**Management Accounting Practices**				
15	H5 MAP →Performance	0.17	0.01***	Yes	

Significance Level at $***p \leq 0.01$; $**p \leq 0.05$; $*p \leq 0.10$

5.11 Testing of Other Hypotheses in the Study

H6a-There is no significant difference in the perception of practicing managers about the adoption of MAP practices between the domestic and foreign companies operating in the manufacturing sector in India.

Table 5.32: Group Statistics of Independent Sample t-test (MAP and Type Of Companies)

Group Statistics					
	Type of company	N	Mean	Std. Deviation	Std. Error Mean
MAP	Domestic	232	3.9171	0.59131	0.03882
	Foreign	83	3.8595	0.55624	0.06105

Table 5.33: Result of Independent Sample t-test (MAP and Type Of Companies)

Independent Samples Test										
Levene's Test for Equality of Variances				t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
MAP	Equal variances assumed	0.730	0.393	0.773	313.000	0.440	0.058	0.074	(0.089)	0.204
	Equal variances not assumed			0.796	152.839	0.427	0.058	0.072	(0.085)	0.201

An independent sample t-test was performed to compare the perceptions of practicing managers on usefulness of MAP with regard to domestic as well as foreign companies operating in India. Levene's test for equality of variance among groups emerged as insignificant with *p* value more than 0.05 confirming equal variance. The corresponding t- statistic was found with p value more than 0.05. Hence the null hypothesis was accepted concluding that there is no difference in perception in MAP with regard to managers of domestic and foreign companies in the national context and settings.

H6b-There is no significant difference in the perception of practicing managers about the adoption of Management Accounting Practices (MAP) between industrial and consumer products that are manufactured in India.

Table 5.34: Group Statistics of Independent Sample t-test (MAP and Type of Products)

Group Statistics					
	Type of product	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
MAP	Industrial	165	3.9179	0.57387	0.04468
	Consumer	150	3.8843	0.59213	0.04835

Table 5.35: Result of Independent Sample t-test (MAP and Type of Products)

Independent Samples Test										
Levene's Test for Equality of Variances				t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
MAP	Equal variances assumed	0.300	0.584	0.512	313.000	0.609	0.034	0.066	(0.096)	0.163
	Equal variances not assumed			0.511	308.040	0.610	0.034	0.066	(0.096)	0.163

An independent sample t-test was performed to compare the perceptions of practicing managers on adoption of MAP with regard to industrial as well as consumer products. Levene's test for equality of variance among groups emerged as insignificant with *p* value *more* than 0.05 confirming equal variance. The corresponding t-statistic was found with *p* value more than 0.05. Hence the null hypothesis was accepted concluding that there is no difference in perception in MAP with regard to consumer and industrial products in the national context and settings.

H6c-There is no significant difference in the perception of practicing managers about the adoption of MAP among different experience groups of managers in the manufacturing sector in India.

Table 5.36: Analysis of Variance between MAP and Different Experience Groups

ANOVA					
Experience of Managers					
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	203.303	213	0.954	0.841	0.852
Within Groups	114.684	101	1.135		
Total	317.987	314			

An ANOVA test was performed to compare the perceptions of practicing managers on the usefulness of MAP based on the number of years of experience Levene's test for equality of variance among groups emerged as insignificant with *p* value more than 0.05 confirming equal variance. The corresponding ANOVA statistic was found with *p* value more than 0.05. Thus the null hypothesis was accepted concluding that there is no difference in perception on MAP with respect to the number of years of experience of practicing managers in the national context and settings.

H7a-There is no significant difference in the perception of practicing managers about the importance of OP between domestic and foreign companies operating in the manufacturing sector in India.

Table 5.37: Group Statistics of Independent Sample t-test (OP and Type of Companies)

Group Statistics					
	Type of company	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
OP	Domestic	232	4.1052	0.53061	0.03484
	Foreign	83	4.0075	0.55473	0.06089

Table 5.38: Result of Independent Sample t-test (OP and Type of Companies)

Independent Samples Test										
Levene's Test for Equality of Variances				t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
OP	Equal variances assumed	0.031	0.861	1.423	313.000	0.156	0.098	0.069	(0.037)	0.233
	Equal variances not assumed			1.393	139.175	0.166	0.098	0.070	(0.041)	0.236

An independent sample t-test was performed to compare the perceptions of practicing managers on the importance of OP with regard to domestic as well as foreign companies operating in India. Levene's test for equality of variance among groups emerged as insignificant with *p* value more than 0.05 confirming equal variance. The corresponding t-statistic was found with *p* value more than 0.05. Hence the null hypothesis was accepted concluding that there is no difference in perception about OP with regard to managers of domestic and foreign companies in the national context and settings.

H7b-There is no significant difference in the perception of practicing managers about the importance of OP between industrial and consumer products that are manufactured in India.

Table 5.39: Group Statistics of Independent Sample t-test (OP and Type of Products)

Group Statistics				
	Type of product	N	Mean	Std. Deviation
OP	Industrial	165	4.10455	0.55347
	Consumer	150	4.05194	0.52071

Table 5.40: Result of Independent Sample t-test (OP and Type of Products)

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
OP	Equal variances assumed	1.369	0.243	0.866	313.000	0.387	0.053	0.061	(0.067)	0.172
	Equal variances not assumed			0.869	312.626	0.386	0.053	0.061	(0.067)	0.172

An independent sample t-test was performed to compare the perceptions of practicing managers on the importance of OP with regard to industrial as well as consumer products. Levene's test for equality of variance among groups emerged as insignificant with *p* more than 0.05 confirming equal variance. The corresponding t-statistic was found with *p* value more than 0.05. Hence the null hypothesis is accepted concluding that there is no difference in perception on OP with regard to consumer and industrial products in the national context and settings.

H7c-There is no significant difference in the perception of practicing managers about the importance of OP among different experience groups of managers in the manufacturing sector in India.

Table 5.41: Analysis of Variance between OP and Different Experience Groups

ANOVA					
Experience of Managers					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	69.656	61	1.142	1.163	0.211
Within Groups	248.332	253	0.982		
Total	317.987	314			

An ANOVA test was performed to compare the perceptions of practicing managers on the importance of MAP based on the number of years of experience Levene's test for equality of variance among groups emerged as insignificant with *p* more than 0.05 confirming equal variance. The corresponding ANOVA statistic was found with *p* value more than 0.05. Hence the null hypothesis is accepted concluding that there is no difference in perception on OP with respect to the number of years of experience of practicing managers in the national context and settings.

5.12 Descriptive Findings of All Variables in the Theoretical Framework

In this section, the descriptive analysis results for all items in the theoretical/conceptual framework are presented, describing how the respondents scored the variables for each construct. It is important to highlight the level of importance that the respondents attach to the variables. It would also facilitate to understand the correlation between the individual variables for each construct. The descriptive analyses are displayed in the following sections.

5.12.1 Descriptive Findings of Competitive Environment (CE) Dimension

In the conceptualisation of this study, Competitive Environment (CE) is the originating variable and captures three dimensions – Manufacturing Technology (MT), Organisational Strategy (OS) and Organisational Design (OD).

CE was measured by six items as shown in the Table 5.42. For the Product Pricing indicator of CE, 49% of the respondents strongly agree with a score of 5, whereas 45 % respondents agree by scoring 4, which makes a total response rate of 94%, that Product Pricing is an important element of competition in the Indian manufacturing sector. Similarly, 95% (48% agree and 47% strongly agree) of the Finance and Accounting (F&A) Managers in the

Indian manufacturing sector believes that the New Product Development is an important consideration for survival and growth in the competitive environment. In case of Marketing Channel Profitability, it was found that 85% (51% agree and 34% strongly agree) of the F&A managers perceive it as an important element in withstanding the intensity of competitive pressure. 91% (45% agree and 46% strongly agree) of the respondents perceive that their Product Lines in comparison with the competitors are important considerations. Understanding Competitors' Action was considered as an important element in the competitive rivalry by 74% (49% agree and 25% strongly agree). Lastly, 68% of the F&A managers considered that Market Share was one of the core elements, as a measure competitive advantage.

Table 5.42: Measures of Competitive Environment (CE) in Percentage

Competitive Environment (CE) Dimension						
Indicators used to measure		**SD**	**D**	**N**	**A**	**SA**
Product Pricing	CE1	-	-	6	45	49
New Product Development	CE2	-	-	6	48	47
Marketing Channel Profitability	CE3	-	-	15	51	34
Product Lines	CE4	-	1	8	45	46
Competitors' Action	CE5	1	2	24	49	25
Market Share	CE6	3	8	20	43	25
	Average	1	2	13	47	38

Respondents were asked to mark on a scale of Strongly Disagree to Strongly Agree. Strongly Disagree (SD) =1; Disagree (D) =2; Neutral (N) =3; Agree (A) =4; Strongly Disagree (SD) = 5.

5.12.2 Descriptive Findings of Manufacturing Technology (MT) Dimension

Manufacturing Technology (MT) dimension reflects the extent to which the F&A mangers of the surveyed companies consider the importance of investment in advanced technology that would influence the management accounting practices leading to better organisational performance. As shown in the Table 5.33 below, there were ten indicators used to measure this variable. On an average, only 55 % (39% agree and 16% strongly agree) of the explored companies considered MT as an important measure which would influence the organisational strategy and organisational design which will lead to best Management Accounting Practices (MAP). Of all the indicators, 72% (47% agree and 25% strongly agree) of the F&A managers felt that Just-in-Time practices was the most important measure of MT dimension.

Table 5.43: Measures of Manufacturing Technology (MT) in Percentage

Manufacturing Technology (MT) Dimension						
Indicators used to measure		**SD**	**D**	**N**	**A**	**SA**
Flexible Manufacturing System	MT1	-	5	32	44	20
Computer Aided Manufacturing	MT2	-	8	30	46	17
Computer Aided Design	MT3	-	11	48	30	11
Computer Aided Engineering	MT4	-	10	48	30	12
Computer Aided Process Planning	MT5	-	7	37	42	15
Reliability Testing Machines	MT6	-	7	26	50	18
Just-in-Time Practices	MT7	-	4	22	47	25
Direct Numerical Control	MT8	-	8	39	37	17
Computer Integrated Manufacturing	MT9	-	7	43	37	14
Numerical Control Systems	MT10	-	8	51	30	11
	Average	-	7	38	39	16

Respondents were asked to mark on a scale of Strongly Disagree to Strongly Agree. Strongly Disagree (SD) =1; Disagree (D) =2; Neutral (N) =3; Agree (A) =4; Strongly Disagree (SD) = 5.

5.12.3 Descriptive Findings of Organisational Design (OD) Dimension

Organisational Design (OD) which reflects the organisational structure of the surveyed companies is a unidimensional construct. This dimension is measured by 9 items as shown in the following table 5.44. Of the 9 indicators, the F&A managers considered Manufacturing Excellence as the most important element in measuring the OD construct with a response rate of 88% (56% agree and 32%strongly agree). 76% (58% agree and 18%strongly agree) of the respondents considered Work-based Teams are a very important component of organisational design. Management Training was considered important by 73% (52% agree and 21%strongly agree) of the respondents. As regards Participative Culture and Employee Empowerment, 72% (51% agree and 21% strongly agree; 49% agree and 23% strongly agree, respectively) of the respondents considered each of them as important features of organisation design.

Table 5.44: Measures of Organisational Design (OD) in Percentage

Organisational Design (OD) Dimension						
Indicators used to measure		**SD**	**D**	**N**	**A**	**SA**
Multiple skills of workforce	OD1		8	25	51	17
Worker training effectiveness	OD2		15	33	36	16
Cross-functional teams	OD3		6	23	47	24
Participative culture	OD4		6	22	51	21
Management Training	OD5	2	5	19	52	21
Flat organisational structure	OD6	1	7	32	45	15
Work-based teams	OD7		4	21	58	18
Employee empowerment	OD8		3	26	49	23
Manufacturing excellence	OD9			12	56	32
	Average		7	24	49	21

Respondents were asked to mark on a scale of Strongly Disagree to Strongly Agree. Strongly Disagree (SD) =1; Disagree (D) =2; Neutral (N) =3; Agree (A) =4; Strongly Disagree (SD) = 5.

5.12.4 Descriptive Findings of Organisational Strategy (OS) Dimension

As defined under section 2.5.3 in Chapter-3, reflects the extent to which organisations respond to a dynamic external environment and align the environmental factors with management of their companies. This study explores the extent to which the surveyed organisations reflect which of the generic strategies from the Porterian (1996) view, were followed by them. 87% (50% agree and 37% strongly agree) of the respondents were of the view that Cost leadership is the right strategy that their organisations would follow for competitive advantage. Followed by the Cost Leadership Strategy, 86% (57%

agree and 29% strongly agree) of the respondents believe that Rapid Product Mix changes are quintessential to remain competitive. According to 75% (50% agree and 25% strongly agree) of the Finance &Accounting (F&A) managers in the Indian Manufacturing sector, Total Quality Management (TQM) is an effective strategic tool. Making their products available at any time is another strategic element, where 70% (50% agree and 20% strongly disagree) of the F&A managers in the surveyed companies considered as important.

Table 5.45: Measures of Organisational Strategy (OS) in Percentage

Organisational Strategy (OS)						
Indicators used to measure		**SD**	**D**	**N**	**A**	**SA**
On-time delivery of products	OS1	-	8	26	47	19
Cost Leadership	OS2	-	-	13	50	37
High quality products through TQM	OS3	-	5	20	50	25
After-sales service & support	OS4	-	10	26	45	19
Quick changes in design and introduction	OS5	-	9	27	48	17
Customise products and services	OS6	-	9	28	44	20
Product availability	OS7	-	10	21	50	20
Make rapid product mix changes	OS8	-		15	57	29
	Average	-	7	22	49	23

Respondents were asked to mark on a scale of Strongly Disagree to Strongly Agree. Strongly Disagree (SD) =1; Disagree (D) =2; Neutral (N) =3; Agree (A) =4; Strongly Disagree (SD) = 5.

5.12.5 Descriptive Findings of Management Accounting Practices (MAP) Dimension

The distribution of the responses for the measures of adoption of Management Accounting Practices (MAP) is reported in the following table 5.36.The perception of the Finance & Accounting managers in the Indian manufacturing sector about the MAP is highest in case of Budgetary Control Systems with 94% (30 % agree and 64 % strongly agree). Similarly, the respondents are of very strong view that Product Profitability Analysis is practiced on the basis of absorption (or full) costing with the scores of 91%

(49% agree and 42% strongly agree;37% agree and 54% strongly agree, respectively). In the case of the Cost-Volume-Profit analysis and Marginal Costing, the scores are at 90% (42% agree and 48% strongly agree; 46% agree and 44% strongly agree, respectively). Customer Profitability Analysis has a score of 72% (32% agree and 40% strongly agree). In the case of Standard Costing, which is another popular tool for cost control has a score of 71% (28% agree and 43% strongly agree). Both the results of Benchmarking and Statutory Cost Audit Reporting show equal scores at 65% (39% agree and 26% strongly agree;22% agree and 43% strongly agree, respectively).

Table 5.46: Measures of Management Accounting Practices (MAP) Dimension in Percentage

Management Accounting Practices (MAP) Dimension							
Indicators used to measure		**MAP**	**Never Use**	**Low**	**Moderate**	**High**	**Very High**
Budgetary Control	BC	MAP1	-	-	6	30	64
Full/Absorption Costing	FC	MAP2	-	-	10	49	42
Cost-Volume-Profit Analysis	CVP	MAP3	-	-	10	42	48
Marginal/Variable Costing	MC	MAP4	-	-	10	46	44
Standard Costing	SC	MAP5	7	6	16	28	43
Quality Costing	QC	MAP6	-	9	33	38	21
Target costing	TC	MAP7	9	10	21	35	26
Activity Based Costing (ABC)	ABC	MAP8	12	10	21	31	27
Activity Based Management (ABM)	ABM	MAP9	-	9	31	39	21
Value chain analysis	VCA	MAP10	14	13	32	26	16
Product life cycle cost analysis	PLC	MAP11	-	10	32	38	20
Benchmarking	BM	MAP12	8	11	17	39	26
Product profitability analysis	PPA	MAP13	-	-	9	37	54
Customer profitability analysis	CPA	MAP14	5	8	15	32	40
Shareholder value analysis / EVA	EVA	MAP15	11	8	20	34	28
Statutory Cost Audit Reporting	SCAR	MAP16	15	4	16	22	43
		Average	5	6	19	35	35

Respondents were asked to mark on a scale of Strongly Disagree to Strongly Agree. Strongly Disagree (SD) =1; Disagree (D) =2; Neutral (N) =3; Agree (A) =4; Strongly Disagree (SD) = 5.

