MANAGEMENT CONTROL PRACTICES IN POWER SECTOR: A STUDY OF POWER DISTRIBUTION UTILITIES IN INDIA

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in
MANAGEMENT

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List of Abbreviations Used

S. No.	Abbreviation	Expended Form
1	MCS	Management Control Systems
2	SEB	State Electricity Board
3	GERC	Gujarat Electricity Regulatory Commission
4	ERC	Electricity Regulatory Commission
5	MGVCL	Madhya Gujarat Vij Company Limited
6	GEB	Gujarat Electricity Board
7	AT&C Looses	Aggregate Technical & Commercial Looses
8	T&D Losses	Transmission & Distribution losses
9	CERA	Central Electricity Regulatory Authority
10	DISCOM	Distribution Company
11	DTR	Distribution Transformer
12	BCS	Basic Control Systems
13	HR	Human Resource
14	PMS	Performance Management System
15	DMS	Decision Making System
13	GOI	Government of India
14	CEA	Central Electricity Authority
15	APDRP	Accelerated Power Development and Reforms Programme
16	R-APDRP	Restructured-Accelerated Power Development and Reforms Programme
17	MW	Megawatt
18	kWH	Kilowatt
19	GDP	Gross Domestic Product
20	CPSU	Central Public Sector Undertakings
21	CERC	Central Electricity Regulatory Commission
22	SERC	State Electricity Regulatory Commission
23	GERC	Gujarat Electricity Regulatory Commission

CHAPTER I

INTRODUCTION

This introductory chapter aims to provide a brief overview of the thesis. It begins with an introduction to the topic followed by research gap, research questions, research objectives and significance of the study. A separate section introduces each chapter to facilitate an overview of the thesis, and a summary concludes this chapter.

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1.1 Background of the Problem

Electricity energy, an important form of energy, is very basic human need. It is a very critical infrastructure input for the socio-economic development of any country. Consumption of electricity power is recognized the world over as most important index of the extent of advancement of country and standard of living of people. India ranks as the sixth largest energy consumer in the world. The power sector in India has registered significant progress since the process of planned development began in 1950. In spite of substantial development since Independence, the energy shortage of about 12% and peak shortage of about 20% continue to plague the economy. Most of the population either remains without electricity connection or receives irregular and unreliable service. India's power sector incurs high system losses throughout the country's transmission and distribution (T&D) networks. The T&D losses range 40-50% which are very high. Factors that contribute to excessive energy losses are a combination of aging infrastructure, theft, bureaucracy, sloth, accumulated debt,

political brinkmanship, corruption and other technical and non-technical issues. The State Electricity Boards (SEBs) were the worst performing power utilities, and as a result they became financially unviable over a period. The losses reached a shocking level of Rs.26,000 crores during 2001-00, which was equivalent to about 1.5% of GDP. Thus, the deteriorated financial health of State Electricity Boards (SEBs) became a matter of serious concern. As SEBs became a drag on the government's finances, there were serious doubts about the ability of the States to contribute towards bridging the gap between supply and demand in India. A message from the Union Power Minister to stakeholders summarises the woes of power sector as follows:

".... We have reached a stage where the State Electricity Boards (SEBs) are depleted of resources and are in no position to pay for the power they buy from the generating stations. The total outstanding dues of the SEBs have crossed Rs. 27,000 crore. This, in turn, has affected the liquidity of the Central Public Sector Undertakings (CPSUs) for investment purposes for future projects…"

(*Source: http://www.energywatch.org.in)*

The Ahluwalia Committee (2001) also reported that the cascading effect of the problems faced by power distribution companies (discoms) will not be limited to the power sector. Power distribution being the final and most crucial link in the electricity value chain, has a direct impact on other sectors' commercial viability, and ultimately on the consumers who pay for power services. The need for distribution reforms was also emphasized by the Prime Minister, Manmohan Singh (2006), he states:

"...high transmission and distribution losses and theft of electricity are unacceptable. These need to be tackled on a war-footing. Reforms in the distribution, which were vital for commercial viability and sustainability of the power sector, had not received adequate attention in the past..."

There was felt an urgent need to reduce transmission and distribution losses and to ensure availability of reliable power supply to the consumers. Reforms in the power sector were initiated in a phased manner. Distribution Reforms was identified as the key area to bring about the efficiency and improve the financial health of the power sector. Subsequently, Ministry of Power took various steps to undertake distribution reforms in a time bound manner. The researcher observes that there are three most important changes have occurred in power sector breifly explained as follows:

1.1.1 Legal and Regulatory Reform

The Electricity Act of 2003 replaced old legislations, namely, Indian Electricity Act, 1910, the Electricity (Supply) Act, 1948 and the Electricity Regulatory Commissions Act, 1998. The new Act outlines the important objectives as:-

> *"to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies, constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal."*

Electricity Act 2003 provided for mandatory establishment of State Electricity Regulatory Commission (SERCs) and required the unbundling of generation, transmission, and distribution (Singh 2006). Section 55 of Electricity Act 2003 provides for setting up independent regulatory commissions separate from the government that can regulate the power sector and promote transparency in the regulatory regime. Section 82 of the Act states that 'Every State Government shall, within six months from the appointed date, by notification, constitute for the purpose of this Act, a Commission for the State to be known as the (name of the state) Electricity Regulatory Commission.' State Electricity Regulatory Commission will supervise overall development of power

sector in State and set key quantitative performance indicators like reduction in T&D losses, 100% metered supply, fixation of tariff and asks Distribution Company for providing data related to power supply position, cost of supply, financial, sales and revenue etc.

1.1.2 Market Structure

As a conception, the power utility has evolved as 'a social policy and basic service' to be provided by the State. Natural monopoly was considered desirable. The policy of liberalization is adopted in the industrialized world in the context of well-functioning electricity systems providing reliable power to all on a financially viable basis' (Dubash 2002; William and Dubash 2004). More than 70 countries have introduced electricity reforms (Bacon and Besant-Jones 2001). In India, the need for liberalization of the power sector was felt due to the scarcity of financial resources with Central and State Governments. The Electricity Act 2003 introduces a new concept called "Open Access." The open access is defined as the *'non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Appropriate Commission.'* Under the open access system, power generators are free to sell power to any consumer of their choice, subject to certain conditions. Thus, the Open Access System opens up new business areas of power trading, parallel distribution and franchise arrangements which ultimately signals an increase in competition in the electricity market. As consumers will be able to source electricity from a supplier of their choice, there is likely to be consumer migrations from SEBs. The SEBs would feel a lot of competitive pressure to improve their services and reduce tariff rates. The Act encourages *Captive Power* plants to add to the development of competition in power market because of the scale of economies. Captive generation by co-operatives and associations would be significant in due to the presence of industrial clusters. Thus, reform strategies aim to set up competition with the pressure to get things right. Many electricity market optimists signals that the

electricity sector in India is moving from the discredited state-led phase to a shining market structure competition.

1.1.3 Reorganization of SEBs

In the early 1990s, all the State Electricity Boards (SEBs) were operating as integrated utilities. All the SEBS were running under huge losses. Policy makers perceviced that unbundling the SEBs, i.e., separating the generation, transmission, and distribution into different entities could improve efficiency levels. Electricity Act 2003 mandated unbundling of generation, transmission, and distribution. As legal entities, the unbundled erstwhile SEBs are companies owned by Government and not privatized except in Orissa and Delhi.

Thus, the power sector in India has also undergone significant changes due to the implementation of many regulatory policies. Unfortunately, reforms have not produced the desired results. High distribution losses remain the key factors for the weak financial position of power distribution utilities. Various articles and news about power sector indicate failed attempts to control high T& D losses, power theft, un-metered supply of power, improper billing, weak system of bill collection, and poor handling of customer grievances. As a result, the operational and financial performance of State Electricity Boards (SEBs) continues to be the most problematic area. CRISIL's opinion (2011) believes that Discoms' distress can affect entire power value chain, including financiers. The researcher observes that the distribution system of the power value chain is most challenging area. An efficient and effective management of power distribution utilities is the need of the hour. It would lead to considerable gains to power distribution companies (Discoms) and in turn to generation and transmission companies as they are all, in a sense, integrated and impact is iterative. The researcher strongly believes that the objectives would be achievable with effective and efficient management of resources in power distribution companies. It is in this context this study becomes relevant in terms

of providing a roadmap for managing the power distribution in the framework of "*Accountability, Transparency, a reliable and effective Management Control System and Corporate Governance*."

1.2 Relevance of Study

As mentioned above, the distribution component of power supply chain is most critical. Post-reform, the power distribution utilities are to be run as commercial enterprises making it market based. The new environment coupled with internal challenges of restructuring indeed pose a demand for new approaches to managing the utility. It is known that when a company undergoes major changes in its organisational setting and faced with changes in external environment, the management of the company reviews company's goal and strategy to cope with external as well as internal changes. Management then also needs an effective management control system. In the changed context of power sector in India, there is every need to review the existing control systems in implementing the strategies and plans. Further, the distribution system in the power sector is spread over as everyone needs electricity. For highly decentralized operations of any company, an effective and efficient MCS is a must (Anthony & Govindrajan, 2009). According to Fauzi & Hussain (2011, p64)

"...when a company faces increasing and tight competition, management frequently reviews a company's goal and strategy to cope with external as well as internal changes. Management then also needs an effective management control system. The objective of designing management control system in such a situation is to help the company achieve the company's goal. There is a continuum of management control system design ranging from traditional to the sophisticated control system. As a result, a higher level of the management control system is expected to improve organizational performance through its managers…"

1.3 Research Gap

Firstly, the study fills the research gap by first ever study in the context of the power utility. The power business has unique features. Being utility, it does not operate on 100% commercial philosophy. The very nature of business of power and recent changes due to reforms throw challenges for efficient and effective configuration of tools and techniques in Management Control Systems (MCS). Chenhall (2003) suggest the design of the management control system is affected by various factors such as environment, technology, organizational structure, organizational size and organizational strategy. The reseracher finds that all these factors relevant in context of this study; hence the study should contribute significantly not only to the development of literature but also for practicing managers who are searching for solutions to improving performance in their companies. Thus, the study particularly contributes towards literature for bringing in substantial improvement in operational and financial performance of distribution segment of power supply chain.

1.4 Statement of Problem

From the literature, we find that there are no studies in the context of the power utility. Quite a few studies have focused on policy research. From the previous discussion on the background of the problem, we propose that there is the high relevancy of effective Management Control Systems to manage the power distribution utilities. Management Control theory is well- established in the finance and control literature. The performance of an organization depends on how effectively its MCS is in implementing strategies and achieving set objectives. The concept of MCS has the potential to unleash the benefits if understood and implemented properly. Therefore, effective MCS in power distribution utilities can address various issues of the power sector. The problem statement emerges as: *Management Control Systems in power distribution utilities are not adequate to achieve the planned objectives. There is a need to make Management Control Systems more effective in the changed market environment.*

1.5 Research questions

In the light of various issues discussed above and building on the conceptual framework presented in the later sections, this study seeks to address the following questions:-

1. What are major developments in Indian power sector in the post reform period?
2. Is Management Control System in power distribution utilities positively associated with the organisational performance?
3. Is Independent Regulatory System in post reform period facilitating the organizational performance in terms of effectiveness of Management Control Systems?
4. Are Management Control Systems practices in public and private power distribution utilities are significantly different?
5. What are facilitating and non-facilitating factors for effective Management Control Systems?