Table 5.47: Measures of Management Accounting Practices – Traditional (MAP-T) Sub- dimension in Percentage

MAP-T Sub-dimension						
Indicators used to measure		**Never Use**	**Low**	**Moderate**	**High**	**Very High**
Budgetary Control	MAP1	-	-	6	30	64
Full/Absorption Costing	MAP2	-	-	10	49	42
Cost-Volume-Profit Analysis	MAP3	-	-	10	42	48
Marginal/Variable Costing	MAP4	-	-	10	46	44
Product profitability analysis	MAP13	-	-	9	37	54
	Average			9	41	50

Respondents were asked to mark on a scale of Never use to Very high use. Never Use =1; Low use =2; Moderate use =3; High use =4; Very high use = 5.

Table 5.48: Measures of Management Accounting Practices - Advanced (MAP-Adv) Sub-dimension in Percentage

MAP-Adv. Sub-dimension						
Indicators used to measure		**Never Use**	**Low**	**Moderate**	**High**	**Very High**
Standard Costing	MAP5	7	6	16	28	43
Target costing	MAP7	9	10	21	35	26
Activity Based Costing (ABC)	MAP8	12	10	21	31	27
Value chain analysis	MAP10	14	13	32	26	16
Benchmarking	MAP12	8	11	17	39	26
Shareholder value analysis / EVA	MAP15	11	8	20	34	28
Statutory Cost Audit Reporting	MAP16	15	4	16	22	43
	Average	11	9	20	31	30

Respondents were asked to mark on a scale of Never use to Very high use. Never Use =1; Low use =2; Moderate use =3; High use =4; Very high use = 5.

Table 5.49: Measures of Management Accounting Practices -ABM (MAP-ABM) Sub-dimension in Percentage

MAP-ABM Sub-dimension						
Indicators used to measure		**Never Use**	**Low**	**Moderate**	**High**	**Very High**
Quality Costing	MAP6	-	9	33	38	21
Activity Based Management (ABM)	MAP9	-	9	31	39	21
Product life cycle cost analysis	MAP11	-	10	32	38	20
	Average		9	32	38	20

Respondents were asked to mark on a scale of Never use to Very high use. Never Use =1; Low use =2; Moderate use =3; High use =4; Very high use = 5.

5.12.6 Descriptive findings of Organisational Performance (OP) Dimension

The Organisational Performance (OP) construct was measured by 12 items as shown in the following table 5.40 which captured the perception of how important those measures are in the surveyed organisations. The OP construct contains both financial and non-financial measures. The OP- Financial sub-dimension (OP-Fin) has six items and OP-Non-Financial (OP-NonFin) has six items. The respondents who are the Finance & Accounting (F&A) Managers have ranked operating income and Cost Reduction with the highest score of 94% (51% agree and 43% strongly agree; 43% agree and 51% strongly agree, respectively). The scores in favour of Return on Investment (ROI) and Cash Flow from Operations were also ranked high at 91% (48% agree and 43% strongly agree; 47% agree and 44% strongly agree, respectively). The respondents have scored Sales Growth at 89% (54% agree and 35% strongly agree) and New Product Revenue at 87% (57% agree and 30% strongly agree). Overall the financial measures seem to be more important for the F&A managers compared to the non-financial measures.

Among non-financial measures, Human Resources Training and Development tops the list with 71% (48% agree and 23% strongly agree). The Market Development and Workplace Relations have similar scores with 69%, both with same agree and strongly agree scores (47% agree and 22% strongly agree). The two indicators Research & Development (R&D) and Environment, Health and Safety measured 68% (43% agree and 25% strongly agree; 40% agree and 28% strongly agree, respectively).

Table 5.50: Measures of Organisational Performance (OP) Dimension in Percentage

Organisational Performance (OP) Dimension						
Indicators used to measure OP		**Not Important**	**Moderately Important**	**Neutral**	**Important**	**Extremely Important**
Operating income	OP1	-	-	6	51	43
Sales growth	OP2	-	-	11	54	35
Return on investment	OP3	-	-	9	48	43
Cash flow from operations	OP4	-	-	9	47	44
Revenue share	OP5	3	5	25	42	25
Market development	OP6	-	7	24	47	22
New product Revenue	OP7	-	-	13	57	30
Research and development (R&D)	OP8	4	7	21	43	25
Cost reduction programs/cost control	OP9	-	-	5	43	51
Human Resources Training & Development	OP10	-	5	24	48	23
Workplace relations	OP11	-	7	24	47	22
Environment ,employee health and safety	OP12	4	6	22	40	28
	Average	1	3	16	47	33

Respondents were asked to mark on a scale of Never use to Very high use. Never Use =1; Low use = 2; Moderate use = 3; High use =4; Very high use = 5.

Table 5.51: Measures of Organisational Performance - Financial (OP-Fin) Sub-dimension in Percentage

OP-Fin Sub-dimension						
Indicators used to measure		**Not Important**	**Moderately Important**	**Neutral**	**Important**	**Extremely Important**
Operating income	OP1	-	-	6	51	43
Sales growth	OP2	-	-	11	54	35
Return on investment	OP3	-	-	9	48	43
Cash flow from operations	OP4	-	-	9	47	44
New product Revenue	OP7	-	-	13	57	30
Cost reduction programs/cost control	OP9	-	-	5	43	51
	Average	-	-	9	50	41

Respondents were asked to mark on a scale of Never use to Very high use. Never Use =1; Low use =2; Moderate use =3; High use =4; Very high use = 5.

Table 5.52: Measures of Organisational Performance – Non-financial (OP-Non-Fin) Sub-dimension in Percentage

OP – Non Fin Sub-dimension						
Indicators used to measure		Not Important	Moderately Important	Neutral	Important	Extremely Important
Revenue share	OP5	3	5	25	42	25
Market development	OP6	-	7	24	47	22
Human Resources Training & Development	OP10	-	5	24	48	23
Environment ,employee health and safety	OP12	4	6	22	40	28
	Average	2	6	24	44	24

Respondents were asked to mark on a scale of Never use to Very high use. Never Use =1; Low use =2; Moderate use =3; High use =4; Very high use = 5.

5.13 Conclusions to the Chapter

In this chapter, the use of Structural Equation Modelling (SEM) technique to test the hypotheses developed in the study was explained, as well as to identify the model fitness among the variables of interest were reported. The factor analysis was conducted prior to the SEM analysis. Reliability and validity of the measurements were identified based on the cut-off values of factor loadings, AVE and Cronbach's alpha. Following this, the hypothesised model was tested by the structural model using the SEM procedure by using warp PLS 4.0. This chapter demonstrates that all of the hypotheses except two were supported, which indicates that the research framework proposed in this study was generally confirmed. The implications of these results are discussed in the next chapter.

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Chapter

6 DISCUSSIONS, FINDINGS & CONCLUSIONS

Contents

6.1 Introduction

The previous Chapter had examined the outcome of the data and hypotheses testing. This Chapter provides a more detailed examination of the findings of this study and to provide further insight into the relationships between the variables that have been examined. The discussion part of the findings of this study is divided into six sections. In the first section, the findings are highlighted and the second section discusses the results of hypotheses testing and the theoretical explanations of the findings and in the third section, it was attempted to provide with the similarities and contrasts of the findings of this study with prior research. This is followed by the explanations to the research objectives set in the beginning. Section four presents some contributions to the theoretical knowledge, methodological aspects, managerial implications, suggestions and the conclusions to the study. Section five provides the limitations faced by this study and section six suggests the scope for future research that could be extended from this study.

6.2 Discussion of Findings

The findings from this study confirm that from the perception of the Finance & Accounting (F&A) Managers in the Indian manufacturing sector, there has been a significant increase in the use of Manufacturing Technology (MT) in the highly competitive environment for business sustainability. Results also show the significant use of cost leadership strategy and the use of differentiation strategy as well, simultaneously. The use of flat organisation design and adoption of both traditional and advanced Management Accounting Practices (MAP) were also observed in the Indian context and settings. These outcomes are particularly important for companies wishing to compete in a globalised environment in India. The relationships among these variables of interest have been analysed using Structural Equation Modelling (SEM) technique.

6.2.1 Results of Hypotheses Testing

The results of the hypotheses testing (summarised in Table 6.1) are discussed along with the literature reviewed.

Table 6.1: Results of Hypotheses Testing

	Hypotheses	Supported /Rejected
	Competitive Environment	
H1a	There exists a significant relation between competitive environment and manufacturing technology.	Supported
H1b	There exists a significant relation between competitive environment and organisational design.	Supported
H1c	There exists a significant relation between competitive environment and organisational strategy.	Supported
H1d	There exists a significant relation between competitive environment and management accounting practices.	Supported
H1e	There exists a significant relation between competitive environment and organisational performance.	Supported
	Manufacturing Technology	
H2a	There exists a significant relation between manufacturing technology and organisational strategy	Supported
H2b	There exists a significant relation between manufacturing technology and organisational design.	Supported
H2c	There exists a significant relation between manufacturing technology and management accounting practices.	Rejected
H2d	There exists a significant relation between manufacturing technology and organisational performance.	Rejected
	Organisational Strategy	
H3a	There exists a significant relation between organisational strategy and organisational performance.	Supported
H3b	There exists a significant relation between organisational strategy and management accounting practices.	Supported
H3c	There exists a significant relation between organisational strategy and organisational design.	Supported
	Organisational Design	
H4a	There exists a significant relation between organisational design and management accounting practices.	Supported
H4b	There exists a significant relation between organisational design and organisational performance.	Supported
	Management Accounting Practices	
H5	There exists a significant relation between management accounting practices and organisational performance.	Supported

6.2.1.1 The Relationship between Competitive Environment (CE) and Manufacturing Technology (MT)

As mentioned earlier, the prior literature explored that manufacturing technology with reference to product complexity will affect the production process which will have a positive influence on Management Accounting Practices (MAP). Therefore the first hypothesis proposed for the study is stated below:

H1a: There exists a significant relationship between competitive environment and manufacturing technology.

The first hypothesis tested the relationship between Competitive Environment (CE) and Manufacturing Technology (MT). The findings from this study confirm that there has been a significant increase in the use of management technology (MT) by the manufacturing companies in India. The contingency literature explored that competitive environment would affect manufacturing technology adopted by the organisations. The structural model as shown under Figure 5.12 in the Chapter 5 clearly indicates that there exists a significant relationship between Competitive Environment (CE) and Manufacturing Technology (MT) ($\beta = 0.55$; $p \leq 0.01$; $R^2 = 0.31$) among manufacturing companies in India. This study supports many other studies which suggested a relationship among Competitive Environment (CE) and Manufacturing Technology (MT) (Choe, 2004; DeLisi, 1990; Harris, 1996). However this study contradicts the findings by Baines & Langfield-Smith (2003), who found no significant direct relationship between Competitive Environment (CE) and Manufacturing Technology (MT).

Evaluating this relationship in the context of prevailing intensity of competition in the Indian business environment, which is more prone to policy changes and procedural modifications, it was observed that competitive environment develops into an uncontrollable factor for the organisations to remain competitive. Hence it can be interpreted that the Finance & Accounts (F&A) Managers perceive the need to adopt innovative technologies to withstand the turbulence in the Competitive Environment (CE).

6.2.1.2 The Relationship between Competitive Environment (CE) and Organisational Design (OD)

The nature of the external environment will influence the organisational structure adopted by the firm. Consistent with that reason, this study expected some association between perceived competitive environment and organisational structure. According to strategy literature, the extent to which an organisation achieves the intended strategies will depend upon the amount of fit between structural and environmental variables (Shenhar, 2001; Heiens & Pleshko, 2011). Therefore, with respect to the relationship between CE and OD, this study hypothesised as follows:

H1b: There exists a significant relationship between Competitive Environment (CE) and Organisational Design (OD)

This hypothesis proposed that there is a significant relationship between CE and OD. The hypothesised relationship between CE and OD was found to be significant ($\beta = 0.14$; $p \leq 0.01$). This study contradicts the findings of Baines & Langfield-Smith (2003), and Tuan Mat (2010), where no significant direct relationship was found between Competitive Environment (CE) with Organisational Design (OD). However, this study supports Waweru (2008), who found a strong positive relationship between competitive environment and organisational design. Since the seminal work of Burns & Stalker (1961), researchers have considered the organic organisational form, characterised by a lack of formally defined tasks and an emphasis on horizontal as opposed to vertical coordination to be the ideal structure for firms operating in turbulent environments. Therefore, the external environment of an organisation will exercise significant influence on the organisational design that the organisation adopts, a conclusion that is in agreement with the traditional view of external environment of organisations (Pugh et al., 1969).

6.2.1.3 The Relationship between Competitive Environment (CE) and Organisational Strategy (OS)

The strategic management literature (Hitt & Tyler, 1991; Rajagopalan et al., 1993: Brouthers et al., 2000), primarily view that managers must analyse the external and internal environments of their organisations, to enable them to identify the external opportunities and threats and internal strengths and weaknesses. Based on this external control perspective it was argued that strategic decisions are largely constrained by external environment (Hitt & Tyler, 1991). The structure of the industry would strongly influence the rules of competition among rivals within the industry (Porter, 1980). Environmental uncertainty would influence competitive strategy (Rajagopalan et al., 1993; Hitt & Tyler, 1991; Brouthers et al., 2000). Moreover, in a study by Anderson & Lanen (1999) it was explored that defenders place greater emphasis on cost data while preparing budgets and plant managers would be the first line of cost control, which is the cost leadership equivalent of Porter’s framework. Competitive environment had a positive association with the strategic choices of an organisation (Baines & Langfield-Smith, 2003; Tuan Mat, 2010). The prospectors would respond quickly to market needs, and a wide range of environmental and market information and indications that support the view that organisations would align their strategic orientation to the environment uncertainty by way of remaining competitive as responses to the dynamic competitive environment (Tuan Mat, 2010). Strategically, managers would become more aggressive when the turbulence in the market is high (Naman & Slevin, 1993; Slevin & Covin, 1997). Keeping this background in view, with respect to the relationship between CE and OS, this study proposed the following hypothesis:

H1c: There exists a significant relationship between Competitive Environment (CE) and Organisational Strategy (OS).

The hypothesised relationship between CE and OS was found to be significant ($\beta = 0.29$; $p \leq 0.01$; $R^2 = 0.48$). This hypotheses support many other studies (Chenhall, 2003; DeLisi, 1990; Fuchs & Mifflin, 2000; Schroeder & Congden, 2000) which show that strategy is an important variable in the study of organisations. This study confirms the findings of Baines & Langfield-Smith (2003), and Tuan Mat (2010), where significant direct relationship was found between Competitive Environment (CE) and Organisational Strategy (OS).

6.2.1.4 The Relationship between Competitive Environment (CE) and Management Accounting Practices (MAP)

Environmental analysis is identified as one of the strategic functions that can be supported by the management accounting information (Brouthers & Roozen, 1999). Supporting this view, this study proposed the following hypothesis:

H1d: There exists a significant relationship between Competitive Environment (CE) and Management Accounting Practices (MAP).

In this study, the hypothesised relationship between CE and MAP was found to be statistically significant ($\beta = 0.26$; $p \leq 0.01$). Therefore, it was concluded that competitive environment will lead to higher adoption of management accounting practices in the Indian manufacturing companies. The results from this study provide support as well as contrast to the prior literature.

The present study supports the findings of similar studies (Hoque & Hopper, 1997; Chong & Chong, 1997; Mia & Chenhall, 1994; Mia, 1993). However, this study contradicts the findings of Tuan Mat (2010) where no significant direct relationship was found between Competitive Environment (CE) and Management Accounting Practices (MAP).

6.2.1.5 The Relationship between Competitive Environment (CE) and Organisational Performance (OP)

Contingency view on organisational performance advocates that the degree of competitive environmental uncertainty that an organisation experiences will influence its performance (Chong & Chong, 1997; Ittner et al., 2003). Therefore, in this study the following hypothesis was proposed:

H1e: There exists a significant relationship between Competitive (CE) Environment and Organisational Performance (OP)

The insights from this study provide support and contrast to the existing literature. Competitive environment is significantly associated with the financial measures of organisational performance (Jusoh, 2010). Organisations that combine both financial and non-financial performance indicators would respond more suitably to the dynamics of business environment than those organisations that focus only on financial performance indicators (Ittner et al., 2003). The contrast view from the related literature explored that managers need information about the non-financial performance measures for the proper orientation of the external competitive environment (Chenhall & Morris,1986). In this study, 12 indicators as mentioned under table 5.5 in the previous chapter were used to measure the organisational performance, which is a formative construct. Six of them were financial and another six were non-financial performance measures. The hypothesised relationship between

Competitive Environment (CE) and Organisational Performance (OP) was found to be statistically significant ($\beta = 0.17$; $p \leq 0.01$).

On the evaluation of the above five hypotheses it was observed that the Competitive Environment (CE) acts as the causal variable that compels to adopt alternatives in their approach towards Manufacturing Technology (MT), Organisational Strategy (OS) and Organisational Design (OD) for adopting improved Management Accounting Practices (MAP) and Organisational Performance (OP). In such a process, the most critical variable in the perception of the Finance & Accounting (F&A) Managers in the manufacturing sector in India has emerged as MT followed by OD and then OS.

India has had a long and illustrious history of producing high-quality goods for domestic and global markets. After independence, India had crafted a modern and well diversified manufacturing sector, bringing out a wide range of products from heavy machinery to items of daily use. This process gathered pace since economic reforms opened up the nation's manufacturing sector to competition and globalisation (Shiba,2013). Today, manufacturing in India constitutes 15% of its GDP, employs about 1.30 crore persons, and accounts for 28% of its gross capital formation. India is among the top ten global manufacturing nations-sectors including the automotive industry, engineering products, gems and jewellery, pharmaceuticals, chemicals, consumer durables and many others are progressing rapidly. Top Indian companies match the best global benchmarks in competitiveness, innovation and quality, and many smaller firms have established a global reputation for themselves. The footprint of the Indian industry in overseas markets is expanding and deepening as companies tap the potential in investments and exports (Shiba, 2013).

Further Prof.Shiba elaborates that nevertheless, India has a long way to go, before can be counted as a manufacturing force in the world. India's share in global manufacturing value added and exports is less than 2 percentage, and its presence in top globally produced goods is below even that. The wide base of the manufacturing pyramid comprising millions of micro, small and medium enterprises (MSMEs) faces several challenges when it comes to manufacturing excellence. To attain faster manufacturing growth in line with the aspirations and transform Indian manufacturing, Indian manufacturers would need to incorporate competitiveness into their manufacturing DNA and create a class of passionate managers and engineers who are enthusiastic about its future.

In recent years, the Government of India has taken active steps to promote manufacturing, including setting up of the National Manufacturing Competitive Council (NMCC), instituting the National Manufacturing Policy in 2011 and enacting the Micro, Small and Medium Enterprises Development Act, 2006. The economic reforms process as a whole has been geared towards rapid growth of manufacturing by promoting innovation, globalisation and competitiveness. The industry too is playing a significant role in building manufacturing strength by adopting new technologies and re-designing the existing technology, to be globally competitive and to be a manufacturing hub for the rest of the world. The new 'Make in India" initiative have identified twenty six major industries of which majority are manufacturing. The twenty five sectors are - automobiles, automobile components, aviation, biotechnology, chemicals, construction, defense manufacturing, electrical machinery, electronic systems, food processing, IT &BPM, leather, media & entertainment, mining, oil &gas, pharmaceuticals, ports & shipping, railways, renewable energy, roads & highways, space, textiles & garments, thermal power, tourism & hospitality and wellness (www.makeinindia.com).

6.2.1.6 The Relationship between Manufacturing Technology (MT) and Organisational Strategy (OS)

Porter (1998) suggested that strategy differences depend on differences in activities that companies tend to proceed with, such as product design..., while all companies must continually improve operational effectiveness in their activities. Therefore, the following hypothesis was proposed:

H2a:There exists a significant relationship between Manufacturing Technology (MT) and Organisational Strategy (OS)

This hypothesis support many other studies in this area (Chenhall, 2003; Fuchs & Mifflin, 2000; Schroeder & Congden, 2000; DeLisi, 1990). These studies explored that application of effective manufacturing technology would require organisations to formulate a clear business strategy to create value for their customers (Jermias & Gani, 2002; Simons, 1987). In this study, the relationship between Manufacturing Technology (MT) and organisational strategy (OS)was found to be statistically significant ($\beta = 0.49$; $p \leq 0.01$) and therefore strongly supported the hypothesis. Similar study conducted in Malaysia by Tuan Mat (2010) also proved this relationship as significant.

6.2.1.7 The Relationship between Manufacturing Technology (MT) and Organisational Design (OD)

Research studies on management accounting practices had widely examined the relationships between Manufacturing Technology (MT) adopted and the organisation design(OD), and it was argued that the MT has a significant impact on the management accounting information that can be provided (Otley,1980). Only a few studies applying contingency theory have explored the influence of manufacturing technology on organisational design and management accounting practices (Abdul Khader & Luther,2008;Baines

& Langfield-Smith, 2003; Kaplan & Mackey, 1992). Hence the following hypothesis is proposed:

H2b: There exists a significant relationship between Manufacturing Technology (MT) and Organisational Design (OD)

In this study, the relationship between Manufacturing Technology (MT) and Organisational Design (OD)was found to be statistically significant ($\beta = 0.30$; $p \leq 0.01$) and therefore supported the hypothesis. However, this study contradicts the findings of Tuan Mat (2010) and Baines& Langfield-Smith (2003), where no significant direct relationship was found between Manufacturing Technology (MT) and Organisational Design (OD) among Malaysian and Australian companies respectively.

6.2.1.8 The Relationship between Manufacturing Technology (MT) and Management Accounting Practices (MAP)

This study draws from the evidence in the prior research that the degree of manufacturing technology adopted in an organisation would influence the extent of use of management accounting practices (Pondeville et al., 2013; Haldma & Laats, 2002). Therefore the following hypothesis was proposed:

H2c: There exists a significant relationship between Manufacturing Technology (MT) and Management Accounting Practices (MAP).

There are many studies supported the view that manufacturing technology would influence management accounting practices (Tuan Mat,2010; Chenhall, 2003; Ittner & Larcker, 2001; Chapman & Chua, 2000). The belief of positive relationship between technology and management accounting practices may not hold good in all circumstances (Hyvönen e.al., 2003). There are studies which found an insignificant relationship between MT and MAP (Waweru, 2008). In this study, the relationship between

Manufacturing Technology (MT) and Management Accounting Practices (MAP) was not found to be statistically significant ($\beta = 0.03$; $p \leq 0.27$) and therefore the hypothesis was not supported. Similar study conducted in Australia by Baines & Langfield-Smith (2003) also proved this relationship as insignificant.

6.2.1.9 The Relationship between Manufacturing Technology (MT) and Organisational Performance (OP)

Over recent years there has been an increase in global competition, particularly within manufacturing. Many firms faced with increased competition from foreign firms have sought to enhance their competitiveness by employing Total Quality Management (TQM), Business Process Re-Engineering (BPR) and many other initiatives. An important concern in the implementation of TQM is the extent to which TQM should be developed together with managerial performance evaluation systems employing measures of the manufacturing processes (Chenhall, 1997). A proper link between strategies and manufacturing operations is a key to develop sustainable competitive advantage. To be successful in this globally competitive, rapidly changing environment, organisations must formulate strategic plans that are consistent with their investment in and use of manufacturing technology. This study proposes that organisations that invest in advanced manufacturing technology and develop mechanisms for manufacturing, the participation of managers in strategy formulation will lead to improved competitive capabilities and better performance than firms that do not (Porter, 1996; Tracey et al.,1999). Hence the following hypothesis was proposed:

H2d: There exists a significant relationship between Manufacturing Technology (MT) and Organisational Performance (OP).

In this study, the relationship between Manufacturing Technology (MT) and Organisational Performance (OP) was not found to be statistically significant ($\beta = 0.00$; $p \leq 0.49$) and therefore the hypothesis was not supported. However, this relationship was not tested in similar studies conducted in Australia by Baines & Langfield-Smith (2003) and Tuan Mat (2010) in Malaysia.

6.2.1.10 The Relationship between Organisational Strategy (OS) and Organisational Performance (OP)

Companies with different organisational factors will differ in their strategic approach and therefore require different management accounting practices, in order to enhance organisational performance (Hope & Hope, 1995; Shank & Govindarajan, 1992; Dent, 1990). Based on this view, it is logical to presume that the organisational strategy will influence organisational performance (Chong & Chong, 1997; Kwock, 1999; Davila, 2000; Köseoglu et al., 2013). Thus the following hypothesis was proposed:

H3a:There exists a significant relationship between Organisational Strategy (OS)and Organisational Performance (OP).

The statistical evidence from this study suggests that there exists a significant relationship between organisational strategy and organisational performance as perceived by Finance & Accounting (F&A) Managers in the manufacturing sector in India (($\beta = 0.22$; $p \leq 0.01$). The perception of the population about the importance of cost leadership strategy as a component of organisation strategy is estimated at 0.59, under confirmatory factor analysis. This implies that the Finance and Accounts (F&A) Managers of the manufacturing sector in India have awarded a weightage of only 0.59 out of 1, for cost leadership becoming a significant component of organisational strategy. This seems to be relatively a low score and the possible reason for such a comparatively low perception towards cost leadership may be due to the belief that prevails in the minds of the managers about the other alternative strategies. In other words, F&A managers seem to have a view that being a cost leader and a differentiator at the same time to create competitive advantage in their respective industries could be the more appropriate strategy in the Indian context to enhance Organisational Performance (OP). Many Finance & Accounting (F&A) Managers raised this view point during the preliminary study and pre-test stages. This observation merit acceptance when evaluated in the light of the observations made by Porter (1985) that joint strategies can be adopted to create competitive advantage. In this context it is worthwhile to quote Magretta (2012,p.63) in *Understanding Michael Porter*, "If you have a real competitive advantage, it means that compared with rivals, you operate at a lower cost, command a premium price, or *both*. These are the only ways that one company can outperform another. If strategy is to have any real meaning at all, Porter argues, it must link directly to your company's financial performance. Anything short of that is just talk."

The aspirations of Indian consumers are very high such that they demand world class products at Indian prices. When it comes to pricing, Indian consumers' aspire to have the best of products at the lowest of prices. As Holden & Nagle (1995) pointed out that pricing is like playing chess. Those who make moves one at a time – seeking to minimise immediate losses or to exploit immediate opportunities – will invariably be beaten by those who can envision the game a few moves ahead. Kawasaki (2011) warns that reduction in prices need not essentially lead to increase in profits due to increase in the number of customers. He further adds that correlation does not equal causation. Market share and profitability may be correlated, but that does not mean market share *caused* profitability. When people misperceive market share as the cause of profitability, then they are tempted to use an inappropriate weapon like pricing to achieve profitability.

Moreover, studies conducted by Tuan Mat (2010) among Malaysian companies and by Ojra (2014) among Palestinian companies, also proved the significant relationship between organisational strategy and organisational performance. The difference was that,as an element of organisational strategy they tested differentiation instead of cost leadership. The study among Palestinian companies had explored the significant relationship between organisational strategy and non-financial performance measures, whereas it was found that the relationship between organisational strategy and financial performance measures was not significant.

6.2.1.11 The Relationship between Organisational Strategy (OS) and Management Accounting Practices (MAP)

The previous literature provides many studies based on contingency theory, which examined the relationship between organisational strategy and the use of management accounting practices (Pondeville et al., 2013; Cinquini & Tenucci, 2010; Cadez & Guilding, 2008a; Kaplan& Norton, 1992; Gupta & Govindarajan, 1984). Hence the following hypothesis was proposed:

H3b: There exists a significant relationship between Organisational Strategy (OS) and Management Accounting Practices (MAP).

The statistical evidence from this study suggests that there exists a significant relationship between organisational strategy and management accounting practices as perceived by Finance & Accounting (F&A) Managers in the manufacturing sector in India (($\beta = 0.18$; $p \leq 0.01$). The findings of this study largely support the findings of previous research which confirmed the relationship between organisational strategy and management accounting practices (Ojra,2014; Cinquini & Tenucci, 2010;Baines & Langfield-Smith,2003; Shortel & Zajack, 1990; Kaplan&Norton,1992; Smith et al., 1989).

6.2.1.12 The Relationship between Organisational Strategy (OS) and Organisational Design (OD)

Previous studies had explored the relationship between organisational strategy and organisational design (Opute, 2009; Glaister et al., 2008; Gibbons & O'Connor, 2005; Kaplan & Norton, 1992; Porter, 1985; Covin & Slevin, 1989; Miller, 1987; Burns & Stalker, 1961). Following the research precedence which combined the organisational strategy and organisational design views, the following hypothesis was proposed:

H3c: There exists a significant relationship between Organisational Strategy (OS) and Organisational Design (OD).

Organisational effectiveness will be achieved when there is a fit between organisation's strategy and its design (Mintzberg, 1979). The statistical evidence from this study suggests that there exists a significant relationship between organisational strategy and organisational design perceived by Finance & Accounting (F&A) Managers in the manufacturing sector in India ($\beta = 0.37$; $p \leq 0.01$). Moreover, the empirical evidence from this study supports the argument that there is a positive relationship between organisational strategy and organisational design (Hwang, 2005; Kohli & Jaworski, 1990). Similarly, the studies conducted by Baines & Langfield-Smith (2003) in Australia and Ojra (2014) in Palestine also supported the finding of this study.

6.2.1.13 The Relationship between Organisational Design (OD) and Management Accounting Practices (MAP)

Management accounting literature provides a candid view of how the management accounting practices will enable the organisations to evolve an organisational design so that they can strategically adapt to the rapid environmental changes (Emsley et al., 2006; Abernethy et al., 2013; Cavalluzo & Ittner, 2004; Baines & Langfield-Smith, 2003; Foster & Swenson, 1997; Shields & McEwen, 1996; Libby & Waterhouse, 1996; Kaplan &Norton, 1992; Gupta & Govindarajan, 1984). These scholars argued that by following the appropriate management accounting practices, organisations can generate valid and reliable information that would enable managers to amplify weak signals, so as to take real time decisions for better organisational performance. Based on these insights, the following hypothesis was proposed:

H4a: There exists a significant relationship between Organisational Design (OD)and Management Accounting Practices (MAP).

The statistical evidence from this study suggests that there exists a significant relationship between organisational design and management accounting practices as perceived by Finance & Accounting (F&A) Managers in the manufacturing sector in India (($\beta = 0.10$; $p \leq 0.08$). This finding is supported by the evidences from similar studies (Waweru, 2008; Chenhall, 2008; Hwang, 2005; Matejka & De Waegenaere, 2000). The findings from the study conducted by Tuan Mat (2010),in Malaysia, also supports this view. However, the findings of the studies conducted by Ojra (2014), Gordon & Narayanan (1984), Moores & Mula (1993) are contradictory to this finding of the study.

6.2.1.14 The Relationship between Organisational Design (OD) and Organisational Performance (OP)

For better organisational performance, organisations must adopt suitable organisational design (Chenhall, 2008; Hwang, 2005). In an attempt to understand how organisational design would influence organisational performance in the Indian context, the following hypothesis was proposed:

H4b: There exists a significant relationship between Organisational Design (OD) and Organisational Performance (OP).

The statistical evidence from this study suggests that there exists a significant relationship between organisational design and organisational performance as perceived by Finance & Accounting (F&A) Managers in the manufacturing sector in India (($\beta = 0.12$; $p \leq 0.03$). The findings of this study is similar to the findings of many other studies where positive association was found between organisational design and organisational performance (Tuan Mat,2010;Baines&Langfield-Smith,2003;Negandhi & Reimann, 1971). However, the present study contradicts the findings of the study conducted by Ojra (2014), among Palestinian manufacturing companies.

6.2.1.15 The Relationship between Management Accounting Practices (MAP) and Organisational Performance (OP)

Empirical evidence establishing the positive relationship between Management Accounting Practices (MAP) and Organisational Performance (OP) are available from prior literature. Organisational performance is the dependent variable in the explored model which includes financial and non-financial performance measures. Many studies explored the relationship between management accounting practices and organisational performance (Ojra, 2014; Tuan Mat, 2010, Mia & Clarke, 1999; Sim & Killough, 1998; Ittner & Larcker, 1995). Baines & Langfield-Smith (2003) explored the relationship between non-financial information with organisational performance. Based on these insights, the following hypothesis was proposed:

H5: There exists a significant relationship between Management Accounting Practices (MAP) and Organisational Performance (OP).

The statistical evidence from this study suggests that there exists a significant relationship between Management Accounting Practices (MAP) and Organisational Performance (OP) as perceived by Finance & Accounting (F&A) Managers in the manufacturing sector in India (($\beta = 0.19$; $p \leq 0.01$).

The management accounting practices literature based on contingency theory proved beyond doubt that there exists a significant positive relationship between management accounting practices and organisational performance (Chenhall & Langfield-Smith, 1998b; Perera et al., 1997; Ittner & Larcker, 1995). This contingency perspective suggests that if organisations effectively align their management accounting practices (MAP) to their environmental and organisational antecedents, they are most likely to achieve a better organisational performance (Tuan Mat, 2010; Baines & Langfield-Smith, 2003). This study also supports the finding of the study conducted by Ojra (2014) among Palestinian manufacturing companies that there is a significant relationship exists between MAP and OP.