1.6 Objectives of the study

Objectives of the study are as follows:

i. To study the relationship between Management Control Systems and Organizational Performance.
ii. To examine the effect of Independent Regulatory Control on Management Control Systems.
iii. To find out whether there is a significant difference between management control practices of public and private power distribution utilities
iv. To find out factors facilitating for effective management control systems

1.7 Significance of Study

From the review of literature (including theoretical and empirical studies), the study has identified that despite several reforms initiated in power sector to improve the performance, various issues

pertaining to power distribution utilities such as high distribution losses, power theft, lack of accountability, lack of customer focus, incorrect accounting and energy audit continue. According to the Planning Commission (2002-07), the power sector in India is in shambles, faced with a host of adverse factors. It remains an area of "serious concern" despite several reform measures. The magnitude of financial losses of state utility has touched to about Rs 50,000 crore *(Indian Express, September 13, 1999)* which is very high in Indian power sector. Ultimately, the society bears the adverse impact of such losses by paying the hiked taxes and higher tariff. Rao S L (2004) (first Chairman of the CERC), also commented that power sector in general is under-researched area despite the fact that its size is massive. Total capital employed in Indian power sector is Rs.4,94,776 crore and the aggregate book losses on accrual basis are Rs.68,085 crore in the year 2012-13. These issues have gained importance for conducting research on Indian power sector. There are pointers to the ineffective control system and lack of professional approach in the implementation of plans in the power sector. The researcher believes that even a small contribution by this study in power sector development could be significant. To the best of the researcher's knowledge, there is no comprehensive study related to Management Control in context of power distribution utilities in India and internationally also. The concept of Management Control as a mechanism of implementing strategy to achieve desired performance is well established in management control literature. The study also gets relevance in view of major structural changes like unbundling of State Electricity Board, institution of independent regulatory mechanism and open access power that have shaped a very different market environment in power sector. Historically, power sector in India has remained under exclusive control of the government for quite a long time and therefore, control system tended to be bureaucratic, characterized by high degree of formalization, centralization and resistance to change. Particularly, State-owned power distribution utilities have to deal with legacy issue of bureaucratic control systems. Norton, Kaplan (2004) state that 70-90 % of organizations fail to realize success from their strategies. Part of because failure or demise of organizations is lapses in

controls (Anthony & Govidrajan2009). Poor and inappropriate MCSs can result in dysfunctional behavior, which can have a negative influence on organizational performance (Porporato, 2012). This study systematically plans to make a significant contribution for the development of the power sector in India. It aims to provide a roadmap for managing the power distribution in the framework of "Accountability, a reliable and effective Management Control System and Corporate Governance." Thus, this study shall particularly contribute towards literature on management of power distribution segment of power supply chain.

1.8 Scope of the Study

The study covers management control practices in power distribution utilities in India. It excludes generation, transmission of power and the firms in the business of supplying raw materials or electrical goods to the power sector firms in distribution. Power distribution utilities of both public and private sector are covered. In most of the States, the State Electricity Boards are unbundled and power distribution is independently functional and known as DISCOMs. In some States, State Electricity Boards continue as integrated power utilities. From the conceptual point, the study covers most important variables of Management Control Systems.

1.9 Thesis Outline

Chapter 1 an introductory chapter contains the background of the problem, research gap, statement of the problem, research questions, significance and scope of the research and thesis outline.

Chapter 2 deals with Industry Profile, i.e., An Overview of Power Sector in India. It provides insight into Power Sector, Importance of power for India, Structure, Reforms, Issues and Challenges in power Sector.

Chapter 3 provides a review of the literature followed by the development of hypotheses and conceptual model. This chapter provides a brief overview of research gap and also presents a conceptual model proposed for the study. The first section provides a brief historical overview of the

evolution of MCS. The second section provides a review of the literature on MCS. The third section provides a brief overview of Regulatory Control as a mediator. The fourth section deals with the theoretical framework proposed for this study. The fifth section deals Organizational Performance in Public and Private Sector power distribution utilities. The last section provides chapter summary.

Chapter 4 details the methodology issues. This section focuses on the research approach, data collection procedures, sample selection, population sample, sample size, measurement of each variable, tools and techniques used for analysis validity and reliability issues of survey instruments.

Chapter 5 examines the model and the hypotheses, presents results and discussion of the statistical analysis. Factor Analysis, Correlation and Regression analysis and ANOVA were used to test the different hypotheses formulated for the study.

Chapter 6 presents a case study of a discom. Qualitative data collected explore the MCS of a case company and analyze the relationship between MCS and Organisational Performance

Chapter 7 the final chapter discusses the findings, theoretical and practical implications of this study and also provides limitations of this study and suggestions for future studies.

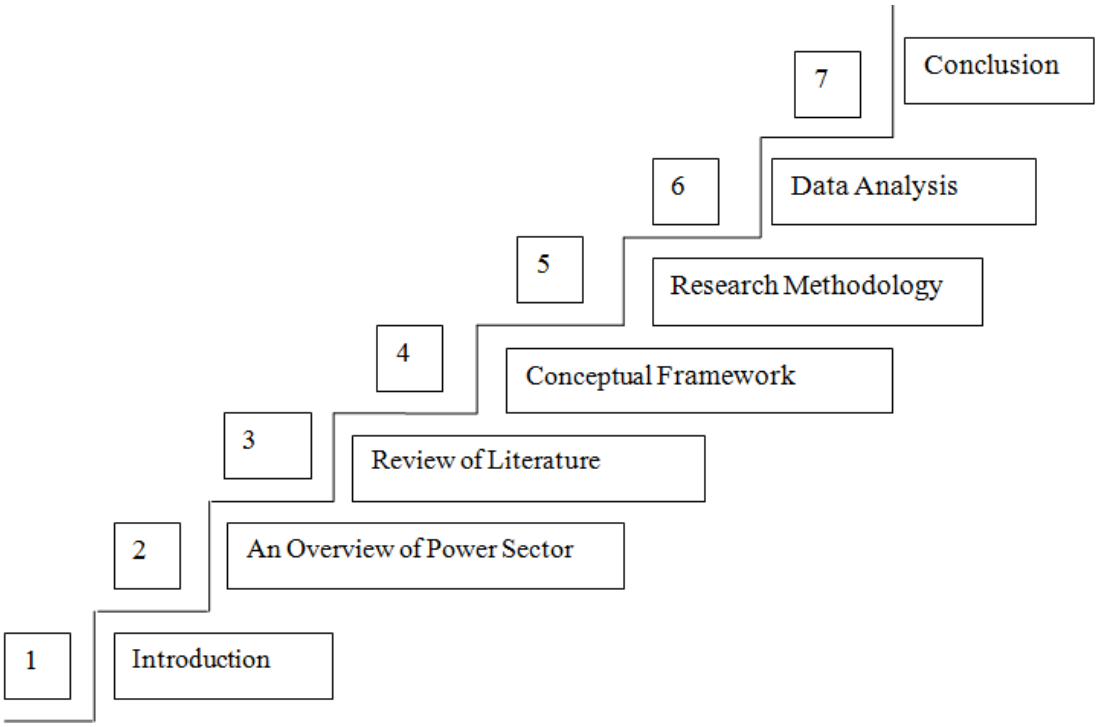

Figure 1: Structure of contents in the thesis

1.10 Chapter Summary

This chapter of the study has provided an overview of the thesis. The chapter began with an introduction to the topic. The background information explicitly specifies the need for research. The research questions, research objectives and significance of the research clearly signify the importance of this research and are discussed in this chapter. This chapter has also provided an outline of the chapters. The next chapter focuses on Industry Profile, i.e., An Overview of Power Sector

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CHAPTER II

AN OVERVIEW OF INDIAN POWER SECTOR

2.1 Introduction

This chapter spells an overview of power sector in India. The chapter highlights the key initiatives and reforms undertaken in the power sector by the GOI to make the sector viable. Despite reforms and several policy level changes, the losses continue and various problems persist. The chapter outlines the issues and challenges in power distribution segment in the post reform period. A fishbone analysis has been used to understand potential causes leading to effect (problem). The chapter sets a background work which motivates this research.

2.2 Historical Outline

Power sector in India evolved with a small power generating station in 1880 in the hills of Darjeeling. Since then the sector has passed through successful and unsuccessful periods. The process of planned development began in 1950 when it was recognized that power development has to be a key priory for the economic development. In initial plan periods, power sector received 18-20% of the total public sector outlay which led to a remarkable growth and progress of all the sectors of economy. Over the years since 1950s, the installed capacity of power plants increased to 89090 MW (31.3.98) from meagre 1713 MW. Electricity generation increased from about 5.1 billion units to 793 Billion units - a 155 fold increase. The per capita consumption of electricity also increased from 15 kWh in 1950 to about 914 kWh in 2012-13 which is 60 times increase.

2.3 The Early Legislations and Institutional Development

Under India's federalist constitution, the electricity sector is a concurrent subject and had been the responsibility of State and Central governments. Central government is responsible for formulating

policies and statutory organizations. The States are responsible to provide for power generation and supply to consumers. The Electricity Act 1910 was the first Act that was introduced to govern the Indian power sector. This Act introduced licensing system in the electricity Industry. After independence since it was felt that the pace of electrification was much below the desired pace and that electricity was only available in major towns/cities. The Electricity (Supply) Act 1948 was introduced for the greater involvement of States. The Electricity Supply Act, 1948 paved the way for setting up of vertically integrated State Electricity Boards (SEBs). SEBs were responsible for generation, transmission and distribution of electricity within the geographical limits of States. The Act also envisaged constitution of the Central Electricity Authority (CEA) with certain specified statutory functions. The Electricity Supply Act 1948 also laid down the principles for calculating the returns. A three percent return on net capital at the beginning of each year was the overall guiding principle for tariffs charged by the SEBs. Industrial Policy Resolution of 1956 reserved generation and distribution of electricity exclusively for the public sector. The policy however, allowed private licensees to continue the business. No new private licenses were approved. Public sector units played a dominant role in electricity generation and supply since independence. State Electricity Boards (SEBs) control little more than 50 percent of generation activity and almost 100 percent of intrastate distribution system and 70 percent of transmission.