In this study, Management Accounting Practices (MAP) were conceptualised in the perception of Finance & Accounting (F&A) Managers as having three dimensions confirming to traditional practices, advanced practices and Activity-Based Management (ABM) based practices. Among these dimensions, managers perceive MAP-Traditional and MAP-Advanced as almost equally important, whereas MAP-ABM was considered as relatively less important. This view proposes that favourable perception about the importance of MAP-ABM sub-dimension which consists of quality costing and product life cycle costing is yet to be endorsed strongly in the mind-set of the managers as such. MAP like quality costing and product life cycle costing, which were considered as more important in the context of developed countries were viewed as relatively less important by Finance & Accounting (F&A) Managers in the Indian manufacturing sector. This perception is likely to cast hindrances in our journey to become one of the most favourable manufacturing destinations in the world. The importance of quality is being visualised as a cardinal means of manufacturing efficiency by matured economies will force Indian organisation to think more inclined towards MAP-ABM related practices focusing on the cost of quality. A change that will favourably influence the perceptions of Finance & Accounts (F&A) Managers on MAP certainly lies in the Organisational Strategy (OS) of the firm. A shift in strategy that focuses more on bridging the gap in perception of the Finance & Accounts (F&A) Managers in tune with quality-bound manufacturing practices with lower costs is essential in improving the organisational performance of Indian manufacturing firms. Such a strategic shift can also demand modification in the organisational design and adoption of innovative manufacturing technologies with the sole objective of making a conscious effort to increase the awareness about the need for reducing the cost of quality among Indian managers. In this endeavour, a closer view of environmental factors (competition and technology) will always help the policy makers in providing clear direction.

6.3 Comparison with Findings of Hypotheses Testing with Prior Studies

Thus results in this study, which are supported by previous findings, have proved that an alignment among competitive environment CE), manufacturing technology (MT), Organisational Design (OD),Organisational Strategy (OS) and Management Accounting Practices (MAP) have a positive impact on organisational performance. These results provide evidence that both traditional and advanced MAP should be used to enhance the organisational performance. The following Table 6.2 summarises the results of comparison with similar studies in Malaysia and Australia.

Table 6.2: Comparison with Similar Studies and Their Findings in Malaysia and Australia

	Hypotheses	India	Malaysia	Australia
	Competitive Environment (CE)			
H1a	There exists a significant relation between competitive environment and manufacturing technology.	Supported		Rejected
H1b	There exists a significant relation between competitive environment and organisational design.	Supported	Rejected	Rejected
H1c	There exists a significant relation between competitive environment and organisational strategy.	Supported	Supported	Supported
H1d	Highly competitive environment will lead to adoption of advanced management accounting practices	Supported	Rejected	
H1e	There exists a significant relation between competitive environment and management accounting practices.	Supported		
	Manufacturing Technology (MT)			
H2a	There exists a significant relation between manufacturing technology and organisational strategy	Supported	Supported	
H2b	There exists a significant relation between manufacturing technology and organisational design.	Supported	Rejected	Rejected
H2c	There exists a significant relation between manufacturing technology and management accounting practices.	Rejected	Supported	Rejected
H2d	There exists a significant relation between manufacturing technology and organisational performance.	Rejected		
	Organisational Strategy (OS)			
H3a	There exists a significant relation between organisational strategy and organisational performance.	Supported	Supported	
H3b	There exists a significant relation between organisational strategy and management accounting practices.	Supported	Supported	Supported
H3c	There exists a significant relation between organisational strategy and organisational design.	Supported		Supported
	Organisational Design (OD)			
H4a	There exists a significant relation between organisational design and management accounting practices.	Supported	Supported	
H4b	There exists a significant relation between organisational design and organisational performance.	Supported	Supported	Supported
	Management Accounting Practices (MAP)			
H5	There exists a significant relation between management accounting practices and organisational performance.	Supported	Supported	Supported

6.4 Comparison with Factor Structures

The existing factor structure of Management Accounting Practices (MAP) is a three dimensional one with total number of indicators being 15. The factor structure was divided as 5-7-3 item combination in each dimension. A similar study among Malaysian companies also got a three dimensional structure but with a different division of 6-6-3 item combination as shown in the following Table 6.3.

Table 6.3: Comparison of MAP Dimension Factor Structure

Factor Structure comparison of Management Accounting Practices (MAP)											
Factor -1				Factor -2				Factor -3			
Malaysia		India		Malaysia		India		Malaysia		India	
1	Standard Costing	1	Budgetary Control	1	Product Profitability Analysis	1	Target Costing	1	Activity Based Costing	1	Quality Costing
2	Product Life Cycle	2	Cost-Volume-Profit Analysis	2	Budgetary Control	2	Activity Based Costing	2	Activity Based Management	2	Activity Based Management
3	Value Chain Analysis	3	Variable/Marginal Costing	3	Shareholder Value Analysis	3	Value Chain Analysis	3	Variable/Marginal Costing	3	Product Life Cycle Costing
4	Target Costing	4	Product Profitability Analysis	4	Customer Profitability Analysis	4	Benchmarking		-		-
5	Benchmarking	5	Full/Absorption Costing	5	Cost-Volume-Profit Analysis	5	Shareholder Value /EVA		-		-
6	TQM		-	6	Full/Absorption Costing	6	Statutory Cost Audit Reporting		-		-
	-	-	-	-	-	7	Standard Costing	-	-	-	-

The existing factor structure of Organisational Performance (OP) is a two dimensional one with total number of indicators being 10. The factor structure was divided as 6-4 item combination in each dimension. A similar study among Malaysian companies got a three dimensional structure but with a division of 5-4-3 item combination as shown in following Table 6.4.

Table 6.4: Comparison of OP Dimension Factor Structure

Factor Structure Comparison of Organisational Performance (OP)											
Factor -1				Factor -2				Factor -3			
Malaysia		India		Malaysia		India		Malaysia		India	
1	Operating Income	1	Operating Income	1	Personnel Development	1	Revenue Share	1	Research & Development		-
2	Cash Flow from Operations	2	Sales Growth	2	Employee Health and Safety	2	Market Development	2	New Product Development		-
3	Sales Growth	3	Return on Investment	3	Workplace Relations	3	Human Resources Training & Development	3	Market Development		-
4	Market Share	4	Cash Flow from Operations	4	Cost Reduction	4	Environment, Employee Health and Safety		-		-
5	Return on Investment	5	New product Revenue		-		-		-		-
	-	6	Cost Reduction /CostControl		-		-		-		-

6.5 Observed Indicator Combinations of MAP and OP Dimensions

6.5.1 Management Accounting Practices (MAP) Dimension

The existing factor structure of Management Accounting Practices (MAP) is a three dimensional one with total number of indicators being 15. The factor structure was divided as 5-7-3 item combination in each sub-dimension. Five indicators in the MAP-Traditional sub-dimension, seven indicators in the MAP-Advanced sub-dimension and three indicators in the MAP – ABM sub-dimension which are shown as follows:

Table 6.5: Combined Loadings of MAP-Traditional Sub-dimension

Indicators		Loading
MAP-1	Budgetary Control	0.57
MAP-2	Full/Absorption Costing	0.64
MAP-3	Cost-Volume-Profit Analysis	0.85
MAP-4	Marginal/Variable Costing	0.79
MAP-13	Product profitability analysis	0.79

Table 6.6: Combined Loadings of MAP- Advanced Sub-Dimension

Indicators		Loading
MAP-5	Standard Costing	0.71
MAP-7	Target costing	0.69
MAP-8	Activity Based Costing	0.84
MAP-10	Value chain analysis	0.75
MAP-12	Benchmarking	0.66
MAP-15	Shareholder value analysis / EVA	0.49
MAP-16	Statutory Cost Audit Reporting	0.87

Table 6.7: Combined Loadings of MAP- ABM Sub-dimension

Indicators		Loading
MAP-6	Quality Costing	0.65
MAP-9	Activity Based Management	0.67
MAP-11	Product Life Cycle	0.67

6.5.2 Organisational Performance (OP) Dimension

The existing factor structure of Organisational Performance (OP) is a two - dimensional one with total number of indicators being 10. The factor structure was divided as 6-4 item combination in each sub-dimension. Six indicators in the OP-Financial sub- dimension and four indicators in the OP-Non-financial sub- dimension which are shown as follows:

Table 6.8: Combined Loadings of OP-Financial Sub- dimension

Indicators		Loading
OP-1	Operating income	0.8
OP-2	Sales growth	0.74
OP-3	Return on investment	0.79
OP-4	Cash flow from operations	0.75
OP-7	New product Revenue	0.56
OP-9	Cost reduction	0.61

Table 6.9: Combined Loadings of OP-Financial Sub- dimension

Indicators		Loading
OP-5	Revenue share	0.71
OP-6	Market development	0.75
OP-10	Human Resources Training & Development	0.76
OP-12	Environment ,employee health and safety	0.63

6.6 Comparison of Findings with Prior Studies in India

The descriptive statistics of this study clearly shows considerable improvement in the use of advanced management accounting practices compared to the results of Joshi (2001) and Anand (2005). The adoption rate of Target costing is 61% compared to 35% in the study by Joshi (2001) and 28.80% in the study by Anand (2005). Similarly the rate of adoption of Activity Based Costing (ABC) is 58%,Value Chain Analysis (VCA) is 42%,Benchmarking is 65% as against 20%,25% and 32% of adoption rate respectively in Joshi (2001). Similarly, adoption of Quality Costing is 59% (Anand, 2005-9.50%), Activity Based Management (ABM) is 60% (Joshi, 2001- 13%), Product Life Cycle Costing (PLC) is 58% (Joshi, 2001-45%. In case of Just-in-Time (JIT) practices, the adoption rate in this study is 72% as against 18.90% of Anand (2005).

Among traditional management accounting practices, adoption of Budgetary Control is 94% (Joshi, 2001-94%). In case of Cost-Volume-Profit (CVP) Analysis, the adoption rate is 90% as against 65% (Joshi,2001) and 77.30% (Anand,2005). The adoption rate of Product Profitability Analysis, the rate of adoption is 91% as against 82% in the study of Joshi (2001).

The evidence from this study clearly shows that the adoption rates of both traditional and advanced Management Accounting Practices (MAP) have improved considerably. Since 2005, it also proves beyond doubt that the

Finance & Accounting (F&A) Managers of Indian manufacturing companies are able to comprehend the importance of the strategic dimension of MAP for better Organisational Performance (OP).

6.7 Meeting the Objectives Set for the Study

This study was for meeting the research objectives set for the study as mentioned under Chapters 1 and 3.

The first objective was met in the exploratory stage itself where a detailed canvas of application of Management Accounting Practices (MAP) in the national context was drawn for the purpose of this study. This was done mostly through literature review and expert opinions. The important observations were:

1) MAP was not generally viewed as a strategic tool by our F&A managers
2) The implementation of MAP to the fullest extent was not found in Indian context
3) These observations underlined the problem statement and substantiated the need for this study.

The second objective was to understand the structure and composition of critical variables that lead to Organisational Performance (OP) through Management Accounting Practices (MAP). The scale development process adopted in this study could comfortably meet this objective. Further to meet this objective, the items identified from the literature review and later on approved by expert panel were subjected to Exploratory Factor Analysis (EFA) with respect to MAP and OP as explained in Section 5.5.1 and Section 5.5.2 of the previous chapter.The identified factor structure after CFA was subjected to a Confirmatory Factor Analysis (CFA) to verify the validity and reliability conditions and to confirm the factor structure in the population. The above procedures identified that MAP exist in 3 dimensions with 15 items and OP exist in 2 dimensions with 10 items. All other four variables such as - CE, MT, OS and OD were confirmed as unidimensional having six, eight, nine and seven items respectively.

The primary objective of business enterprises is to create value to its customers, by creating value for themselves. Thus the third objective is met by pinpointing the organisational performance outcome and the contingency insights into the relationship between organisational strategy and organisational design with management accounting practices that contributed to the performance outcome. Further attention is drawn to the fact that the competitive environment, organisational strategy and both traditional and advanced management accounting practices have strong positive relationship with both financial and non-financial measures of performance in the Indian context. Also the findings of the study give evidence to understand that technology doesn't form a critical concern in the minds of the Finance & Accounting (F&A) Managers in their feeling towards the importance of Management Accounting Practices (MAP). Whereas, Competitive Environment (CE) is considered as an important antecedent to Management Accounting Practices (MAP) as well as Manufacturing Technology (MT). This paradoxical belief among the Finance & Accounting Managers can cause a concern in effective implementation of Management Accounting Practices (MAP) in the Indian context as illustrated under section 6.2.1.8 above.

The fourth objective of contributing to the existing literature was met by identifying the critical linkages between the selected variables, and by statistically validating the theoretical model, adopting both reflective and formative constructs by using relevant fit and quality criteria/indices as shown in the Figure 5.12 under section 5.7 of the previous chapter. It was proved that both traditional and advanced Management Accounting Practices (MAP) are being used by Indian companies and the ABM based MAP is considered relatively lesser important in comparison with advanced MAP thus contributing to the understanding of MAP among Indian companies. The interpretation of these findings and its relative cross validation on the basis of similar studies conducted in other contexts could meet this objective. A separate section in this regard is included under managerial implications, suggestions and conclusions.

6.8 Significant Contributions of the Study

The contributions of this study to the existing body of knowledge in this area are divided into theoretical contributions, methodological contributions and contributions to the society. Each of these is discussed below.

6.8.1 Theoretical Contributions

The contingency perspective of the use of management accounting practices provides insights that enrich the understanding of its effects in the Indian context and sittings. From this point of view, this study contributes to the theoretical foundation of the important role played by the management accounting practices in the strategic process of organisations thus making a significant contribution to the strategic management literature. This study supports the findings of many other studies that had emphasised the significant role of management accounting practices as a perennial source of vital information from the strategic point of view, which in turn helps to enhance the strategic decision making process in organisations (Cinquini & Tenucci, 2010; Cadez & Guilding, 2008 ;Kaplan & Norton,2004).

From the use of management accounting practices literature, this study contributes to the rational view of decision making under conditions of environmental complexities (Busenitz & Barney, 1997; Kaplan& Norton,1992; Haley & Stumpf, 1989). The present study argues that from the perspective of Finance & Accounting (F&A) Managers, competitive environment has a strong influence on the use of manufacturing technology in the manufacturing sector in India. Further, the evidence from this study also strongly supports the view that it is the competitive environment which is an environmental (external) factor that shapes organisational strategy which is an organisational (internal) factor thus contributes to the theory of strategic management.

This study has added to the existing literature of management accounting practices and organisational performance in the Indian context particularly in the developing economy settings. Although there are other studies which had been conducted in other developing countries such as Palestine (Ojra, 2014), Libya (Abugalia, 2011) and South Africa (Waweru et al., 2004), they do not seem to have specifically tested the alignment among the critical variables, using structural equation modelling.

Moreover, different economic and cultural characteristics between India and other developing countries mean the findings of this study provide a better understanding of how management accounting and organisational performance take place in a different developing economy setting. This study has also filled a gap in the literature concerning the relationships between management accounting practice (MAP), Organisational Design (OD), Organisational Strategy (OS), Manufacturing Technology (MT) and Competitive Environment (CE). Like many studies in other countries which had explored the relationships between these variables, this study also has actually empirically tested and proved the relationships between these critical variables in the Indian context. In addition, this study has also contributed to the literature with proven evidence that both the traditional and advanced Management Accounting Practices (MAP) are being used for enhancing the Organisational Performance (OP)in the Indian context. This study has also statistically confirmed that traditional and advanced management accounting practices are considered with more or less equal importance by the finance and accounting managers in the manufacturing sector in India.

From the perspective of the performance management literature, this study contributes by exploring the importance of not only the financial performance measures but also the non-financial performance measures in enhancing the organisational performance of organisations (Bisbe & Malagueno, 2012; Hall, 2011; Gimbert et al., 2010; Kaplan & Norton, 2004, 2008; Ittner et al., 2003; Govindarajan &Gupta, 1985).

The findings from this study contribute to the literature on critical linkage between Management Accounting Practices (MAP) and Organisational Performance (OP) by exploring the organisational performance as a dependent variable and the performance outcomes depend on the extent of alignment between environmental (external) factors and organisational (internal) factors (Hyvönen, 2007; Hoque, 2004; Haldma & Lääts, 2002; Mia & Clarke, 1999; Ittner & Larcker, 1998; Kaplan & Norton, 2004;Govindarajan & Gupta, 1985). In this study, the Competitive Environment (CE) and Manufacturing Technology (MT) were considered as external factors and the Organisational Strategy and Design were considered as internal factors.

Thus this study attempted to make several contributions to the theoretical foundations relating to the contingency perspective of the organisational theory, concerning strategic undercurrents in the organisations and management accounting practices for enhancing organisational performance.

6.8.2 Methodological Contributions

A major methodological contribution of the study was the inclusion of both formative and reflective constructs for measurement of different latent variables (LVs) used in the study. The construct of Management Accounting Practices (MAP) and Organisational Performance (OP) were conceptualised as first order reflective and second order formative in this study. This conceptualisation emerged as a fitted one in confirmatory stage with acceptable model fit indices. Literature suggests four types of model conceptualisations in multi-dimensional constructs. The decision on the appropriate one is purely on theoretical grounds and hence the conceptualization used in this study merit acceptance on evaluation in lines with the prevailing theoretical considerations regarding operationalisation of the constructs.

A construct is multidimensional when it consists of a number of interrelated attributes or dimensions and exists in multidimensional domains. The multi-dimensional construct can be different manifestations of different dimensions in the reflective manner or can be treated as the outcome of its dimensions (Jarvis et al., 2003). When dealing with multidimensional constructs, two levels of analysis are required, one level relating manifest indicators to (first-order) dimensions, and a second level relating the individual dimensions to the (second-order) latent construct.

Since for each of the levels both formative and reflective specifications are applicable, Jarvis et.al., (2003) identified four different types of multidimensional constructs such as:

1. Formative first-order and formative second-order
2. Reflective first-order and formative second-order,
3. Formative first-order and reflective second-order, and
4. Reflective first-order and reflective second-order models.

This study conceptualised Management Accounting Practices (MAP) and Organisational Performance (OP) constructs as "reflective first order and formative second order" with each dimensions measuring different facets of MAP and OP. The first order dimensions were assumed as reflective one, as measurement was done using multiple items validated through confirmatory procedures where item reliability was an essential consideration (Diamantopoulos & Siguaw, 2006). A general rule of thumb can be used to decide whether indicators can be treated reflectively or formatively measured. If the indicators are expected to be highly correlated, then the measurement model should be set as reflective and if the indicators are not expected to be highly correlated, even though they clearly refer to the same latent variable, then the measurement model should be set as formative (Kock, 2009). In the second order conceptualisation, i.e. the relation between first order dimensions and second order construct, two contrasting options among reflective and formative are possible. In this study both possibilities were subjected to confirmatory factor analysis as explained in Section 5.6 of Chapter-5.

This study has adopted and modified the instruments developed by Baines & Langfield-Smith (2003) and Tuan Mat (2010) for measuring variables such as Competitive Environment (CE), Manufacturing Technology (MT), Organisational Strategy (OS), Organisational Design (OD), Management Accounting Practices (MAP) and Organisational Performance (OP). In addition, this study combined both traditional and advanced management accounting practices as indicators of the Management Accounting Practices (MAP) construct. This method has enabled the researcher to further analyse how both techniques act as instruments of Management Accounting Practices (MAP), by complementing each other, for better Organisational Performance (OP) in organisations. It is also interesting to note that the factor analysis has derived three distinct factor structures one with traditional MAP and the other two as advanced MAP.

Data in this study had been analysed using Structural Equation Modelling (SEM). Argument persists over the data multivariate normality in SEM in many studies. According to Shook et al., (2004), most researchers using SEM to analyse their survey data, do not discuss the normality issue; a few studies report that their data met the normality requirement, whereas most demonstrate a violation of multivariate normality (Tuan Mat, 2010). Most of those reviewed studies have used the MLE technique to analyse their structural model, while some of them did not disclose the technique used. The normality of the data was tested by using AMOS 18.0 (assessment of normality) and normality issues were noticed at the multivariate level. But the critical ratio (CR) attached to multivariate kurtosis was found < 5 as suggested by Bentler (2005).

Numerous studies conducted around the world have shown the importance of information on the competition provided through management accounting in achieving better performances, especially in formulating the company's strategy, implementing the strategy of cost leadership, and in general in making strategic, business and financial decisions. However, the this study conducted in the Indian context shows that many respondents are not familiar with the essence of the strategic dimension of management accounting practices, but they are aware of such practices ,which is corroborated by the fact that contemporary management accounting practices are not applied in business. The necessity to improve this situation in our current competitive economic conditions is a challenge and obligation for managerial, and management accounting profession. In this sense, from the point of the title given based on the topic of research and the research findings, we can identify the directions of future development:

From the theoretical and methodological point of view, it is necessary to transfer knowledge and skills from the reference authors and scholars from the relevant literature from the countries with developed tradition in this area to our managerial, administrative and accounting theory and practice. It is pertinent to recall that the management accounting innovations like Activity-Based Costing (ABC) and Balanced Score Card (BSC) are conceived and developed first in the academia before it was put to practice.

The introduction of the continuing education of the Finance & Accounting Managers (of strategic and competitive dimensions of management accounting practices), initiating dialogues between the practitioners and the academia especially given its multidisciplinary nature - affiliation to management and management accounting systems and practices, as well as the specific needs and complexity of strategic decision making in the globalised world settings.

6.8.3 Contributions to Society

Business is a legitimate function to serve the society. Businesses make products and services that are needed by the society at large. The paradigm shift from providing financial information to providing information relating to social and environmental concerns is a missing link in the knowledge of sustainable practices and strategy development. The Sustainable Business Network, a network of organisations with an interest in sustainability, provides a broad definition of a sustainable business, “a business that offers products and services that fulfil society’s needs while placing an equal emphasis on people, planet and profits.” Many organisations do try to integrate social and environmental practices into their strategic and operational plans. The Management Accounting Practices (MAP) can embrace the responsibility of facilitation and collaboration in those integrated activities to serve the society better. The era of globalisation has transformed the Management Accounting Practices (MAP) and the metamorphosis still continues; from bean counting to business partnership, Management Accounting Practices (MAP) therefore moved from the back office to the front office (Holtzman, 2004).

In a world which is millions of years old, industrial organisations are young, just less than 500 years old. In India, the industrial organisations are still younger, may be, less than 150 years old. It was only in the last 500 years the world GDP has gone up by taking a precipitous growth upwards. It is because of the industrialisation and the birth of industrial organisations, the world has achieved economic progress and prosperity of its people. People became richer and the standard of living had gone up tremendously. That is the importance of industrial organisations and therefore we have to pay attention to it. We are in some stage of evolution, as many of the processes are still evolving. If we look at the 20th century (1900-2000) we had incredible growth. When population quadrupled, the GDP grew by 20 times. It was primarily a resource led growth. There were abundant natural resources and commodities, which were available at very low prices. That was the axiom of growth of the 20th century. But 21st century would be more complex and it would be a century of resource constraints. Money would be far more difficult to find and achievement of economic growth would be much more difficult unless innovative and environment friendly methods are introduced

(Muthuraman, 2012). Hence, in the 21st century, the relevance of Management Accounting Practices (MAP) has increased multifold, ever since the world felt resource constraints. The problem of achieving a balance between economic and social goals should be of major concern, as Management Accounting Practices (MAP) are adopted in measuring economic and social achievements and reporting business activities. The emphasis of Management Accounting Practices (MAP) is more on management than on accounting and it is the only source of useful and authentic information, which is not available in the financial accounting systems, for planning and control and for better utilisation of scarce resources.

New roles and new challenges are facing Management Accounting Practices (MAP). For successful business partnering MAP must constantly advance knowledge in diverse areas and effectively communicate it with their external and internal stakeholders all levels in their organisations. This is particularly important in a multicultural society. Accounting has evolved to its present status as a profession through meeting the needs of measuring economic and financial activity and communicating this information to the society. Society is now demanding environmental information from organisations. The Finance & Accounting (F&A) Managers must enhance their perception towards the environment, health and safety aspect of manufacturing businesses (factor loading was only 0.63), which can be achieved through implementing and monitoring appropriate management accounting practices in their respective organisations. Management Accounting Practices (MAP) must include communications that are needed about ecological information to interested parties in order to continue to receive professional support from society. Management Accounting Practices (MAP) have played a significant role in organisations even before 1900s. This is supported by researchers. Management

Accounting practitioners are seen as key information providers for internal business process, management planning and control, resource management and creation of value through effectively used materials, men, machine and money to provide value to the society ,by making available the products and services needed by the society ,at the best available quality and at the best prices.

6.9 Managerial Implications and Suggestions

This study offers several contributions to practitioners in the explored theoretical, industrial and geographical contexts. The primary aim of business organisations is to profitably satisfy their customers. Therefore, the managerial implications of this study were commenced by investigating the organisational performance outcome as the dependent variable and the contingency insights that contributed to the outcome as antecedents, mediating through management accounting practices. The overall image emerging from this study is based on the theoretical framework previously adopted in Australia and Malaysia and applied to the manufacturing context in India. This study addressed empirically the research objectives set in the Chapter 1 by testing for causal associations between these measures and their influence on organisational performance. The conclusions arrived from the results of this study and the suggestions made thereon have deep implications for both theory and practice which are discussed in this section.

1) Managers, both the Finance & Accounting (F&A) Managers and Non-Finance Managers are reminded of the importance of including both financial and non-financial measures in their organisational performance evaluation. In this connection , managers are also reminded that whether a higher importance should be attached to the financial or non-financial performance will depend on the contingency

dynamics (internal and external) of the company (e.g. organisational strategy, organisational structure, management accounting practices in use, nature and intensity of competitive environment) and the prevailing cultural environment. Attention is drawn to the fact that competitive environment dimension of environment, organisational strategy and management accounting practices usage have strong positive association with both financial and non-financial performance indicators.

Therefore Finance & Accounting (F&A) Managers should obtain the non-financial performance measures from other functional managers so as to measure their impact on organisational performance.

2) Concerning the importance of using management accounting practices, managers' attention is drawn to a number of issues. First, as mentioned earlier, the strategic dimension of management accounting practices usage is a principal factor of organisational performance. Better quality decisions taken on the reliable and valid information provided by the management accounting practices would eventually lead to better organisational performance.

   In this regard, the managers are reminded that the influence of management accounting practices with a strategic emphasis may differ between the financial and non-financial dimensions of organisational performance, and that the nature and degree of this influence are dependent on the contingency factors like the competitive environment, manufacturing technology, organisational strategy and organisational design. Among the environmental factors, Competitive Environment (CE) has a strong positive relationship (β = 0.55) with

Manufacturing Technology (MT) and Manufacturing Technology (MT) has a strong positive relationship (β =0.49) to the Organisational Strategy (OS). Therefore, in order to maximise their strategic decision making effectiveness and organisational performance, managers must ensure that necessary steps are taken to achieve a good fit between the relevant contingency factors. It is evident that the originating point of the entire discussion of the topic of research is the competitive environment which is an uncontrollable variable. Therefore the organisational strategy that a firm follows in accordance with the competitive environment would influence the association between organisational structure, management accounting practices and organisational performance. Furthermore, diverse organisational strategies would clearly imply different orientations in the adoption of best management accounting practices that would complement the organisational strategy followed by different organisations. The evidence from this study clearly supports the view that it is the status of competitive environment which would influence the degree of relationship between organisational strategy, organisational design and management accounting practices. Moreover, most of the previous studies were concerned with Miles & Snow's (1978) typology or Porter's (1980) differentiation strategy. While there is a dearth of studies which examined the cost leadership strategy and differentiation strategy simultaneously, this study attempts to fill that gap.

3) The business environment has drastically changed and is still evolving in a globalised environment. Thus, it is mission critical to ensure that appropriate Management Accounting Practices (MAP) are adopted in the organisations to enhance the quality of their decision making

process. This is important because effective MAP can help to better coordinate business activities as well as to provide useful information for managers at all levels to make right decisions.

If the Management Accounting Practices (MAP) do not properly match with the existing organisation's strategy and design, the managers might have been provided with inaccurate and invalid information, which consequently might threaten the firm's performance. Therefore the MAP must be capable of providing real time or at least right time information for the managers at all levels. This process will ultimately improve organisational performance.

4) Analytics is the extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and fact-based management to drive decisions and actions (Davenport & Harris, 2007).

   Management Accounting Practices (MAP) encompass all these elements and therefore should be developed as a business analytics tool to provide solutions to questions on optimal product/service pricing to maximise revenue growth and profits (financial), costs and profit margin predictions for existing and new products (financial), which elements of product/service offering can be cut to save money but without affecting customer satisfaction (non-financial) etc. As explored in this study, nearly 40% of respondent companies have already implemented advanced Enterprise Resource Planning (ERP) systems, SAP R3 in particular; efforts could be channelised towards data mining and data analytics to stay ahead of competition. Analytics are always shown as scores out of 100, a scale that everyone understands and allows the combination of unlike units of measurement. For example, customer complaints are an absolute number, customer retention is a ratio and customer satisfaction is usually a survey. Using software to convert these different measurement bases into a common index simplifies understanding and enables Key Performance Indicators (KPIs) to be combined into a higher analytic. Analytics should be weighted according to the importance, data integrity, and credibility.

Analytics-based reports are usually produced directly from a Business Intelligence (BI) data system and thus no longer require spreadsheets and power point slides as presentations tools. In this way, people can monitor performance on a daily basis. From the above discussions, it is very clear that MAP could be a very effective business analytics tool for managers to provide high-level alerts as well as detailed metrics.

5) Statutory cost audit reporting has the maximum weightage among all the management accounting practices, which indicates the strong perception (indicator weightage 0.87) of Finance & Accounting (F&A) Managers in the Indian manufacturing sector. This shows the inclination of the F&A managers towards conformance of regulatory requirements.

   Though it clearly shows the usefulness of information contained in the statutory cost audit report, it is also important that the Finance & Accounting (F&A) Managers also give equal weightage, not only for regulatory requirements and thus balance the organisational performance and conformance aspects for business sustainability. They have to focus on other areas as well, where the indicator weightages are low. For e.g. Budgetary control (indicator weightage of 0.57), Full Costing (indicator weightage of 0.64), Target Costing (0.69), Benchmarking (0.66) and

Shareholder Value Analysis (0.49) so as to enhance the organisational performance. It was also observed that Cost-Volume-Profit Analysis was considered as important by the F&A managers (indicator weightage of 0.85) which shows their inclination towards short term profitability.

As the business environment is fast changing, the long term outlook should not be ignored for survival and growth.

6) The natural resources are depleting and availability of commodities is shrinking globally, as a consequence, the input costs of manufacturing are likely to go up in future.

   In this back ground, new strategies to reduce costs (indicator weightage of 0.61) by eliminating wastes should be a priority and a major objective of Management Accounting Practices (MAP). Doing right at the first time can eliminate wastes and rework resulting in reducing the cost of quality, which would lead to better organisational performance.

7) Processes that manufacture products can create solid, liquid and gases those are subsequently released to the environment. These residues have the potential to degrade the environment. Like production processes, packaging is another source of degrading the environment. The environmental costs of processes that manufacture, market and deliver products and the post-purchase costs caused by the use and disposal of products are a great concern for the modern industrial organisations. Assignment of environmental costs to products by the relevant Management Accounting Practices (MAP) can produce valuable managerial information. Similarly the information collected regarding occupational accidents has been for e.g. frequency, types,

location, employee groups, length of sick-leaves etc. This information has been put in relation with e.g. number of employees, numbers of hours worked, number of sites etc. However, when seeing the employee health and safety issues and occupational accidents in the management accounting context, then the costs of these accidents, the value that the company loses in the course of occupational hazards, accidents and the value that is created though prevention initiatives becomes areas of interest.

As mentioned earlier, employee health, safety and environment perspective of the F&A Managers also should improve (indicator weightage of 0.63) to make organisations a better place to work and to protect the planet for the future generations.

8) To maintain the competitive position of the company and determine strategies aimed at improving future competitiveness, managers require information which indicates by whom, to what extent and why they are overpowered by competition.

   The answers to the foregoing questions are given by management accounting information systems, aimed at the creation of an information data base on competition, on the basis of which companies make strategic decisions and build competitive advantage. Intelligent and rational adjustment of a company's competitive position to the changes occurring in the market is provided by continuous reporting on competition. The necessity of a system, oriented toward generating information on competition is driven by the fact that competitive advantage is a relative position, which requires constant evaluation of competition which can be achieved through relevant Management Accounting Practices (MAP).

9) Achieving and sustaining competitive advantage in a dynamic and thoroughly Volatile, Uncertain, Complex and Ambiguous (VUCA) environment necessarily requires sophisticated management accounting knowledge and skills, as well as designing an effective management accounting information system to support the larger and more complex information requirements of managers at all levels. Constant and dramatic changes in contemporary competitive environment, as well as the need of integration with the global markets, require the knowledge of a widely focused Management Accounting Practices (MAP).