Though the Electric Supply Act 1948 mandated the setting up of the State Electricity Boards, it took a long time for all the States to set them up. The delay in the constitution of the SEBs adversely affected the progress of the electrification program. From the Fifth Plan onwards i.e. 1974-79, the central government involved in the generation and bulk transmission of power to supplement the efforts at the State level. The government set up large power projects as a supplementary effort in meeting the country's power requirements. The National Thermal Power Corporation (NTPC) and National Hydro-electric Power Corporation (NHPC), North-Eastern Electric Power Corporation

(NEEPCO), Tehri Hydro Development Corporation (THDC), and Nathpa Jhakri Power Corporation (NJPC) were set up. To construct, operate and maintain the inter-State and interregional transmission systems the National Power Transmission Corporation (NPTC) was set up in 1989 which was renamed as POWER GRID in 1992. For the planning process, Government decided to divide the electricity system into five regions. Today, strong integrated grids exist in all the five regions of the country and the energy resources developed are widely utilized within the regional grids. The concept of National Grid is being envisaged to make it possible for power to flow anywhere in the country.

2.4 Performance of the State Electricity Boards (SEBs)

In the initial period, the SEBs' were financially healthy and their performance was satisfactory. They played a vital role in the development of the sector. Over the years, the financial position of the SEBs deteriorated. It became a serious concern by the mid-fifties itself. One of the reasons for poor performance was established that SEBs virtually functioned as extended wing of the Government administration. A noteworthy study by Joel Ruet (2005) about the nature of SEBs in India described that "*SEBs are administrations, not enterprises...the question of efficiency is alien to the functioning of SEB…'.* His analysis articulated the functioning of SEB as bureaucratic, procedural, and administrative and a complete absence of formal discretionary power within SEBs. The SEBs were treated as centres of patronage for doling out jobs to people who were close to the power centre. One factor which merits special mention is the political interference. The political interference in terms of declaring free or subsidized power in many states completely destroyed the financial position of the SEBs. Subsidies which were announced by the State Governments were not necessarily paid to the SEBs. Subsidies were announced purely to garner votes during elections. According to the World Bank estimate (1999a), the SEBs paid an annual subsidy of about $4.6 billion to agricultural and residential users which are 1.5 percent of GDP. Unmetered supply to agriculture also led to corruption. The SEBs started attributing all losses to agriculture as it could not be measured. The

losses which happening on account of a nexus between the ground staff of the SEBs and the errant consumers, were being put on the account of agriculture since the agriculture sector had no meters or had defective meters. It is estimated that about 30 to 40 percent of the consumption shown against the agricultural sector is an overestimate. Over time, the performance of the SEBs went from bad to worse. The return on assets became negative for most of the SEBs and it also had a negative spill-over effect on the overall management practices of the SEBs.

Planning Commission's Annual Report (2011-12) on the working of State Power Utilities reports that the poor financial performance of SEBs stems from many factors:

Commercial Loss: There are high commercial losses which mean theft. Theft occurs in the form of direct tapping from distribution lines and tampering with the meter. It means the consumer does not pay for the electricity he consumes.

Table 1: Commercial Losses (Rs. crore)

Year	2009-10	2010-11	2011-12	2012-13	2013-14
Losses in Rs. crore	-40883	-44160	-64402	-51398	-31148

*The commercial loss is the gap between total revenue receivables and total expenditure in a given year

Irrational Tariff: The tariff structure is irrational and un-remunerative. The tariffs are not fixed on the basis of any economic rationale but on political convenience. Political party would like to increase tariffs for fear of loss of vote banks. As a result, power subsidies keep on rising to excessive levels.

Poor Collection: Collection efficiency is poor, leading to an average receivables position of 30 per cent of revenues.

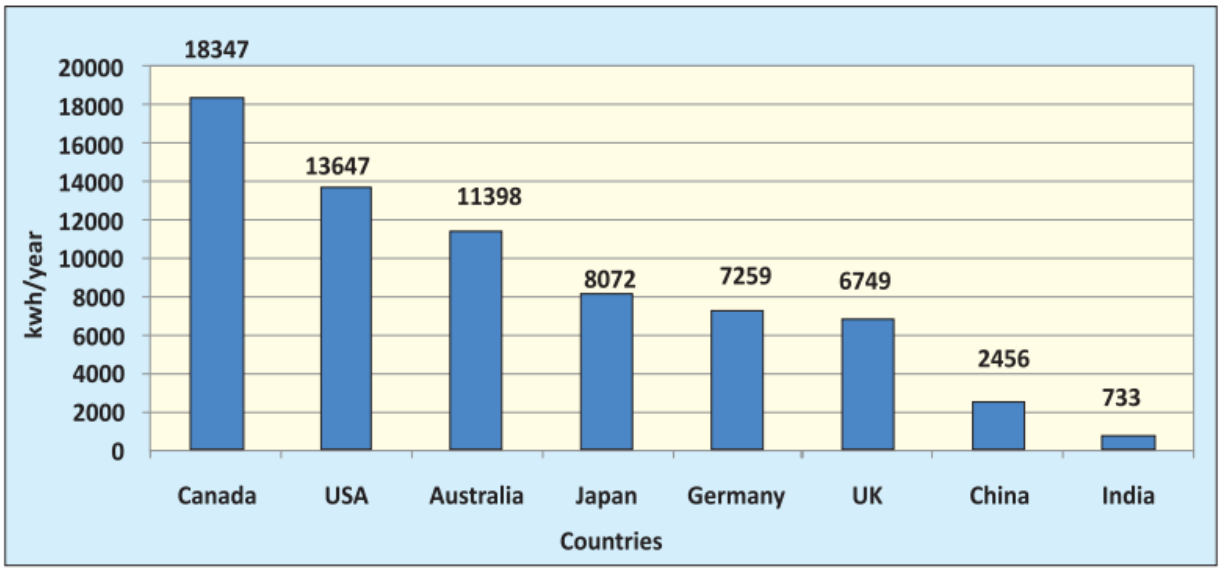
Cross subsidy: The regime of cross subsidy became more and more stringent whereby the commercial and the industrial sector along with railway traction made up for a part of the revenue lost through sale of electricity to the agricultural and domestic sectors. Higher electricity price for the industrial sector harmed them since they slowly became uncompetitive.

The SEBs were failing to infuse fresh investments due to poor financial health. There were no investments made for improving the distribution infrastructure. Outdated infrastructure was out of sync with the growing demand. By the early 1990s, the SEBs had no financial strength left in them to rectify the situation. The position of the SEBs became so critical that they became absolutely unviable and unsustainable.

2.5 Power Sector Performance on Major Indicators

Measures on broad performance standards related to financial viability of utilities and its social obligation help us to capture power sector performance in India.

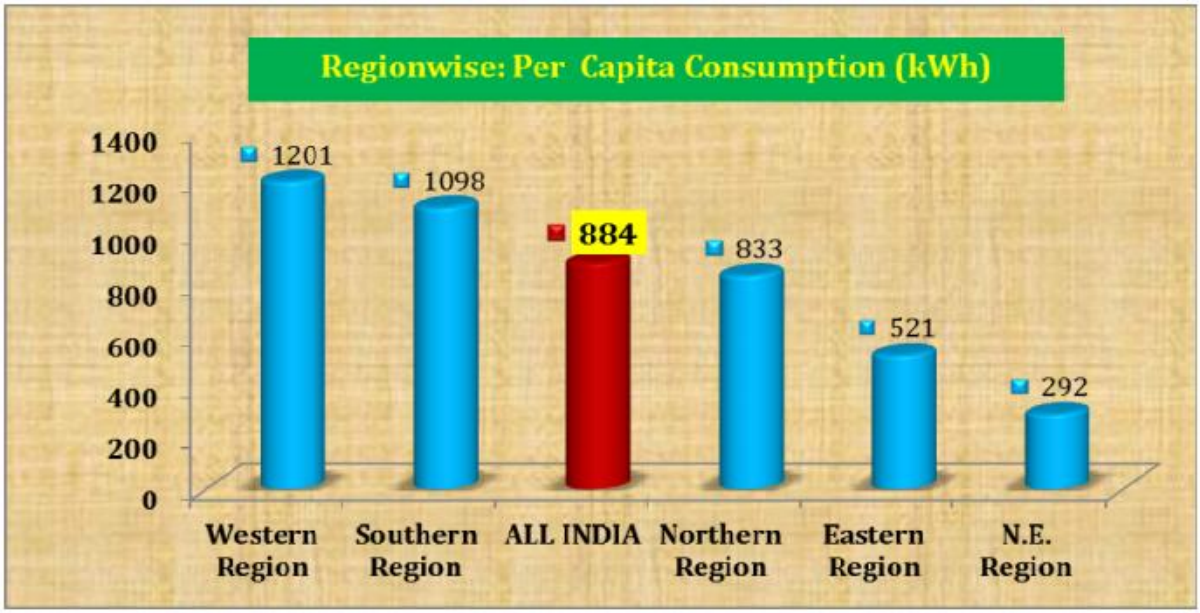
Per Capita Consumption: India's per capita consumption is only about 733 units as compared to a world average of 2429 units. This is one of the lowest in world. A glance of Figure 3 about per capita consumption levels of some of the developed countries gives an idea of the extent of deprivation in India when it comes to electricity consumption. Despite the higher population, China has higher per capita consumption compared to India.



Source: Central Electricity Authority

Figure 2: Per capita consumption of electricity in India vis-à-vis some developed economies

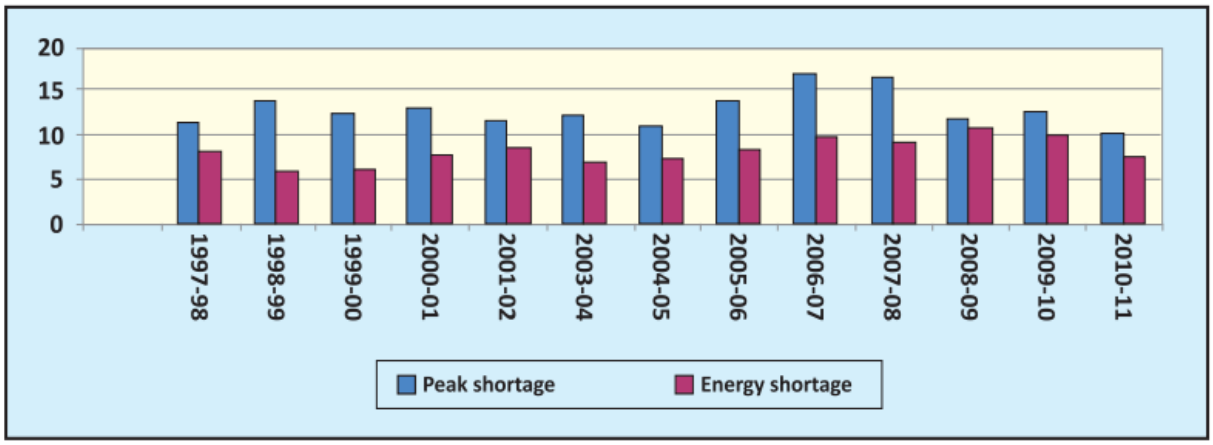
There is also a variation in per capita consumption across regions. Figure 3 below shows that the per capita consumption of western region is highest among all regions. It is about 36% higher than the All India per capita consumption.