   The analysis of considerable experience of developed countries should widen and deepen the knowledge and help in comprehending the priorities of further changes to management accounting practices of companies in the developing countries. It is necessary to recognise favourable settings required for implementing new approaches of Management Accounting Practices (MAP). Today, there are new information requirements to manage changes and for continuous improvement so that the management could have authentic information support, in managing the company, particularly key strategic variables through Management Accounting Practices (MAP). The extent to which MAP is capable of helping the management in serving the above mentioned purposes fundamentally determines its significance, i.e. the usefulness of its information. It is of great implication that the Finance & Accounting (F&A) Managers in the Indian manufacturing sector should know this very well and seek the ways to add value to their organisations. In many successful companies in the world, as members of multifunctional teams and as reliable companions, the F&A Managers play a major role through the management accounting function.

10) When considering the adoption of latest Management Accounting Practices (MAP), it is very important to link it with modern challenges of information requirements of organisations.

    New environment brings new challenges and problems which predictably impose the need for serious reconsideration of past business philosophies of companies, based on stable and imaginable business conditions. Only by integrating the internal antecedents (organisational strategy and organisational design) and external antecedents (competitive environment and manufacturing technology), it is possible to provide quality information for strategic management of a modern company.Practical application of some new solutions faces difficulties in developed countries as well, because of high investment and operational costs but the benefits outweigh costs. It is particularly emphasised that, from the aspect of modern Management Accounting Practices (MAP), there is much left to be done in order to raise management accounting to the highest level of the modern strategic management.

Thus, a proper configuration of Organisational Design (OD), Organisational Strategy (OS) and Management Accounting Practices (MAP) is essential. If this association matches with the environmental factors, superior financial performance can be achieved by the organisation. Therefore, results in this study provide helpful insights and useful guidelines to organisations facing these challenges, especially those managers who are responsible in making sure that their companies move towards the right direction.

6.10 Conclusions to the Chapter

The overall picture emerging from this study is based on the theoretical framework developed from both advanced and developing countries, and applied to the Indian context and settings in the manufacturing environment. India is categorised as a rapidly developing economy with very strong home grown manufacturing business enterprises. Focusing on the alignment among Competitive Environment (CE), Manufacturing Technology (MT), Organisational Design (OD) and Organisational Strategy (OS) and Management Accounting Practices (MAP), this study addressed empirically the research objectives set in the first chapter by testing the causal relationships between these variables of interest and their impact on organisational performance. The conclusions reached from the results of this study have profound implications for both theory and practice as mentioned in the previous sections of this chapter.

Based on the findings from the pilot study as well as the main study, it is concluded that the research model adopted from other countries is generally applicable to Indian manufacturing sector. Globalisation has opened up the manufacturing sector in India to greater competition, and application of innovative manufacturing technology in India also has increased. Indian manufacturing enterprises have placed their emphasis on pursuing both cost leadership and differentiation strategies simultaneously to achieve competitive advantage. An increased use of many of the advanced Management Accounting Practices (MAP) is also very obvious. It has been found that both traditional and advanced management accounting practices are almost equally important in the perception of the Finance & Accounting (F&A) Managers in the manufacturing sector in India. These findings show that manufacturing companies in India rely on both the management accounting practices, in order to cope with the challenges in their environmental (external) as well as organisational (internal) factors. Therefore, it is concluded that the relationships between competitive environment, manufacturing technology, organisational strategy, organisational design, management accounting practices and organisational performance were found significant in the manufacturing sector in India.

6.11 Limitations to the Study

As with any research, the current study is also subject to a number of limitations. Although this study has significantly contributed to the understanding of how the alignment among the variables of interest to improve organisational performance, there are also some limitations that need to be highlighted as explained below:

1. Firstly, the sample represents the population of manufacturing sector in India. Any generalisation of this study's results to non-manufacturing organisations cannot be made without considerable caution. However, since the methodology adopted to conduct the study was on the basis of strong empirical evidences, the same can be considered suitable for any study related to MAP in different industry settings.
2. This study has not explored the importance of Balanced Score Card (BSC), which is an existing concept with regard to Management Accounting Practices (MAP) in developed countries. The concept is still in the nascent stage in countries like India and hence was not considered as the awareness of practicing managers in usage of this tool for MAP was found insufficient during the preliminary study.
3. This study has adopted scales developed by Baines & Kim Langfield-Smith (2003) and Tuan Mat (2010). Even though the study could successfully validate these scales in the Indian context on statistical guidelines, content-wise validation may face issues due to lack of

practical exposure by all the respondents to various approaches indicated in the scale for measurement.

4. Though in framing the theory related to this research, references adopted are based on studies conducted both in developed and developing economies, most of the references were from developing countries. The theoretical underpinnings behind such studies were suitably blended with limited studies conducted in the Indian context to finalise the theoretical framework for the study. This extension of conceptual facts from one context to another context can create certain element of ambiguity among respondents which can create a bias in the findings.

6.12 Future Scope of the Study

1. In this study the important uncontrollable variable was only Competitive Environment (CE); whereas the scope of other variables like the influence of national culture and values as contingency variables could be examined. To enrich the knowledge in this area, further research using a triangulation approach, using a mix of both qualitative and quantitative data is necessary, with a goal of exploring the moderating/mediating effect of these factors in the best use of management accounting practices orienting towards organisational performance.

2. The methodology adopted in this study was tested in the manufacturing sector of India. The same methodology can be extended to the services sector also to explore the use of management accounting practices leading to organisational performance.

3. Further on the methodological approach, inferences drawn from the current study could be cross-validated by a qualitative research among a group of selected finance & accounting managers of the same sector.
4. A more in-depth comparative study exploring the relationships between environmental and organisational constructs between the developed and developing countries' context could be conducted.
5. As a key direction for knowledge development in the area of management accounting practices research, differences among different manufacturing sectors can be explored across nations from the perspective of both developed and developing countries .
6. There exists a good opportunity to investigate and evaluate the cause and effect relationships through longitudinal studies.
7. Finally, another study which will overcome the limitations identified on completion of this study can be considered as a scope of future research.

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APPENDIX

I QUESTIONNAIRE

• Contents •

This questionnaire has five segments (Segment 1 to 5). Kindly mark the answers to all the questions. Your reply to the survey will be strictly confidential.

Segment -1

This segment seeks general information about your organisation.

Please tick the relevant box.

1. Industrial Sector Classification:

1	Electrical and Electronics
2	Engineering
3	Food Processing
4	Life Sciences and Health Care
5	Machinery and Equipment
6	Fertilizers and Chemicals
7	Petrochemical and Polymer
8	Rubber Products
9	Textiles and Apparel
10	Transport Equipments
11	Basic Metal Products
12	Wood based
13	Others (Please specify)

2. Type of company:

1	Domestic
2	Foreign
3	Others (Please specify)

3. Type of Product:

1	Consumer
2	Industrial
3	Others (Please specify)

4. Total Number of Employees:

1	< 250
2	251-500
3	501-1000
4	> 1000

5. Personal Data:

Qualification/s	
Designation	
Experience (in years) Within the company	
Experience (in years) Within the industry	
Country	
State	
City	

Please mention the ERP System Used, if any	

Segment -2

This section seeks for information on the Competitive Environment and the status of Manufacturing Technology in your company in the past five years.

5. Please indicate which you believe about the intensity of the competitive environment of your company by choosing your response on a scale of 1 to 5: **(**1-Strongly Disagree; 2- Disagree; 3- Neutral; 4- Agree; 5- Strongly agree**)**.

Please tick the relevant box.

	Competitive Environment (CE):	**1**	**2**	**3**	**4**	**5**
1	**Product pricing** decisions are important considerations in our company to be competitive.					
2	**New products development** is an important consideration in our company to be competitive.					
3	**Marketing/distribution Channels' Cost & Profitability** are important considerations in our company to be competitive.					
4	**Product/Product lines** are important considerations in our company to be competitive.					
5	**Competitors' action and its impact** are important considerations in our company to be competitive.					
6	**Markets/revenue share** is an important consideration in our company to be competitive.					

6. Please choose your response on a scale of 1 to 5: (1-Strongly Disagree; 2-Disagree; 3-Neutral; 4-Agree; 5- Strongly agree). Please tick the relevant box.

	Manufacturing Technology (MT):	**1**	**2**	**3**	**4**	**5**
1	**Flexible Manufacturing System (FMS) is important** in adapting changes in the products being manufactured in our company.					
2	**Computer Aided Manufacturing System (CAM)** is considered as an important factor in our company.					
3	**Computer Aided Design (CAD)** is considered as an important factor in our company.					
4	**Computer Aided Engineering (CAE)** is considered as an important factor in our company.					
5	**Computer Aided Process Planning (CAPP)** is considered as an important factor in our company.					
6	**Reliability Testing Machines (RTM)** are considered as important factors in our company.					
7	**Just-in-Time (JIT) practices** are considered as important factors in our company.					
8	**Direct Numerical Control (DNC)** is considered as an important factor in our company.					
9	**Computer Integrated Manufacturing (CIM)** is considered as an important factor in our company.					
10	**Numerical Control (NC) Systems** is considered as an important factor in our company.					

Segment -3

This section seeks information on Organisational Strategy and Organisational Design in your company in the past 5 years.

7. Please indicate the extent of usage of a range of organisational design practices below by choosing your response on a scale of 1 to 5: **(**1-Strongly Disagree; 2- Disagree; 3- Neutral; 4- Agree; 5- Strongly agree**)**. Please tick the relevant box.

	Organisational Design	**1**	**2**	**3**	**4**	**5**
1	The **multiple skills of the work force** are considered important in designing the structure of our company.					
2	**Worker training effectiveness** is an important consideration in designing the structure of our company.					
3	**Cross-functional teams** are considered important in designing the structure of our company.					
4	**Participative culture** is an important consideration in designing the structure of our company.					
5	**Management Training** is an important consideration in designing the structure of our company.					
6	**Flattening of formal organisational structure** is an important consideration in designing the structure of a manufacturing organisation.					
7	**Work-based teams are** considered important in designing the structure of our company.					
8	**Employee empowerment** is an important consideration in designing the structure of our company.					
9	**Manufacturing Excellence** is an important consideration in designing the structure of our company.					

8. Please indicate the extent of importance to which your business unit has its strategic emphasis for the following aspects by choosing your response on a scale of 1 to 5: **(**1-Strongly Disagree; 2- Disagree; 3- Neutral; 4- Agree; 5- Strongly agree**)**.

Please tick the relevant box.

	Organisational Strategy	**1**	**2**	**3**	**4**	**5**
1	**On-time delivery of products** is an important consideration in organisational strategy of our company.					
2	**Cost leadership** is an important consideration in organisational strategy of our company.					
3	**High quality products through TQM** are important consideration in organisational strategy of our company.					
4	**After-sales service & support** are important considerations in organisational strategy of our company.					
5	**Ideas to make changes in design and to introduce them quickly** are important considerations in organisational strategy of our company.					
6	**Customize products and services** to customer need are important considerations in organisational strategy of our company.					
7	Timely information on **Product availability** is important considerations in organisational strategy of our company.					
8	**Make rapid volume/product mix changes** is important considerations in organisational strategy of our company.					

Segment -4

This section seeks information on changes in management accounting practices in your company in the past 5 years.

9. Please indicate the extent of usage of Management Accounting Practices (MAP) by choosing your response on a scale of 1 to 5: (Never Use -1; Low Usage -2; Moderate Usage -3: High Usage-4; Very High Usage-5). Please tick the relevant box.

	Management Accounting Practices	**1**	**2**	**3**	**4**	**5**
1	Budgetary Control					
2	Full/Absorption Costing					
3	Cost-Volume-Profit Analysis					
4	Marginal/Variable Costing					
5	Standard Costing					
6	Quality Costing					
7	Target costing					
8	Activity Based Costing (ABC)					
9	Activity Based Management (ABM)					
10	Value chain analysis					
11	Product life cycle cost analysis					
12	Benchmarking					
13	Product profitability analysis					
14	Customer profitability analysis					
15	Shareholder value analysis / EVA					
16	Statutory Cost Audit Reporting					

Segment -5

This section seeks information on your company's performance in the past 5 years.

10. Please consider the following performance indicators and comment the importance of Management Accounting Practices (MAP) in improving the performance of your business unit on a scale of 1 to 5: (Not Important-1; Moderately Important-2; Neutral-3; Important-5; Extremely Important-6**).**

Please tick the relevant box.

	Organisational Performance	**1**	**2**	**3**	**4**	**5**
1	Operating income					
2	Sales growth					
3	Return on investment					
4	Cash flow from operations					
5	Revenue share					
6	Market development					
7	New product Revenue					
8	Research and development (R&D)					
9	Cost reduction programs/cost control					
10	Human Resources Training & Development					
11	Workplace relations					
12	Environment ,employee health and safety					

"End of questionnaire"

APPENDIX

II OUTPUT OF ANALYSIS USING AMOS.18

• Contents •

1. Confirmed Model of Management Accounting Practices (MAP)

Model Fit Summary
CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	34	168.910	86	.000	1.964
Saturated model	120	.000	0		
Independence model	15	1959.630	105	.000	18.663

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.041	.935	.909	.670
Saturated model	.000	1.000		
Independence model	.378	.350	.257	.306

Standardized RMR = .0495

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.914	.895	.956	.945	.955
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.819	.748	.782
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	82.910	49.834	123.780
Saturated model	.000	.000	.000
Independence model	1854.630	1714.609	2002.028

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.538	.264	.159	.394
Saturated model	.000	.000	.000	.000
Independence model	6.241	5.906	5.461	6.376

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.055	.043	.068	.226
Independence model	.237	.228	.246	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	236.910	240.561	364.498	398.498
Saturated model	240.000	252.886	690.309	810.309
Independence model	1989.630	1991.240	2045.918	2060.918

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	.754	.649	.885	.766
Saturated model	.764	.764	.764	.805
Independence model	6.336	5.890	6.806	6.342

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	202	222
Independence model	21	23

Scalar Estimates (Group number 1 - Default model)
Maximum Likelihood Estimates
Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
MAP2	<---	MAP - T	1.000				
MAP1	<---	MAP - T	.803	.092	8.768	***	par_1
MAP3	<---	MAP - T	1.312	.109	12.021	***	par_2
MAP4	<---	MAP - T	1.230	.106	11.621	***	par_3
MAP13	<---	MAP - T	1.128	.105	10.797	***	par_4
MAP8	<---	MAP - Adv	1.000				
MAP7	<---	MAP - Adv	.931	.080	11.591	***	par_5
MAP10	<---	MAP - Adv	1.113	.083	13.332	***	par_6
MAP12	<---	MAP - Adv	.970	.080	12.199	***	par_7
MAP15	<---	MAP - Adv	.909	.084	10.885	***	par_8
MAP6	<---	MAP - ABM	1.000				
MAP9	<---	MAP - ABM	1.135	.136	8.372	***	par_9
MAP11	<---	MAP - ABM	1.144	.137	8.354	***	par_10
MAP16	<---	MAP - Adv	.769	.094	8.216	***	par_11
MAP5	<---	MAP - Adv	.773	.080	9.606	***	par_12

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
MAP2	<---	MAP - T	.656
MAP1	<---	MAP - T	.563
MAP3	<---	MAP - T	.836
MAP4	<---	MAP - T	.794
MAP13	<---	MAP - T	.721
MAP8	<---	MAP - Adv	.710
MAP7	<---	MAP - Adv	.709
MAP10	<---	MAP - Adv	.827
MAP12	<---	MAP - Adv	.748
MAP15	<---	MAP - Adv	.664
MAP6	<---	MAP - ABM	.610
MAP9	<---	MAP - ABM	.689
MAP11	<---	MAP - ABM	.685
MAP16	<---	MAP - Adv	.499
MAP5	<---	MAP - Adv	.584

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
MAP - T	<-->	MAP - Adv	.217	.034	6.423	***	par_14
MAP - ABM	<-->	MAP - Adv	.311	.050	6.181	***	par_15
MAP - ABM	<-->	MAP - T	.134	.023	5.864	***	par_16
e14	<-->	e15	.345	.077	4.476	***	par_13

Correlations: (Group number 1 - Default model)

			Estimate
MAP - T	<-->	MAP - Adv	.561
MAP - ABM	<-->	MAP - Adv	.619
MAP - ABM	<-->	MAP - T	.588
e14	<-->	e15	.282

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
MAP - T	.176	.028	6.175	***	par_32
MAP - Adv	.851	.124	6.890	***	par_33
MAP - ABM	.295	.057	5.142	***	par_34
e1	.233	.021	11.120	***	par_35
e2	.244	.021	11.670	***	par_36
e3	.130	.016	8.120	***	par_37
e4	.156	.017	9.271	***	par_38
e5	.207	.020	10.495	***	par_39
e6	.840	.078	10.808	***	par_40
e7	.730	.068	10.816	***	par_41
e8	.487	.055	8.834	***	par_42
e9	.630	.061	10.359	***	par_43
e10	.894	.080	11.198	***	par_44
e11	.498	.049	10.062	***	par_45
e12	.421	.048	8.717	***	par_46
e13	.437	.050	8.792	***	par_47
e14	1.521	.127	11.948	***	par_48
e15	.983	.084	11.640	***	par_49

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
MAP5	.341
MAP16	.249
MAP11	.470
MAP9	.475
MAP6	.372
MAP15	.441
MAP12	.560
MAP10	.684
MAP7	.502
MAP8	.503
MAP13	.519
MAP4	.630
MAP3	.699
MAP1	.317
MAP2	.430

2. Confirmed Model of Organisational Performance (OP)

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	24	43.408	31	.069	1.400
Saturated model	55	.000	0		
Independence model	10	1330.337	45	.000	29.563

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.015	.974	.953	.549
Saturated model	.000	1.000		
Independence model	.220	.372	.233	.305

Standardized RMR = .0294

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.967	.953	.990	.986	.980
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.689	.666	.682
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	12.408	.000	33.904
Saturated model	.000	.000	.000
Independence model	1285.337	1170.019	1408.040

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.138	.040	.000	.108
Saturated model	.000	.000	.000	.000
Independence model	4.237	4.093	3.726	4.484

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.056	.000	.059	.827
Independence model	.302	.288	.316	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	91.408	93.150	181.470	205.470
Saturated model	110.000	113.993	316.391	371.391
Independence model	1350.337	1351.063	1387.863	1397.863

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	.291	.252	.360	.297
Saturated model	.350	.350	.350	.363
Independence model	4.300	3.933	4.691	4.303

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	326	378
Independence model	15	17

Scalar Estimates (Group number 1 - Default model)
Maximum Likelihood Estimates
Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
OP2	<---	F1	1.000				
OP1	<---	F1	.990	.072	13.671	***	par_1
OP3	<---	F1	1.065	.078	13.616	***	par_2
OP4	<---	F1	1.022	.079	12.994	***	par_3
OP7	<---	F1	.758	.078	9.690	***	par_4
OP9	<---	F1	.765	.083	9.187	***	par_5
OP5	<---	F2	1.000				
OP6	<---	F2	.822	.071	11.514	***	par_6
OP10	<---	F2	.735	.076	9.695	***	par_7
OP12	<---	F2	.856	.087	9.883	***	par_8

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
OP2	<---	F1	.747
OP1	<---	F1	.794
OP3	<---	F1	.790
OP4	<---	F1	.755
OP7	<---	F1	.569
OP9	<---	F1	.607
OP5	<---	F2	.790
OP6	<---	F2	.737
OP10	<---	F2	.686
OP12	<---	F2	.623

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
F1	<-->	F2	.252	.032	7.795	***	par_12
e9	<-->	e10	.109	.040	2.689	.007	par_9
e7	<-->	e9	-.106	.031	-3.456	***	par_10
e1	<-->	e6	-.057	.013	-4.347	***	par_11

Correlations: (Group number 1 - Default model)

			Estimate
F1	<-->	F2	.701
e9	<-->	e10	.225
e7	<-->	e9	-.304
e1	<-->	e6	-.287

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
F1	.224	.030	7.365	***	par_13
F2	.577	.079	7.346	***	par_14
e1	.178	.017	10.259	***	par_15
e2	.129	.013	9.910	***	par_16
e3	.153	.015	9.969	***	par_17
e4	.177	.017	10.507	***	par_18
e5	.269	.023	11.812	***	par_19
e6	.225	.020	11.382	***	par_20
e7	.348	.048	7.319	***	par_21
e8	.328	.035	9.241	***	par_22
e9	.351	.042	8.405	***	par_23
e10	.665	.063	10.581	***	par_24

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
OP12	.388
OP10	.471
OP6	.543
OP5	.624
OP9	.368
OP7	.323
OP4	.570
OP3	.625
OP1	.630
OP2	.558

3. Measurement Model of Competitive Environment (CE)

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	14	10.040	7	.186	1.434
Saturated model	21	.000	0		
Independence model	6	790.737	15	.000	52.716

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.011	.989	.968	.330
Saturated model	.000	1.000		
Independence model	.224	.430	.202	.307

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.987	.973	.996	.992	.996
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.467	.461	.465
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	3.040	.000	15.654
Saturated model	.000	.000	.000
Independence model	775.737	687.331	871.542

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.032	.010	.000	.050
Saturated model	.000	.000	.000	.000
Independence model	2.518	2.470	2.189	2.776

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.037	.000	.084	.612
Independence model	.406	.382	.430	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	38.040	38.678	90.576	104.576
Saturated model	42.000	42.958	120.804	141.804
Independence model	802.737	803.011	825.252	831.252

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	.121	.111	.161	.123
Saturated model	.134	.134	.134	.137
Independence model	2.556	2.275	2.862	2.557

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	440	578
Independence model	10	13

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
CE2	<---	CE	1.000				
CE1	<---	CE	.935	.074	12.700	***	
CE3	<---	CE	1.298	.109	11.945	***	
CE4	<---	CE	1.212	.105	11.596	***	
CE5	<---	CE	1.283	.123	10.475	***	
CE6	<---	CE	1.490	.158	9.435	***	

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
CE2	<---	CE	.695
CE1	<---	CE	.646
CE3	<---	CE	.801
CE4	<---	CE	.767
CE5	<---	CE	.682
CE6	<---	CE	.609

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
CE	.172	.026	6.508	***	
e1	.184	.018	10.273	***	
e2	.210	.020	10.736	***	
e3	.161	.019	8.345	***	
e4	.177	.019	9.213	***	
e5	.325	.031	10.399	***	
e6	.646	.059	11.016	***	

4. Measurement Model of Manufacturing Technology (MT)

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	19	43.063	17	.000	2.533
Saturated model	36	.000	0		
Independence model	8	1467.224	28	.000	52.401

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.019	.968	.933	.457
Saturated model	.000	1.000		
Independence model	.334	.317	.122	.246

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.971	.952	.982	.970	.982
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.607	.589	.596
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	26.063	10.437	49.361
Saturated model	.000	.000	.000
Independence model	1439.224	1317.463	1568.360

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.137	.083	.033	.157
Saturated model	.000	.000	.000	.000
Independence model	4.673	4.584	4.196	4.995

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.070	.044	.096	.096
Independence model	.405	.387	.422	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	81.063	82.184	152.362	171.362
Saturated model	72.000	74.125	207.093	243.093
Independence model	1483.224	1483.696	1513.244	1521.244

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	.258	.208	.332	.262
Saturated model	.229	.229	.229	.236
Independence model	4.724	4.336	5.135	4.725

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	202	244
Independence model	9	11

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
MT2	<---	MT	1.000				
MT1	<---	MT	.839	.070	11.968	***	
MT3	<---	MT	.972	.070	13.909	***	
MT4	<---	MT	1.031	.069	14.844	***	
MT5	<---	MT	1.018	.068	14.994	***	
MT6	<---	MT	.863	.069	12.443	***	
MT7	<---	MT	.787	.079	9.974	***	
MT9	<---	MT	.951	.068	14.056	***	

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
MT2	<---	MT	.782
MT1	<---	MT	.665
MT3	<---	MT	.759
MT4	<---	MT	.808
MT5	<---	MT	.811
MT6	<---	MT	.689
MT7	<---	MT	.568
MT9	<---	MT	.764

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
MT	.419	.053	7.961	***	
e1	.266	.026	10.158	***	
e2	.373	.033	11.356	***	
e3	.291	.028	10.393	***	
e4	.238	.025	9.561	***	
e5	.227	.024	9.514	***	
e6	.346	.031	11.158	***	
e7	.546	.046	11.774	***	
e9	.271	.026	10.434	***	

5. Measurement Model of Organisational Design (OD)

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	23	52.356	22	.000	2.380
Saturated model	45	.000	0		
Independence model	9	1623.746	36	.000	45.104

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.020	.967	.932	.473
Saturated model	.000	1.000		
Independence model	.323	.299	.124	.240

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.968	.947	.981	.969	.981
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.611	.591	.599
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	30.356	12.940	55.470
Saturated model	.000	.000	.000
Independence model	1587.746	1459.563	1723.299

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.167	.097	.041	.177
Saturated model	.000	.000	.000	.000
Independence model	5.171	5.057	4.648	5.488

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.066	.043	.090	.114
Independence model	.375	.359	.390	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	98.356	99.869	184.665	207.665
Saturated model	90.000	92.961	258.866	303.866
Independence model	1641.746	1642.338	1675.519	1684.519

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	.313	.258	.393	.318
Saturated model	.287	.287	.287	.296
Independence model	5.228	4.820	5.660	5.230

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	204	242
Independence model	10	12

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
OD2	<---	OD	1.000				
OD1	<---	OD	.825	.056	14.772	***	
OD3	<---	OD	.941	.078	12.092	***	
OD4	<---	OD	.982	.076	12.942	***	
OD5	<---	OD	1.002	.081	12.339	***	
OD6	<---	OD	.904	.079	11.502	***	
OD7	<---	OD	.891	.068	13.046	***	
OD8	<---	OD	.847	.071	11.995	***	
OD9	<---	OD	.549	.058	9.453	***	

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
OD2	<---	OD	.712
OD1	<---	OD	.663
OD3	<---	OD	.741
OD4	<---	OD	.793
OD5	<---	OD	.750
OD6	<---	OD	.707
OD7	<---	OD	.797
OD8	<---	OD	.728
OD9	<---	OD	.573

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
OD	.435	.063	6.941	***	
e1	.424	.039	10.876	***	
e2	.377	.034	11.232	***	
e3	.317	.031	10.306	***	
e4	.247	.026	9.607	***	
e5	.340	.032	10.455	***	
e6	.355	.033	10.609	***	
e7	.199	.020	9.707	***	
e8	.277	.026	10.716	***	
e9	.268	.023	11.687	***	

6. Measurement Model of Organisational Strategy (OS)

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	14	32.363	14	.004	2.312
Saturated model	28	.000	0		
Independence model	7	1188.771	21	.000	56.608

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.018	.971	.941	.485
Saturated model	.000	1.000		
Independence model	.345	.339	.118	.254

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.973	.959	.984	.976	.984
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.667	.649	.656
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	18.363	5.505	38.920
Saturated model	.000	.000	.000
Independence model	1167.771	1058.501	1284.425

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.103	.058	.018	.124
Saturated model	.000	.000	.000	.000
Independence model	3.786	3.719	3.371	4.091

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.065	.035	.094	.184
Independence model	.421	.401	.441	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	60.363	61.095	112.899	126.899
Saturated model	56.000	57.464	161.072	189.072
Independence model	1202.771	1203.137	1229.039	1236.039

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	.192	.151	.258	.195
Saturated model	.178	.178	.178	.183
Independence model	3.830	3.482	4.202	3.832

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	230	283
Independence model	9	11

Scalar Estimates (Group number 1 - Default model)
Maximum Likelihood Estimates
Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
OS1	<---	OS	1.591	.146	10.871	***	
OS3	<---	OS	1.419	.137	10.343	***	
OS4	<---	OS	1.741	.155	11.209	***	
OS5	<---	OS	1.705	.149	11.432	***	
OS6	<---	OS	1.841	.157	11.750	***	
OS7	<---	OS	1.678	.152	11.011	***	
OS8	<---	OS	1.000				

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
OS1	<---	OS	.751
OS3	<---	OS	.702
OS4	<---	OS	.783
OS5	<---	OS	.806
OS6	<---	OS	.840
OS7	<---	OS	.764
OS8	<---	OS	.620

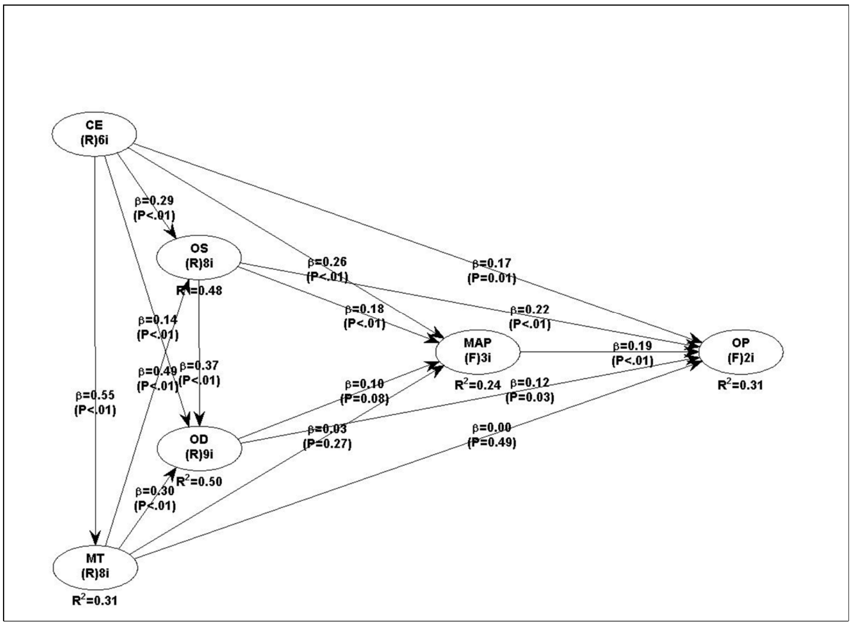
Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
OS	.159	.027	5.874	***	
e2	.311	.029	10.910	***	
e3	.329	.029	11.315	***	
e4	.302	.029	10.530	***	
e5	.249	.024	10.192	***	
e6	.225	.024	9.510	***	
e7	.318	.030	10.767	***	
e8	.254	.022	11.751	***	

APPENDIX

III OUTPUT OF ANALYSIS USING warp PLS 4.0

Screen shot of estimated full model



Model fit and quality indices

Average path coefficient (APC)=0.229, P<0.001
Average R-squared (ARS)=0.367, P<0.001
Average adjusted R-squared (AARS)=0.361, P<0.001
Average block VIF (AVIF)=1.820, acceptable if <= 5, ideally <= 3.3
Average full collinearity VIF (AFVIF)=1.830, acceptable if <= 5, ideally <= 3.3
Tenenhaus GoF (GoF)=0.485, small >= 0.1, medium >= 0.25, large >= 0.36
Sympson's paradox ratio (SPR)=1.000, acceptable if >= 0.7, ideally = 1

General model elements

Outer model analysis algorithm: PLS regression
Default inner model analysis algorithm: Warp2
Multiple inner model analysis algorithms used? No
Resampling method used in the analysis: Bootstrapping
Number of data resamples used: 100
Number of cases (rows) in model data: 315
Number of latent variables in model: 6
Number of indicators used in model: 36
Number of iterations to obtain estimates: 5

****

* Combined loadings and cross-loadings *

****

	CE	MT	OD	MAP	OP	OS	Type	SE	P value
CE1	0.760	0.025	-0.047	0.012	0.067	-0.093	Reflect	0.047	<0.001
CE2	0.788	-0.018	-0.069	0.034	0.050	-0.006	Reflect	0.048	<0.001
CE3	0.813	-0.001	0.077	0.000	-0.028	0.027	Reflect	0.047	<0.001
CE4	0.792	-0.067	0.020	0.029	-0.006	0.019	Reflect	0.044	<0.001
CE5	0.756	0.047	-0.010	-0.062	-0.039	-0.053	Reflect	0.053	<0.001
CE6	0.705	0.019	0.028	-0.018	-0.048	0.111	Reflect	0.049	<0.001
MT1	0.175	0.709	-0.022	0.054	0.052	-0.056	Reflect	0.053	<0.001
MT2	-0.003	0.804	-0.041	0.017	0.013	-0.117	Reflect	0.048	<0.001
MT3	-0.070	0.812	-0.108	0.012	-0.009	0.015	Reflect	0.045	<0.001
MT4	-0.147	0.860	-0.036	-0.057	0.013	0.013	Reflect	0.042	<0.001
MT5	-0.149	0.833	-0.021	-0.012	0.027	0.004	Reflect	0.045	<0.001
MT6	0.037	0.751	0.113	0.023	0.063	-0.093	Reflect	0.052	<0.001
MT7	0.256	0.655	0.171	-0.030	-0.010	0.173	Reflect	0.048	<0.001
MT9	-0.013	0.790	-0.016	0.001	-0.144	0.080	Reflect	0.051	<0.001
OD1	-0.061	0.060	0.739	-0.015	-0.001	0.008	Reflect	0.048	<0.001
OD2	-0.118	0.152	0.778	0.014	0.007	-0.029	Reflect	0.041	<0.001
OD3	-0.008	-0.079	0.781	0.169	-0.130	-0.033	Reflect	0.042	<0.001
OD4	-0.043	-0.001	0.813	0.071	-0.068	-0.134	Reflect	0.047	<0.001
OD5	-0.011	-0.004	0.795	-0.107	0.102	-0.012	Reflect	0.046	<0.001
OD6	-0.040	0.117	0.769	-0.059	0.160	-0.150	Reflect	0.053	<0.001
OD7	0.043	-0.095	0.814	-0.018	-0.015	-0.026	Reflect	0.052	<0.001
OD8	0.040	-0.136	0.766	-0.055	-0.039	0.264	Reflect	0.049	<0.001
OD9	0.242	-0.009	0.632	-0.004	-0.017	0.151	Reflect	0.046	<0.001
OS1	0.005	0.034	0.047	-0.034	0.057	0.811	Reflect	0.047	<0.001
OS2	0.250	-0.179	0.149	-0.017	-0.129	0.666	Reflect	0.043	<0.001
OS3	0.004	0.099	0.040	0.002	-0.063	0.770	Reflect	0.052	<0.001
OS4	-0.024	-0.081	0.015	-0.039	0.120	0.807	Reflect	0.043	<0.001
OS5	-0.157	0.097	0.041	0.045	-0.044	0.807	Reflect	0.045	<0.001
OS6	-0.214	-0.005	-0.021	0.038	0.052	0.841	Reflect	0.039	<0.001
OS7	0.008	0.036	-0.127	-0.012	0.029	0.780	Reflect	0.044	<0.001
OS8	0.210	-0.029	-0.139	0.013	-0.057	0.697	Reflect	0.048	<0.001
lv_MAP-	0.115	-0.010	-0.083	0.815	0.062	0.010	Formati	0.052	<0.001
lv_MAP-	-0.049	0.054	-0.005	0.825	0.147	-0.083	Formati	0.054	<0.001
lv_MAP-	-0.067	-0.046	0.090	0.794	-0.216	0.075	Formati	0.055	<0.001
lv_CP-F	0.103	-0.027	-0.032	0.046	0.898	0.045	Formati	0.039	<0.001
lv_OP-N	-0.103	0.027	0.032	-0.046	0.898	-0.045	Formati	0.039	<0.001

Notes: Loadings are unrotated and cross-loadings are oblique-rotated. SEs and P values are for loadings. P values < 0.05 are desirable for reflective indicators.