Source: Annual Report – Planning Commission

Figure 3: Region wise per capita Consumption (kWh)

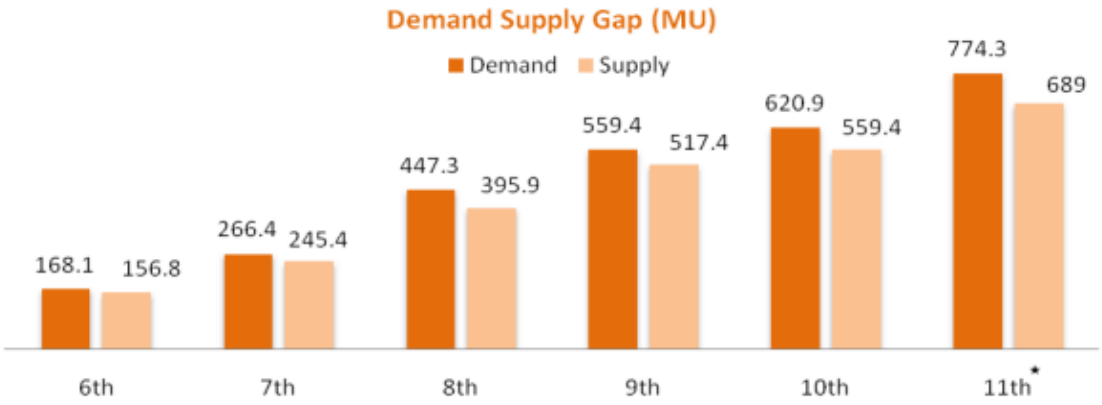
a) *Energy Shortage*: Though power generation has increased at about 8% since independence, there have been consistent shortages. Peak demand shortage is to the extent of 10.3% (2010-11) whereas the energy shortage is about 7.5%. The extent of shortages over the last ten years is indicated in figure 4 below,



Source: Central Electricity Authority (2011-12)

Figure 4: Energy & Peak shortages in India (in percentages)

Figure 5 below shows that Indian power sector is facing severe demand and supply position gap

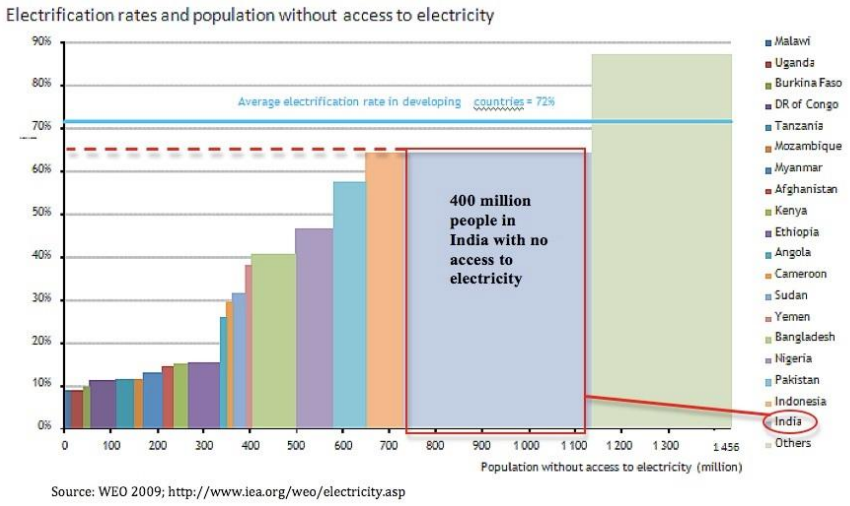


Source: CEA Monthly Review of Power Sector, Sep 2009

Figure 5: Demand Supply Gap

As per report by Institute of Energy Management and Research Report (p.10), 'The energy requirement during FY 2008-09 was 774,324 MU3 while the energy availability was only 689,021 MU resulting in energy shortage of 11 %.

b) *Electrification*: While installed power capacity greatly increased in the 50 years since India's independence, most of the population either remains without connection to the public power system or receives infrequent and unreliable service characterized by frequent power cuts and fluctuating voltages. Figure shows that India is one of the largest populations without access to electricity.



Source: WEO 2009; http://www.iea.org/weo/electricity.asp

Figure 6: Electrification Rate and Population without access to Electricity

Cost Recovery: Cost recovery is a key foundation for making power sector viable. The figure shows that there is no alignment between retail prices and the actual cost of producing.

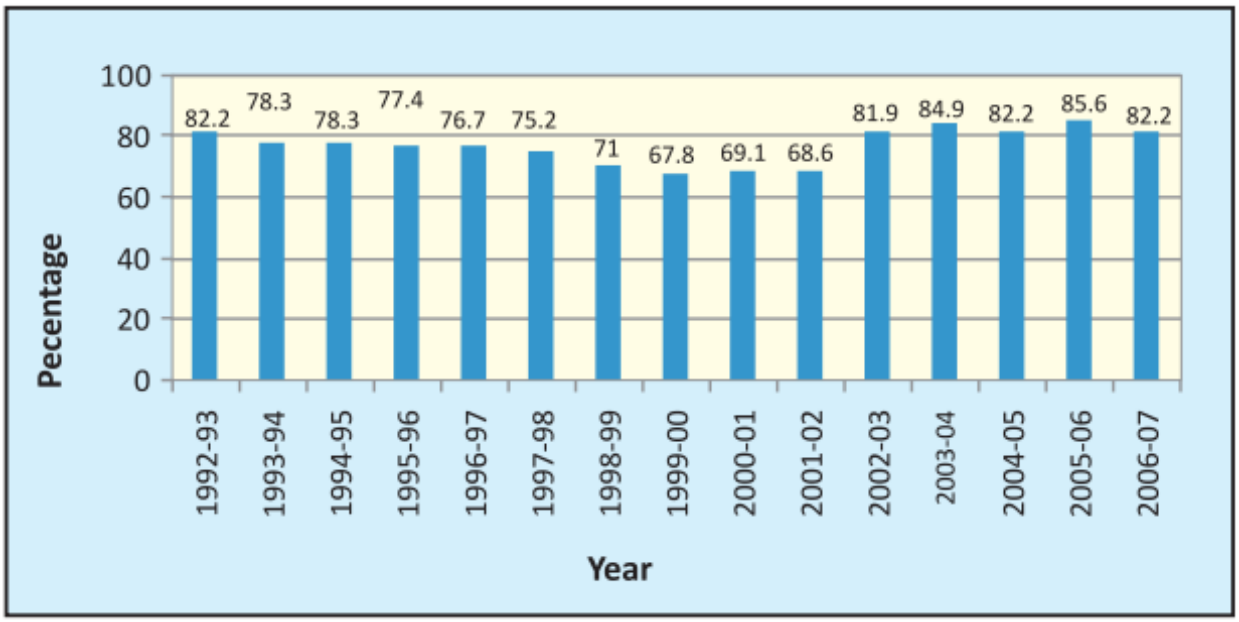


Figure 7: Recovery as percentage of cost

Transmission & Distribution Losses: India's power sector experiences high system losses throughout the country's transmission and distribution (T&D) networks. Most developed countries have the T&D losses less than 10 percent (Table 1). A substantial part of these losses are due to theft. According to an estimate by Prime Minister's Council on Trade & Industry, a six per cent reduction in T&D losses means saving about 22 billion units of electricity worth Rs. 4,100 crore per annum nationally.

Table 2: T&D Losses for Countries (in per cent)

Country	Transmission & Distribution Loss
India	33
Nigeria	38
Nicaragua	30
Pakistan	26
Cameroon	26
Russia	12
UK	8
China	7
US	6
Japan & Germany	4

Source: CEA, Power Ministry Data

The use of term Transmission and Distribution (T&D) losses is being done away with the introduction the concept of Aggregate Technical & Commercial (AT&C) loss. The major downside of taking account of T&D loss was that it represented only the loss due to heat dissipation while the system included other aspects of losses such as metering issues, theft etc. AT&C loss is that it provides a complete picture of energy and revenue loss condition. The AT&C Losses comprise of two elements: Technical Losses & Commercial Losses. The Technical Losses primarily take place due to a) Transformation Losses b) High Resistance losses (Copper loss) on distribution lines due to inherent resistance and poor power factor in the electrical network. The commercial losses are mainly due to low metering efficiency, theft and pilferages. Region wise Aggregate Technical & Commercial (AT&C) are presented in table 3 below

Table 3: AT&C Losses All India Region Wise

Region	2007-08	2008-09	2009-10	2010-11
East	33.1%	36.6%	33.94%	38.24%
North-East	40.3%	40.7%	36.23%	37.33%
North	34.5%	31.1%	29.66%	28.91%
South	20.3%	16.9%	19.05%	19.26%
West	31.4%	31.6%	28.02%	24.44%
All India	**29.4%**	**27.7%**	**27.2%**	**26.04%**

Factors which contribute to astronomical energy losses are a combination of technical and non-technical issues. Poor metering, lack of investments in distribution networks resulting in overloaded feeders, ill-maintained substations with aging transformers, and other technical shortfalls are further amplified by inefficient billing and inadequate revenue collection as well as simply un-metered

supply and wide spread electricity theft. The lack of consumer education in the rural sector, rampant political interference, and inefficient electricity use are diminishing the already weakened power sector.

In the pre-reform situation, the problems and issues of the power sector were as follows:

1. Liquidity crunch
2. High levels of transmission and distribution losses
3. Inadequate transmission and distribution system
4. Lack of adequate metering
5. Drop in the pace of rural electrification
6. Fast rate of obsolescence of existing generating capacity
7. Declining share of hydro-thermal mix

(Source: Power line 2008)

The Union Ministry of Power concedes that endemic problems of the power sector in India had been because of:

1. Un-metered supply - only 50% supply metered
2. No comprehensive energy audit/accounting
3. Theft and pilferage - Theft roughly estimated over Rs. 20,000 crores (US$ 4000 million)
4. Cross Subsidy in favour of agriculture and domestic sectors thereby adversely affecting industrial competitiveness

2.6 The Policy of Liberalization

By the 1980s, the total losses of the SEBs without subsidy crossed Rs. 3000 crore. There was little hope of any cure unless some drastic measures were taken. The deteriorating health of the SEBs, the scarcity of financial resources available with the Central and State Governments, and moreover, macroeconomic financial crisis, made it difficult for the Government to fund power projects through budgetary support. Due to these events, the government decided to restructure the power sector in a

phased manner in 1991. Consequently, the policy of liberalization was followed with the opening up the power sector to foreign private companies to get funds and technology into the Indian power sector. Numerous reform measures were taken with the objective to promote the development of an efficient, commercially viable and competitive power sector. Electricity Act 2003, termed as a 'magic formula' to implement the sweeping changes, was enacted to provide a framework for a more competitive, transparent and commercially driven power sector. This Act replaced old legislations, namely, Indian Electricity Act, 1910, the Electricity (Supply) Act, 1948 and the Electricity Regulatory Commissions Act, 1998. This new Act seeks to free up distribution, the main stumbling block in the development of India's power sector The important objectives of the Act are as follows:-

> *"to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies, constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal."*

The implementation of the Electricity Act, 2003 (EA 2003) laid down a new framework for the electricity market. With the legal and regulatory changes, the working of distribution company was affected as follows:

- Independent Electricity Regulatory Commission (SERC) in each state is a mandatory requirement
- Open access is introduced in transmission and distribution.
- Exclusivity of distribution license is removed with the introduction of parallel license

- Rural distribution by Panchayats, Cooperative Societies, non-Government organizations, franchisees

Electricity Act 2003 indicates a shift toward increasing organized private sector participation and competition. The Act recognizes the need for a strategy that distinguishes urban power distribution from rural electricity supply. It also facilitates the establishment of distribution franchisee models and rural distribution through gram panchayats. The Act introduces a new concept called "Open Access". The open access is defined as the "non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Appropriate Commission." In simple terms, open access refers to the right to use a system by a party that does not own the system. It is also known as Third Party Access. Under open access system power generators are free to sell power to any consumer of their choice, subject to certain conditions. Thus, the Open Access System opens up new business areas of power trading, parallel distribution and franchise arrangements which ultimately signals increase in competition in the electricity market. As consumers will be able to source electricity from a supplier of their choice, there is likely to be consumer migrations from SEBs. The SEBs would feel a lot of competitive pressure to improve their services and reduce tariff rates. With the provisions of open access, the SEBs are now left with monopoly to the delivery of power but not for selling the power. The Act encourages Captive Power plants to add to the development of competition in power market because of scale of economies. Captive generation by co-ops and associations would be significant in due to presence of industrial clusters. In sum, the Electricity Act attempts to project introduce competition all along the power supply chain to make it efficient and cost effective. However, the objectives would be achievable with effective management of resources.

2.7 Distribution Sector Reforms

Power distribution is the final and most crucial link in the electricity value chain. It assumes great significance as the segment has a direct impact on the sector's commercial viability, and ultimately on the consumers who pay for power services.

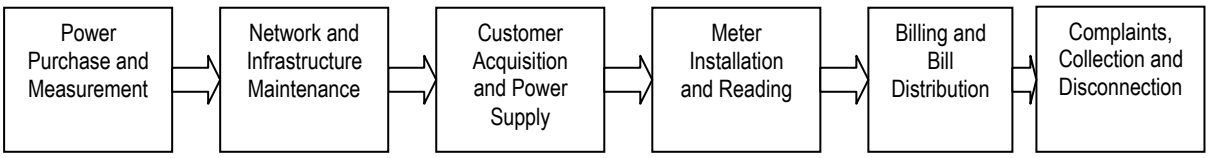


Figure 8: Power Distribution Value Chain

The distribution system has been fraught with deep-routed legacy problems. The sector has been plagued by high distribution losses and poor financial health of utilities with low cost recovery. Consequently, the distribution companies have not been able to undertake corresponding investments in infrastructure augmentation. The sector has started receiving greater attention and investment with the restructuring of the state electricity boards (SEBs). Several new initiatives have been introduced to reduce aggregate technical and commercial (AT&C) losses along with a definitive regulatory framework. The various policies and regulations introduced by the government are set to increase competition and bring about commercial viability."

While privatisation of distribution has not taken off in a way that was hoped for, the new franchisee model holds the promise of increased private investment in the sector. Rural infrastructure is getting a boost with the onset of the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) which aims to create rural distribution infrastructure and provide electricity to all rural households, while the distribution companies are getting funds under the Accelerated Power Development and Reform Programme (APDRP) to implement information technology (IT) systems and establish baseline data. The results of all these initiatives are likely to be more visible in the future.

Distribution reforms in India began in the mid-1990s, and followed the World Bank's model of privatization which required intermediate steps of unbundling and corporatisation of vertically integrated state utilities. GOI identified power distribution reform as fundamental to improving commercial performance and financial viability of the power sector in India. Since the toughest roadblock stalling power sector development has been the poor financial health of the SEBs, which is mainly due to poor performance on the distribution front. The Ministry of Power has undertaken various initiatives for bringing improvement in the power distribution sector. In March 2003, GOI approved a scheme called "Accelerated Power Development and Reforms Programme (APDRP)" to accelerate distribution sector reforms with the main objectives of:

1) Improving financial viability
2) Reduction of T&D losses to around 10%
3) Improving customer satisfaction
4) Increasing reliability of power supply
5) Improving quality of supply
6) Adopting systems approach with MIS
7) Bringing Transparency through computerization

The APDRP is a biggest initiative of GOI to reform the distribution system. It is an instrument to leverage distribution reforms in the States by way of incentivising the power sector reform and providing an investment of 50% of project cost. Schemes undertaken under APDRP are for renovation and modernisation of sub-stations, transmission lines & distribution transformers, augmentation of feeders & transformers, feeder and consumer meters, high voltage distribution system (HVDS), consumer indexing, computerised billing etc. The MOUs provision is made for taking forward the distribution reform aspects in a time bound manner, the salient aspects of which are:

1) Setting up of SERC
2) Restructuring of SEB
3) Administrative measures for improvement
4) Delegation of powers & duties
5) Metering up to 11 kV feeder level and energy accounting
6) 100% Metering of all consumers
7) Computerization of SEB commercial and technical functions
8) Adoption of turnkey contracts for APDRP implementation
9) Agricultural tariff policy and subsidy by State Government
10) Adoption of unit wise commercial accounting practices

The APDRP program also includes a system of local management and energy accounting through widespread metering in every state utility's distribution systems composed of a number of urban and rural distribution sub-areas, known as "distribution circles".

Thus, the driving force behind reform and restructuring of Power Sector in India has been the need to introduce competition and more investment, wherever possible. A number of initiatives to accelerate the process of reform, both at the Central Level and at the State Level, were taken. In the distribution segment, six level intervention strategies were introduced by GOI which is as follows:

1. National level – Policy formulation, technical guidelines and standards,
2. State level – Tariff fixation, corporatization, subsidies and budgetary support.
3. SEB level – Restructuring, increased accountability, development of MIS, Reduce T&D loss
4. Distribution circle level – Reducing outages, improving reliability.
5. Feeder level – 11 KV feeders as business units
6. Consumer level - Mandatory metering. Discipline of disconnection for non-payment, stringent penalties for theft.”

2.8 Major issues and challenges

Although some positive transformation of the sector has taken place after the reform but the progress has been slow. The overall performance is sometimes compared to a "leaky bucket", where the more funds are invested into the system, the more quickly they spill out without benefits. The utility is still crippled with many issues. Some major issues are outlined as follows:

i) The energy shortage of about 12% and peak shortage of about 20% continue to plague the economy in spite of substantial development in power generation since Independence. There is great challenge and a very daunting task of making electricity available for all by 2012 (shifted to 2019) or achieving Power Independence by 2030.

ii) Magnitude of losses is high and they still continue. In 1992-93, the total financial losses of the power sector came to Rs.4,600 crore and in just three years later, these losses doubled. Three years later, they doubled again. The trends continued and state utility financial losses touched Rs.45, 000 crore.

iii) Sector is still unable to attract good private investment causing a severe shortage of funds. As per an estimate an investment of around $180 billion will be required by 2012.

iv) There is no consumer focus. They are not only faced with poor quality of services but with the prospects of massive tariff hike due to revenue gap.

v) There is lack of transparency in the system of governance primarily due to vested political interests against reforms.

vi) There is absence of accountability for actions and decisions mainly due to improper accounting and reporting system. Lack of reliable and timely information system leads to wrong and irreversible bad management decision making.

vii) There is absence of proper monitoring and management review system which inhibits accomplishment of set objectives despite facilitating policy measures at macro level.

viii) Huge financial leakages are not reported accurately which indicates that there is no proper accounting and reporting system. According to an estimate in the year 2000-01, there are some Rs.20, 000 – 30,000 crore (US$ 4-5 billion) flowing every year into the pockets of individuals and institutions through theft, graft and corruption in the power distribution system. Also for lack of full energy audit at all levels, we are failing to trace accurately where energy is lost. The above and other causes are indicative of ineffective management of resources.

Various potential causes to poor financial condition of power distribution utilities are detailed in a fishbone diagram.

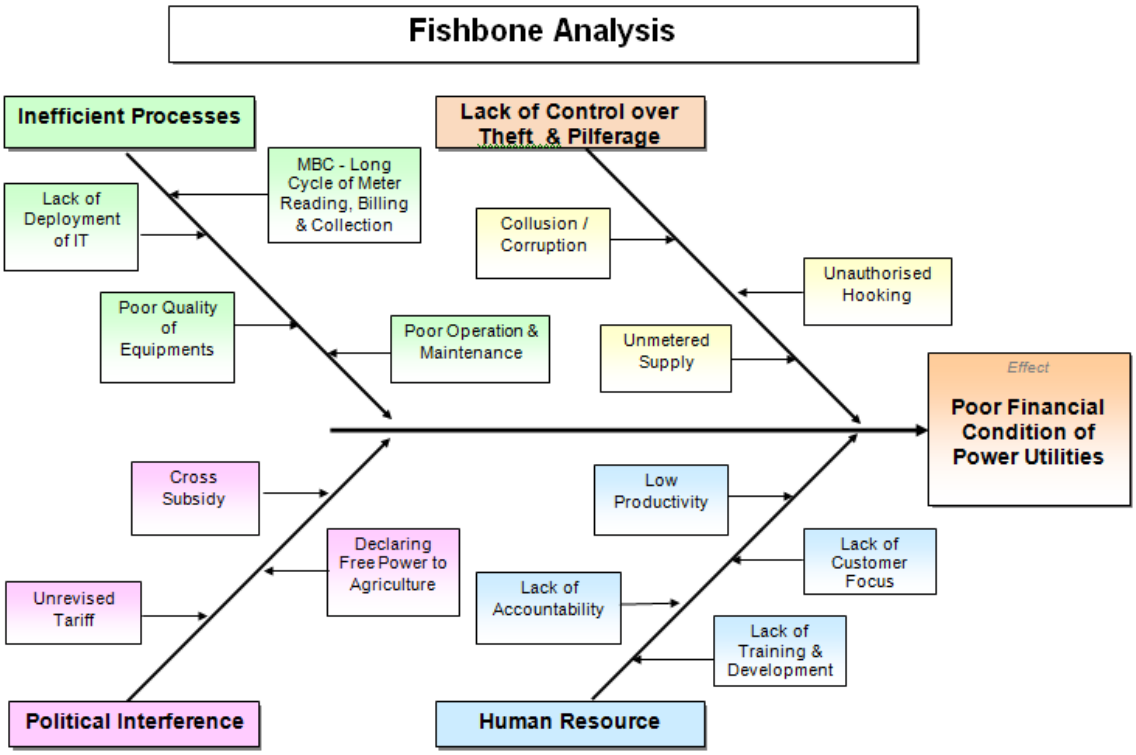


Figure 9: Fishbone Analysis

The above and other causes are indicative of ineffective management of resources. In view of the persisting problems and ensuing future competitive market conditions in the electricity market, there is need for efficient and effective management of resources in power utilities.