****
* Latent variable coefficients *
****

R-squared coefficients

CE	MT	OD	OS	MAP	OP
	0.306	0.500	0.235	0.314	0.479

Adjusted R-squared coefficients

CE	MT	OD	OS	MAP	OP
	0.304	0.495	0.226	0.303	0.475

Composite reliability coefficients

CE	MT	OD	OS	MAP	OP
0.897	0.925	0.928	0.852	0.893	0.923

Cronbach's alpha coefficients

0.862	0.906	0.912	0.740	0.760	0.904

Average variances extracted

0.593	0.607	0.588	0.658	0.806	0.600

Full collinearity VIFs

CE	MT	OD	OS	MAP	OP
1.758	2.077	2.040	1.353	1.447	2.304

****
* Correlations among latent variables and errors *
****

Correlations among l.vs. with sq. rts. of AVEs

	CE	MT	OD	MAP	OP	OS
CE	**0.770**	0.551	0.514	0.423	0.436	0.558
MT	0.551	**0.779**	0.622	0.343	0.382	0.647
OD	0.514	0.622	**0.767**	0.369	0.428	0.646
MAP	0.423	0.343	0.369	**0.811**	0.401	0.411
OP	0.436	0.382	0.428	0.401	**0.898**	0.475
OS	0.558	0.647	0.646	0.411	0.475	**0.774**

Note: Square roots of average variances extracted (AVEs) shown on diagonal.

P values for correlations

	CE	MT	OD	MAP	OP	OS
CE	1.000	<0.001	<0.001	<0.001	<0.001	<0.001
MT	<0.001	1.000	<0.001	<0.001	<0.001	<0.001
OD	<0.001	<0.001	1.000	<0.001	<0.001	<0.001
MAP	<0.001	<0.001	<0.001	1.000	<0.001	<0.001
OP	<0.001	<0.001	<0.001	<0.001	1.000	<0.001
OS	<0.001	<0.001	<0.001	<0.001	<0.001	1.000

****
* Indicator weights *
****

	CE	MT	OD	MAP	OP	OS	Type	SE	P value	VIF	WLS	ES
CE1	0.214	0.000	0.000	0.000	0.000	0.000	Reflect	0.014	<0.001	1.897	1	0.162
CE2	0.222	0.000	0.000	0.000	0.000	0.000	Reflect	0.013	<0.001	2.069	1	0.175
CE3	0.229	0.000	0.000	0.000	0.000	0.000	Reflect	0.014	<0.001	2.075	1	0.186
CE4	0.223	0.000	0.000	0.000	0.000	0.000	Reflect	0.013	<0.001	1.946	1	0.177
CE5	0.213	0.000	0.000	0.000	0.000	0.000	Reflect	0.015	<0.001	1.767	1	0.161
CE6	0.198	0.000	0.000	0.000	0.000	0.000	Reflect	0.016	<0.001	1.598	1	0.140
MT1	0.000	0.146	0.000	0.000	0.000	0.000	Reflect	0.009	<0.001	1.750	1	0.103
MT2	0.000	0.165	0.000	0.000	0.000	0.000	Reflect	0.011	<0.001	2.236	1	0.133
MT3	0.000	0.167	0.000	0.000	0.000	0.000	Reflect	0.011	<0.001	3.026	1	0.136
MT4	0.000	0.177	0.000	0.000	0.000	0.000	Reflect	0.011	<0.001	3.935	1	0.152
MT5	0.000	0.171	0.000	0.000	0.000	0.000	Reflect	0.012	<0.001	2.613	1	0.143
MT6	0.000	0.155	0.000	0.000	0.000	0.000	Reflect	0.011	<0.001	1.947	1	0.116
MT7	0.000	0.135	0.000	0.000	0.000	0.000	Reflect	0.013	<0.001	1.623	1	0.088
MT9	0.000	0.163	0.000	0.000	0.000	0.000	Reflect	0.012	<0.001	2.145	1	0.129
OD1	0.000	0.000	0.140	0.000	0.000	0.000	Reflect	0.011	<0.001	2.223	1	0.103
OD2	0.000	0.000	0.147	0.000	0.000	0.000	Reflect	0.011	<0.001	2.580	1	0.114
OD3	0.000	0.000	0.148	0.000	0.000	0.000	Reflect	0.010	<0.001	2.347	1	0.115
OD4	0.000	0.000	0.154	0.000	0.000	0.000	Reflect	0.009	<0.001	2.564	1	0.125
OD5	0.000	0.000	0.150	0.000	0.000	0.000	Reflect	0.010	<0.001	2.355	1	0.119
OD6	0.000	0.000	0.145	0.000	0.000	0.000	Reflect	0.010	<0.001	2.292	1	0.112
OD7	0.000	0.000	0.154	0.000	0.000	0.000	Reflect	0.010	<0.001	2.501	1	0.125
OD8	0.000	0.000	0.145	0.000	0.000	0.000	Reflect	0.010	<0.001	2.083	1	0.111
OD9	0.000	0.000	0.119	0.000	0.000	0.000	Reflect	0.012	<0.001	1.586	1	0.076
OS1	0.000	0.000	0.000	0.000	0.000	0.169	Reflect	0.009	<0.001	2.285	1	0.137
OS2	0.000	0.000	0.000	0.000	0.000	0.139	Reflect	0.011	<0.001	1.685	1	0.093
OS3	0.000	0.000	0.000	0.000	0.000	0.160	Reflect	0.010	<0.001	2.015	1	0.124
OS4	0.000	0.000	0.000	0.000	0.000	0.168	Reflect	0.010	<0.001	2.278	1	0.136
OS5	0.000	0.000	0.000	0.000	0.000	0.168	Reflect	0.010	<0.001	2.475	1	0.136
OS6	0.000	0.000	0.000	0.000	0.000	0.175	Reflect	0.010	<0.001	2.712	1	0.147
OS7	0.000	0.000	0.000	0.000	0.000	0.162	Reflect	0.009	<0.001	2.154	1	0.127
OS8	0.000	0.000	0.000	0.000	0.000	0.145	Reflect	0.013	<0.001	1.632	1	0.101
lv_MAP-	0.000	0.000	0.000	0.413	0.000	0.000	Formati	0.027	<0.001	1.487	1	0.336
lv_MAP-	0.000	0.000	0.000	0.417	0.000	0.000	Formati	0.026	<0.001	1.520	1	0.344
lv_MAP-	0.000	0.000	0.000	0.402	0.000	0.000	Formati	0.029	<0.001	1.417	1	0.320
lv_CP-F	0.000	0.000	0.000	0.000	0.557	0.000	Formati	0.025	<0.001	1.600	1	0.500
lv_OP-N	0.000	0.000	0.000	0.000	0.557	0.000	Formati	0.025	<0.001	1.600	1	0.500

Notes: P values < 0.05 and VIFs < 2.5 are desirable for formative indicators; VIF = indicator variance inflation factor; WLS = indicator weight-loading sign (-1 = Simpson's paradox in l.v.); ES = indicator effect size.

APPENDIX

IV PROFILE OF THE EXPERT PANEL IN THE PRELIMINARY STUDY& PRE-TEST

1	Associate Vice - President (Finance)	Godrej & Boyce Mfg Co.Ltd
2	Head - Business Planning (Commercial Vehicles BU)	Tata Motors Ltd
3	Former Senior Manager (Finance)	Apollo Tyres Ltd
4	DGM (Finance)	BSES Kerala Power Ltd. (Reliance Energy Ltd)
5	GM (Finance)	Binani Zinc Ltd
6	Vice-President (Finance)	AVT Natural Products Ltd
7	GM (Finance)	GTN Textiles Ltd
8	Company Secretary	Patspin India Ltd
9	Senior Manager (Finance)	Cochin Shipyard Ltd
10	Company Secretary	Travancore Cochin Chemicals Ltd
11	Associate Professor (Finance & Control)	Indian Institute of Management-Bangalore
12	Director	Naipunya Institute of Management
13	Director	Karunya University School of Management
14	BBS Associates	Practicing Cost Accountants
15	SAP FICO Consultants	CCS Technologies Pvt. Ltd
16	SAP FICO Consultant	CLSS Pvt.Ltd

APPENDIX

V OUTPUT OF PILOT TEST ANALYSIS USING warp PLS 4.0

Model fit and quality indices

Average path coefficient (APC)=0.275, P<0.001
Average R-squared (ARS)=0.392, P=0.010
Average adjusted R-squared (AARS)=0.365, P=0.040
Average block VIF (AVIF)=1.948, acceptable if <= 5, ideally <= 3.3
Average full collinearity VIF (AFVIF)=2.104, acceptable if <= 5, ideally <= 3.3
TenenhausGoF (GoF)=0.471, small >= 0.1, medium >= 0.25, large >= 0.36
Sympson's paradox ratio (SPR)=0.923, acceptable if >= 0.7, ideally = 1

General model elements

Outer model analysis algorithm: PLS regression
Default inner model analysis algorithm: Warp2
Multiple inner model analysis algorithms used? No
Resampling method used in the analysis: Bootstrapping
Number of data resamples used: 100
Number of cases (rows) in model data: 62
Number of latent variables in model: 6
Number of indicators used in model: 61
Number of iterations to obtain estimates: 6

****
* Latent variable coefficients *
****

R-squared coefficients

op	ce	mt	od	os	map
0.389		0.271	0.597	0.546	0.155

Adjusted R-squared coefficients

op	ce	mt	od	os	map
0.335		0.259	0.577	0.530	0.127

Composite reliability coefficients

op	ce	mt	od	os	map
0.906	0.885	0.946	0.947	0.922	0.930

Cronbach's alpha coefficients

op	ce	mt	od	os	map
0.885	0.842	0.936	0.937	0.903	0.917

Average variances extracted

op	ce	mt	od	os	map
0.456	0.568	0.637	0.668	0.598	0.464

Full collinearity VIFs

op	ce	mt	od	os	map
1.592	1.763	2.369	2.504	2.991	1.404

APPENDIX

VI DESCRIPTIVE STATISTICS

1. Descriptive Statistics of Competitive Environment

Indicators used to measure CE		N	Mean	Std. Deviation
Product Pricing	CE1	315	4.43	0.60
New Product Development	CE2	315	4.41	0.60
Marketing Channel Profitability	CE3	315	4.19	0.67
Product Lines	CE4	315	4.37	0.66
Competitors' Action	CE5	315	3.96	0.78
Market Share	CE6	315	3.79	1.02
	Valid N (listwise)	315		

2. Descriptive Statistics of Manufacturing Technology

		N	Mean	Std. Deviation
Indicators used to measure	MT1	315	3.78	0.82
Flexible Manufacturing System	MT2	315	3.72	0.83
Computer Aided Manufacturing	MT3	315	3.42	0.83
Computer Aided Design	MT4	315	3.45	0.83
Computer Aided Engineering	MT5	315	3.64	0.81
Computer Aided Process Planning	MT6	315	3.78	0.81
Reliability Testing Machines	MT7	315	3.89	0.90
Just-in-Time Practices	MT8	315	3.62	0.85
Direct Numerical Control	MT9	315	3.57	0.81
Computer Integrated Manufacturing	MT10	315	3.44	0.79
Numerical Control Systems	Valid N (listwise)	315		

3. Descriptive Statistics of Organisational Design

Indicators used to measure		N	Mean	Std. Deviation
Multiple skills of workforce	OD1	315	3.76	0.82
Worker training efffectiveness	OD2	315	3.53	0.93
Cross-functional teams	OD3	315	3.89	0.84
Participative culture	OD4	315	3.86	0.82
Management Training	OD5	315	3.86	0.88
Flat organisational structure	OD6	315	3.67	0.84
Work-based teams	OD7	315	3.88	0.74
Employee empowerment	OD8	315	3.91	0.77
Manufacturing excellence	OD9	315	4.20	0.63
	Valid N (listwise)	315		

4. Descriptive Statistics of Organisational Strategy

Indicators used to measure		N	Mean	Std. Deviation
On-time delivery of products	OS1	315	3.78	0.85
Cost Leadership	OS2	315	4.23	0.67
High quality products through TQM	OS3	315	3.95	0.81
After-sales service & support	OS4	315	3.73	0.89
Quick changes in design and intrduction	OS5	315	3.73	0.84
Customise products and services	OS6	315	3.74	0.87
Product availability	OS7	315	3.79	0.88
Make rapid product mix changes	OS8	315	4.14	0.64
	Valid N (listwise)	315		

5. Descriptive Statistics of Management Accounting Practices

Indicators used to measure		N	Mean	Std. Deviation
Budgetary Control	MAP1	315	4.58	0.60
Full/Absorption Costing	MAP2	315	4.32	0.64
Cost-Volume-Profit Analysis	MAP3	315	4.38	0.66
Marginal/Variable Costing	MAP4	315	4.34	0.65
Standard Costing	MAP5	315	3.92	1.22
Quality Costing	MAP6	315	3.70	0.89
Target costing	MAP7	315	3.59	1.21
Activity Based Costing (ABC)	MAP8	315	3.52	1.30
Activity Based Management (ABM)	MAP9	315	3.71	0.90
Value chain analysis	MAP10	315	3.17	1.24
Product life cycle cost analysis	MAP11	315	3.67	0.91
Benchmarking	MAP12	315	3.64	1.20
Product profitability analysis	MAP13	315	4.44	0.66
Customer profitability analysis	MAP14	315	3.92	1.16
Shareholder value analysis / EVA	MAP15	315	3.61	1.27
Statutory Cost Audit Reporting	MAP16	315	3.73	1.42
	Valid N (listwise)	315		

6. Descriptive Statistics of Organisational Performance

Indicators used to measure		N	Mean	Std. Deviation
Operating income	OP1	315	4.37	0.59
Sales growth	OP2	315	4.23	0.64
Return on investment	OP3	315	4.34	0.64
Cash flow from operations	OP4	315	4.35	0.64
Revenue share	OP5	315	3.82	0.96
Market development	OP6	315	3.83	0.85
New product Revenue	OP7	315	4.17	0.63
Research and development (R&D)	OP8	315	3.79	1.02
Cost reduction programs/cost control	OP9	315	4.46	0.60
Human Resources Training & Development	OP10	315	3.89	0.81
Workplace relations	OP11	315	3.84	0.85
Environment ,employee health and safety	OP12	315	3.81	1.04
	Valid N (listwise)	315		