2.9 Characteristics of power utility and distribution

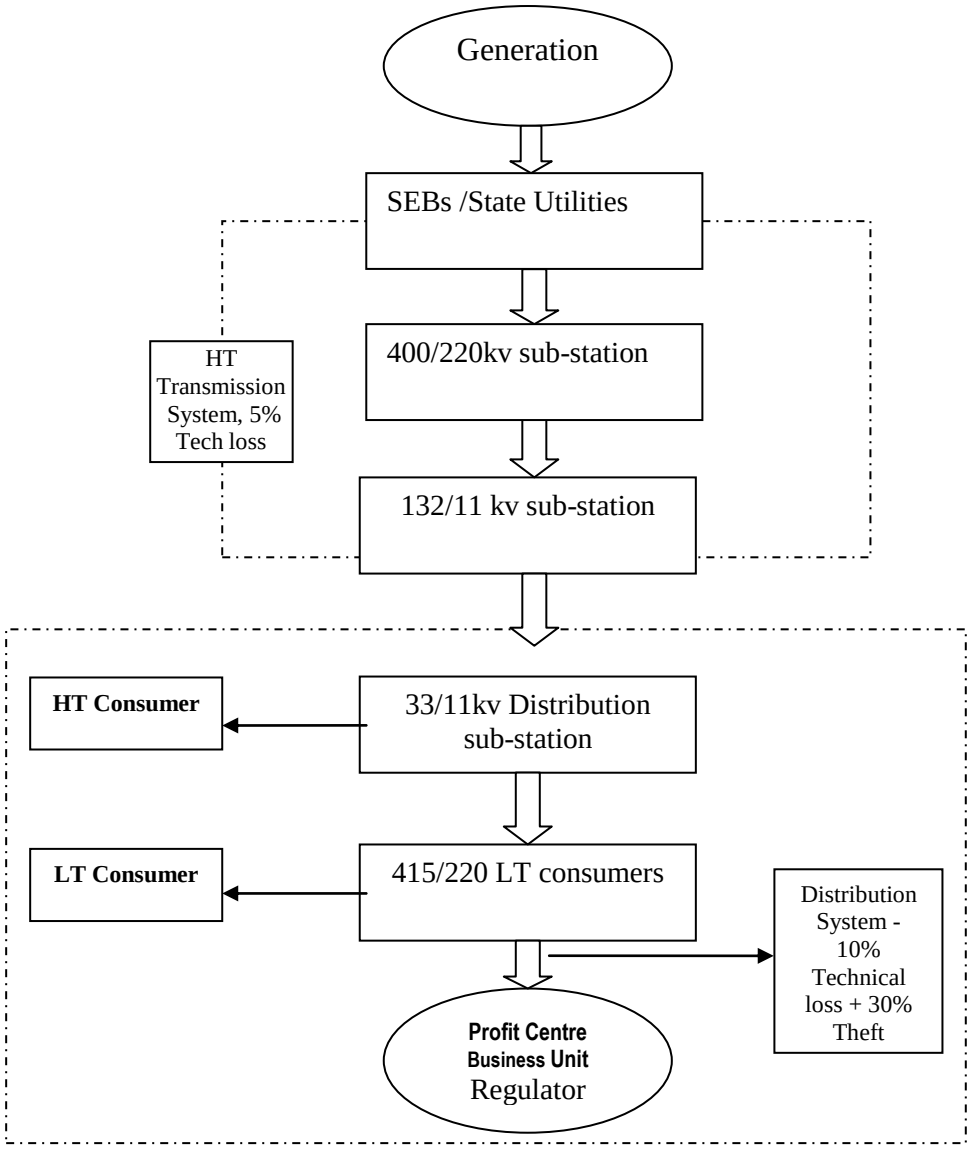
Characteristics of electricity distribution are as follows:

1. There are some unique features of power utility. Unlike oil or gas in a pipeline, generated electricity cannot be stored easily or economically. It must be generated and delivered at the precise moment it is needed or it goes waste. Therefore, a reliable service is a result of co-operation and communication among all interconnected companies. Secondly, delivering electricity to consumers is a complex task because of the physical nature of electricity. The entities performing the functions of power generation, its transmission, and its final distribution can not be isolated. All power suppliers and delivery systems are interconnected. Thirdly, to reach consumers, electricity travels from the power plant through miles of transmission and distribution lines until it reaches its final destination where it will be used. Distribution is widely and intensely spread over geographically which make control function more difficult and complex. Fourthly, electricity is a standardized product i.e. there is absence of product differentiation. Electricity is not available everywhere. It is produced in one place and has to be used elsewhere immediately. Therefore, need for planning is critical. Overall features can well be summarised in tabulated form as follows:

Table 4: Unique features of power utility

1	Storability	No
2	Fluctuating demand	Yes
3	Direct connection to end users	Yes
4	Interconnections between end users	No
5	Product Quality	Standard
6.	Political Motives (Interference)	Yes
7.	Remoteness of control points	Yes
8.	Social sensitivity	Yes
9.	Size and geographic jurisdiction limitations	Yes

2. Power Distribution is the weakest link in the entire power sector value chain. It is termed as ‘leaky bucket. Figure 8 gives us an idea. Issues such as high T& D losses, power theft, un-metered supply of power, improper billing and weak system of bill collection and handling of customer grievances all are related to distribution segment. Distribution systems loss chain is diagrammatically presented on next page



Source: Blueprint for Power Sector Development

Figure 10: Distribution System Loss Chain

Vertical Unbundling: In the restructuring of power sector, various state governments corporatised their boards and unbundled the vertically integrated power utilities into generation, transmission and distribution. In India, power sector remained vertically integrated in pre reform period. In post reform era, SEBs – vertically integrated monolithic organisations are being unbundled or broken into separate corporations with ownership changing hand from the public to the private sector with the

objectives to attract private participation and create a quasi- competitive environment. Figure below shows the structural changes.

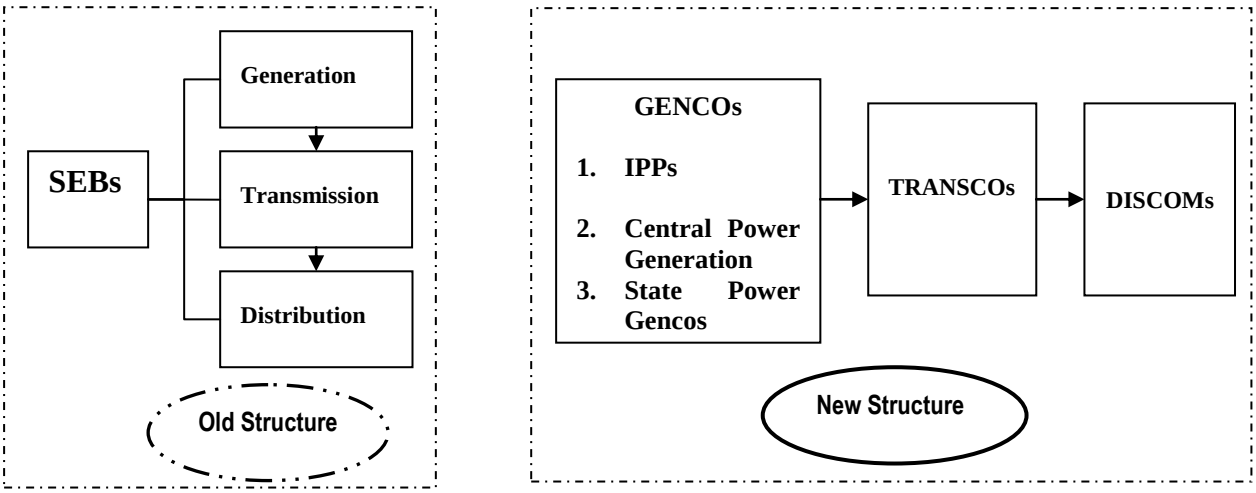


Figure 11: Post reform structure

3. Organisational Structure Changes: Organisation structure is one of the important implementation mechanisms because a structure specifies the reporting relationships and division of responsibilities and that shapes decision-making process. With the unbundling of SEBs, separate entities became independent which led to changing the old structure of organisation.

4. Distribution Circle as Business Unit: In the power industry value chain, as shown in the figure below, the distribution circle is treated as a Business Unit. With the business unit concept a distribution circle will be like an independent work unit or operating division of organisation serving well defined customer segment or geographical area with the given authority to take decisions within the framework of guidelines. A business unit conceptually houses all functions responsible for distinct business with clearly defined performance parameters. Operational efficiency, better focus and better management controls are possible in business unit because they are self- sufficient with clearly defined functional mandate.

5. 11 KV feeder line as Profit Centre: The power network is the distribution network of 11kV lines. Each 11kV feeder which emanates from the 33kV substation branches further into several subsidiary 11kV feeders to carry power close to the load points i.e. consumers. At these load points, a transformer further reduces the voltage from 11kV to 415V to provide the last-mile connection through Low Tension (LT) feeders to individual customers. In the six level strategy interventions, each feeder is operationalised as an independent profit centre. This means that they have now freedom or sufficient autonomy to take operating decisions on profit oriented basis. This is possible as one junior engineer deals with two to three feeders on an average. Full responsibility can be assigned to him. This will ensure energy accounting and reduction of commercial and technical losses in the entire feeder and also enhance responsibility and accountability and improve the quality and speed of decision making with profit consciousness. A good example of setting up profit centres is ABB which a European MNC in the business of power generation, transmission and distribution. The company is organized into 4500 small profit centres. Each profit centre is defined with profit and loss responsibility and meaningful autonomy. Figure 12 below depicts the profit centre concept in Indian power sector.

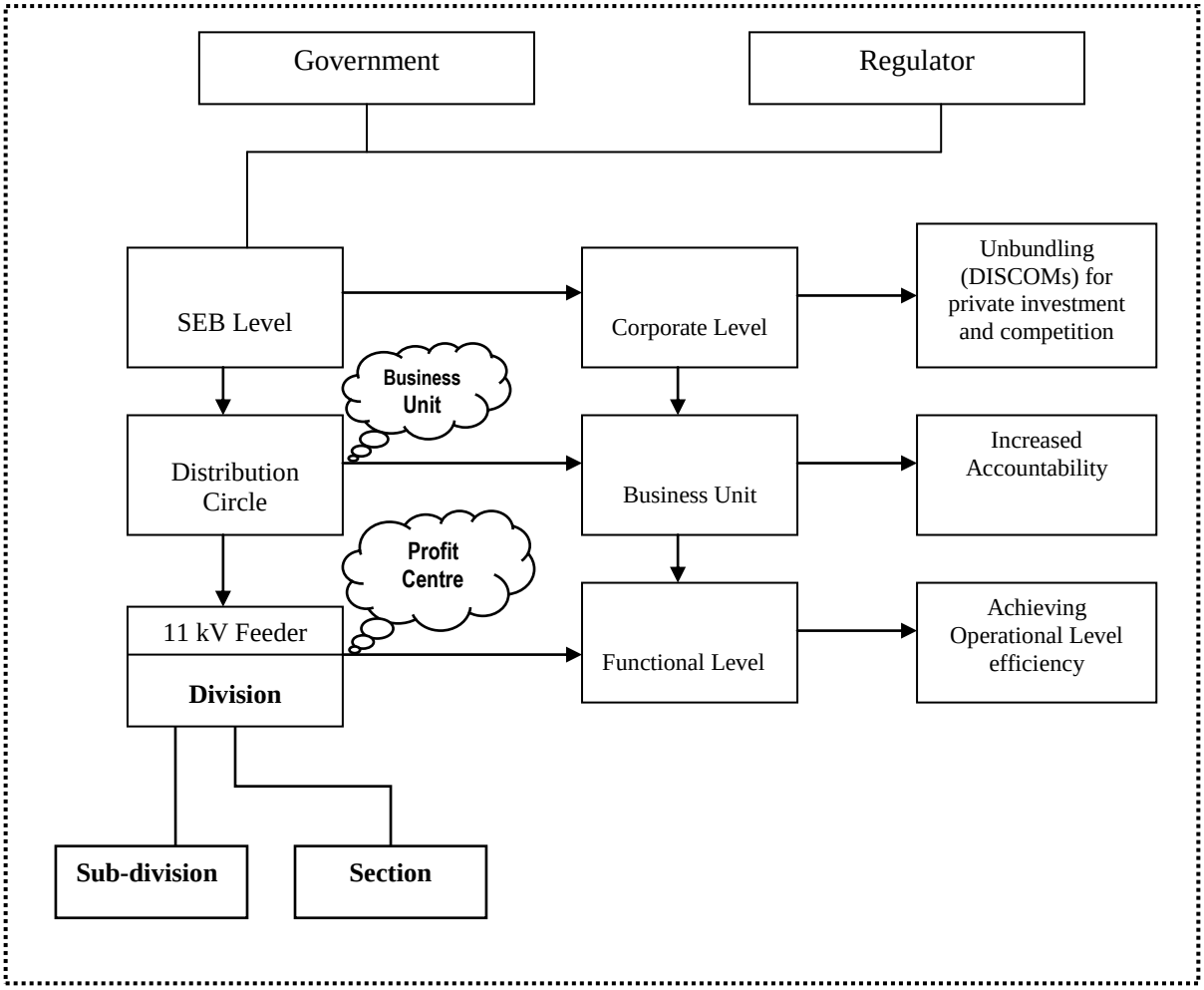


Figure 12: Profit Centre Concept in Power Sector

Reforms introduced in power sector envisage a different electricity distribution market. This is explained as follows:

i) *Privatization of Distribution Business*: Since the weakest link in the power industry value chain is the distribution of power to the ultimate consumers, the government decided to transfer it to private players. After opening up in 1991, a number of States initiated the power sector reform process, emphasizing the unbundling, tariff rationalization and corporatisation of generation, transmission and distribution. Orissa was the first state to restructure the power sector. The experience of privatization expected to address technical and financial challenges in the State of Orissa was far from satisfactory. Then, the private utilities in Delhi have taken right clues from the experiences with

Orissa model and achieved major milestones in the historic power sector reforms. As a result of the power sector reforms in Delhi, the national capital is now served by two of the best private electric utilities in India, BSES and Tata Power. There is entry of new players in distribution sector in many other states too which is an indicative of onset of competitive conditions.

ii) *Market for Bulk Power*: Since a sufficient quantity of power to be pushed into the bulk power market, contractual bilateral agreements are expected and the existing public as well private sector players may operate on the margin in the bulk power market. A market for bulk power can induce the desired changes in distribution tariff structure to reflect price variability across time of day and seasons of the year, and design of interruptible/firm supply contracts with consumers. Entrepreneurial ingenuity would pave its own path to sell power in a competitive environment.

iii) *Real-time retail electricity pricing*: There will be greater price responsiveness in demand through real-time retail electricity pricing and at the same time calls for greater protection of customers from price hikes. Customers will be exposed to hourly price fluctuations, so that price-responsive demand will be meaningful, and still assure them of relative stability in their monthly bills. The transition from a single-buyer model to a multi-buyer multi-seller model would result in a competitive power market. This would provide incentives for new investment while providing affordable and quality power to consumers.

iv) *Focus on Customer Service Improvement*: Services like assured power supply, reduction in breakdowns and interruptions, minimizing cases of tripping, restoration of supply, billing etc. would need to be assured to customers from companies. The distribution department has to resolve complaints of consumers and provides guidance as and when needed. Many DISCOMS have set up the consumer grievances cell. The value chain of the power distribution would seek to determine where in the company's operations customer value can be enhanced or costs lowered.

v) *Procurement and Inventory Management*: Consequent to implementation of reform and creation of DISCOMs, there is a phenomenal spurt in the level of investment in the distribution sector. The investment plans relate to erection of new sub stations, enhancement of power transformer capacities, erection of interlinking lines, erection of capacitors, release of new services and additional loads, operation and maintenance work etc. The execution and improvement would require an efficient management system.

vi) *Competitive Bidding*: Competitive procurement of electricity by the distribution licensees is expected to reduce the overall cost of procurement of power. Competitive bidding will facilitate development of power markets.

vii) *Institutionalizing Captive Power*: The industries have always a pressing need for uninterrupted and reliable power supply. Electricity Act 2003 institutionalizes captive power plant. Section 2 (8) of the defines a captive generating plant as a power plant set up by any person to generate electricity primarily for his own use. Freedom to set up captive power plants offer a sizeable and potentially competitive capacity

viii) *Power Purchase Agreement (PPA):* In compliance with the provisions of the Electricity Act, 2003 and National Electricity Policy, distribution companies will have to purchase/arrange power directly from the various generating stations and other power stations by power purchase agreements.

xi) *Introduction of Profit Centre Accounting*: Under this, transmission divisions are treated as cost centres and the distribution divisions as profit centres.

2.10 Need for Study

The territory of operations of power distribution is unwieldy. The operations are widely spread across to distant and remote locations. Consequently, control over these operations becomes indirect and remote, and therefore a suitable Management Control Systems is needed to achieve the set

objectives. “Control systems depend on overall characteristics of the organization” (Macintosh N. B; Daft R. L.:1987). The characteristics are mainly related to the size of the firm and nature of business. Power utility is very different business characterized by unique features as discussed above. Further, it is a utility and does not operate on 100% commercial philosophy. Apart from various issues and challenges explained before, researcher visualizes the three most important developments in power sector in the post reform period which are expressed diagrammatically as in figure below

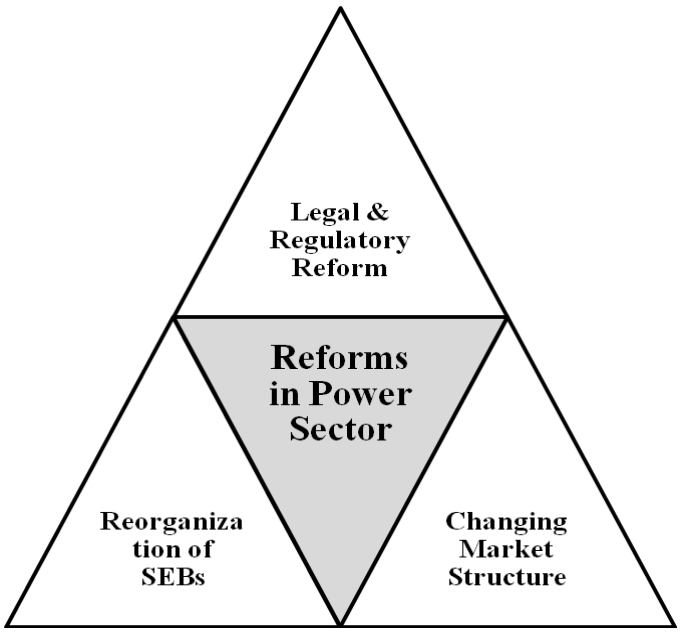


Figure 13: Driving Forces in Power Sector in the Post Reform Period

Major changes in the organisational setting of SEBs (catering to 95% of power distribution in India) and changes in the external environment i.e. competitive market conditions and institution of independent regulatory systems gets contextual and theoretical support for this study. The work of various researchers like Khandwalla, Pradip N. (1972), Louise Kloot, (1997), Fisher (1998), Guthrie Kenneth M. (1984), Chenhall (2003), Anthony & Govindrajan (2009) suggest that Management Control Systems are influenced by external environmental factors and its design is affected by various factors such as environment, technology, organizational structure, organizational size, organizational strategy and the context in which it operates. According to Gül Sosay (2005),

"…diffusion of independent regulatory agencies (IRAs) across economically advanced countries has attracted much scholarly attention in recent years, systematic work on their spread across developing countries is still scarce.."

The study in context of in India is also very different compared to other developed countries like USA, UK where span of control in terms of population density/served and geographic size are small compared to India.

"There is a lack of accountability in distribution, outdated rules, regulations, management structures, and practices unless you establish accountability at all levels, you can never improve performance." *Union Minister (Financial Express, 18 March 2002)*

2.11 Chapter Summary

While the power is a major input for the socio economic development of a country and is one of the key drivers for achieving GDP growth, unfortunately, the Indian power sector has not kept pace with the continuously increasing demand. The country is facing severe energy and peaking power shortages pecked at 8.4% and 12.3% respectively. The distribution segment remains the most challenging area in terms of poor performance. It is termed as a 'leaky bucket' as huge financial leakages are consistently reported. Despite the unbundling of the State Electricity Boards, the distribution utilities in most states continue to perform poorly in terms of the loss levels. The AT&C loss levels have continued to remain at high levels and were at 32.07% in 2006-07 (As per CEA data). It is thus imperative to address issues that may jeopardise the growth of an already ailing power sector. Since power utility largely remained under governmental control in the pre-reform period, did not face any competition. In the post reform era, due to implementation of Electricity Act, 2003 which brings in competition in the form of open access and permits multiple players in same franchise area for distribution, a new environment is emerging which would be posing a demand for new approaches in managing the utility. In a competitive environment, distribution companies would

require be managed as commercial enterprises making it market based. This challenges is greater as experience with competitive power markets world over is still limited, and many of the frameworks for designing such markets are conceptually new and at the same time, the pressure to get things right is high (Weiss, J : 2002). Further, the power utility has the responsibility and accountability to supply un-interrupted quality power, the distribution network, therefore, it has to be equipped with a efficient and effective Management Control Systems. In the altered scenario in power distribution market, there is every need to review the practices of management and control mechanism in implementing the strategies. The relevancy of Management Control Systems is also high due to competitive market conditions in power distribution. It is in this context that a study of management control systems in power distribution utility would make a significant contribution. It is one of the first comprehensive studies to analyse Management Control Practices in power sector. By this study, an understanding of connection between MCS and organisational performance research into issues of management in power distribution utilities.

CHAPTER III

REVIEW OF LITERATURE

Management Controls have been applied for as long as formal organizations have existed."

- *A . W. Steiss (1982)*

3.1 Introduction

In this chapter, review of the selective and useful studies most relevant to the research in question is attempted. The purpose of literature review was to identify contributions made by other scholars, find research gaps and understand the methods and techniques used in carrying out various researches in the field of management control. The chapter is structured into three sections: evolution of concept of management control**,** overview of empirical studies, and summary.

3.2 Evolution of Concept of Management Control

The field of management control systems evolved over past many years with contributions from accounting, organisational management and strategic management. Twentieth century concern for management control is traced from the beginning of the scientific management revolution to present-day management thought. An early philosophy of the concept of management control is provided by Davis. According to him, the control is the instruction and guidance of the organization and the direction and regulation of its activities. Early writers such as Taylor, Emerson, introduced the basics of what today may be identified as the control process. It became well known by the end of the first decade of 20th century. The importance of control was recognized by such authors as Lawson,

Franklin, Diemer, Dutton, Lichtner, Cornell, Robinson, Williams. But, control has long been considered to be one of the most neglected and least understood areas of management activity. The first text devoted entirely to the subject of management control was written in 1920 by Francis M. Lawson. Fayol identified control as one of the five functions of management. He defined the control as the comparison of the activities of the personnel to the plan of action. He advocated application of control to all things within the organization. Fayol's definition perpetuated in the management literature through the 1920s and 1930s. Then, in 1928, Urwick, formulated first set of *control principles*. The writers such as Mc Kinsey (1921), Mixter 1923) and Sisson (1937) tended to equate organisation and management with control. According to Mooney (1939), preservation of management control over organsation was seen as critical for successful management (cited by Lee D Parker p. 56). During the 40s, with the decentralization to different organizational levels, studies on management control focused on several functional viewpoints (Giglioni and Bedeian 1974). Robert Anthony (1965) put forward a conceptual framework in his work on *planning and control systems.* He sets out three different processes, namely strategic planning and control, management control and task control. From the 1950s to 1982, Robert Anthony was one of the pioneers in the study of management control systems. His articles and texts are cited frequently and used in the curricula of many business schools. Many believe that his most well-known work in 1965 helped launch the field of management control systems research. Beginning in the 1960s, the innovative work in information and control systems emphasized the management uses of information and became a major thrust. From the 80s onwards management control scholars stressed that financial-based incentive formulas led to managerial practices, which favoured short-term results, thereby annihilating long-term ones (Coates et al. 1992). The 1990s marked the continual attempts to "modernize" or "renew" management accounting theory and practices (Kaplan, 1994; Otley, 1995, 2003). Recently, the emphasis of management control systems has focused on the increasing interest in the corporate governance and risk management concepts. This has resulted in the introduction of

new insights into the management control concept (Merchant and Van der Stede 2007). Langfield-Smith (1997) points out that the research in the area of strategy and management control has increased significantly in recent years. One indication of growing interest is the impact of methods like the balanced scorecard (Kaplan and Norton, 1996), strategic management accounting (Bromwich, 1990) and value-based management (Donovan, Tully and Wortman, 1998) (cited in Kald et al. 2000). Otley (2001) extended the boundaries of management control to the performance management field. According to Demartini (2014), the meaning of 'control systems' has changed into a more constructive, steering meaning of 'performance management', which enables (instead of constraining) managerial activity to achieve organisational goals. It is observed that in the evolutionary trend, the control concept is extending its boundaries to encompass new management areas. Recent literature indicates that the focus of management control systems is towards high-quality performance and satisfactory results while maintaining an orderly and problem-free environment.

3.3 Overview of empirical studies

There are a number of studies that examine the design and use of management control systems in context of profit and nonprofit organsations. For example, some studies investigate management control systems in small business organisations, family businesses, retail business and growing businesses. Various other studies focus on large business organisations bringing several aspects of MCS. Various studies focus on the role MCS and significance of MCS.

3.3.1 Studies related to role and significance of MCS

Giovanni B. Giglioni, Bedeian Arthur G. (1974) giving a comprehensive view of the literature on control theory, emphasize that "executives can use the knowledge of control concept, control process, characteristics of control systems, problems likely to occur when controlling, what to guard against, general control models, control principles and techniques."

Rajan, Madhav V. (1992), studies that the role of management control systems is ensuring that managers choose actions desired by the owner. Using an abstract model of a multi-divisional firm, the author shows that certain commonly observed internal accounting procedures can help implement actions, at no additional cost to the owner. A positive role can derived for the internal reports. Based on those reports, target-based bonus schemes can be formulated and non-controllable costs can be allocated.

Simons R., Barbara G.,(1990). The study focuses on the role of MCS to manage emerging strategy and gaining a competitive advantage. They present a model that departs from the traditional analysis of "fit" between formal systems and critical success factors. They argue that rather than focusing on what the organization already understands and does well, the systems should direct organizational attention to emerging threats and opportunities. In their discussion, following three major points emerge with regard to the role of management control:

- To influences operational behavior
- To manage strategy
- To create competitive advantage

Stefano, Baraldi (1998). The paper examines the role and characteristics of management control systems in not for profit Italian Organizations. The author uses the reference model of MCS given by Ramanathan KV (1982)'s book, *Management Control in NPO*. The model emphasizes technical behavioural dimension. Results of the study led to conclusions that the managers of NPO, facing given environmental and internal conditions, widely use MCS to improve the organisational effectiveness. However, the tools used in MCS differ significantly in comparison with MCS commonly used in business firms. In NPO, soft variables such as acceptance and perception are crucial for the effectiveness of MCS. MCS in NPO should be able to gather and integrate the many-

sided set of measures because the goals are heterogeneous .The reference model of MCS for NPO drawn by Ramanathan (1982) is as follows:

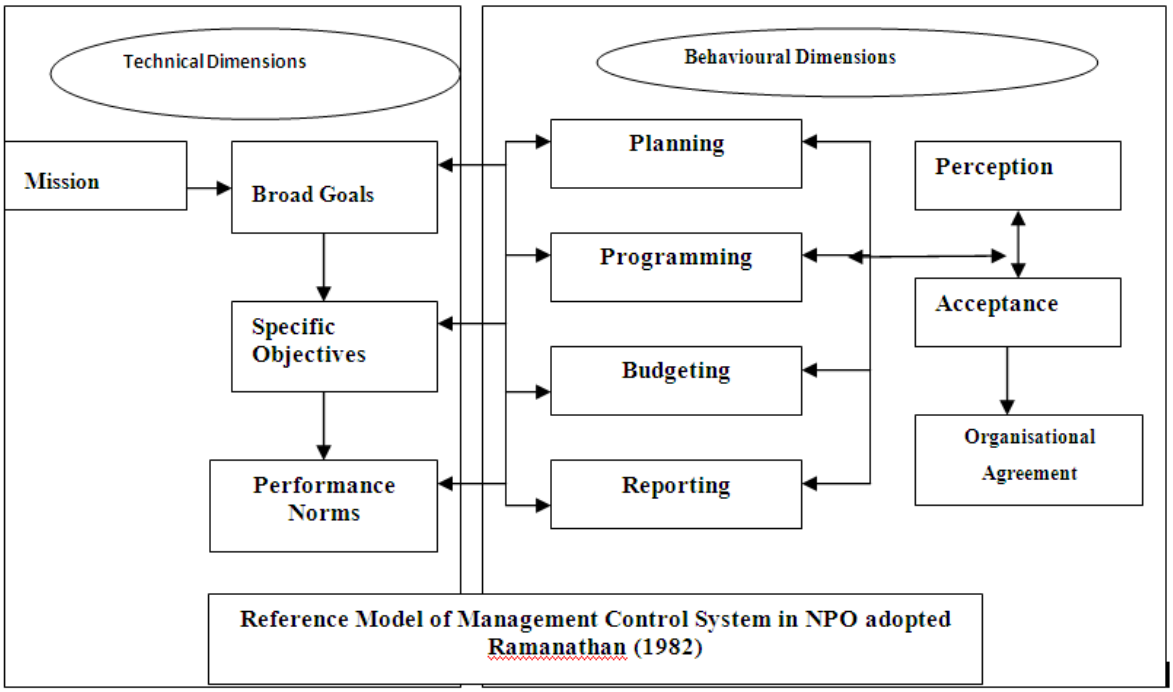


Figure 14: MCS in Not for Profit Organisation

Nilsson, Fredrik; Olve, Nils-Go¨ Ran, (2001). The paper discusses the role of control systems in multi-business companies. The paper focuses on the formulation and implementation of corporate and business unit strategies. The author discusses three categories of control models: (1) models for performance management, (2) models for value-based management and (3) models for strategic management. The discussion is in normative texts in context of Nordic companies. The authors argue that the control models should facilitate decision-making on the design and use of control systems in multi-business companies.

3.3.2 Studies related to Design and Process of MCS

There are some studies that focus on design and process of MCS. Such studies are useful to identify various techniques and tools of control and the control process used in organisations.

Rowe Alan J.(1961). The study explores research problems associated with the design of MCS. The study presents concepts related to management controls and discusses information requirements, decision rules, and feedback mechanisms. The use of computer simulation as a means for studying the dynamic response characteristics of management controls in a business environment is discussed. The author clearly specifies the importance of information to an MCS model.

Widener Sally K; Selto Frank H (1999). The study emphasizes that internal auditing as an integral part of MCS, nevertheless growing number of firms are outsourcing this activity. The reason for this is that firms are focusing on core competencies and minimizing non-core cost supports.

Trester R.H. (1965). The study is in the context of water utilities in the United States. The author points out that the managers of any modern utility are to be really successful, to "beat par". They cannot afford to be ignorant of any area of their utility's operation. To do away with ignorance, they must have proper management control tools. They must ask themselves what the proper tools are, and whether they are available to them. The author discussed only those tools that people should use to manage a company; for it seemed to him that executives often neglect some of the most valuable control tools available tools that already exist or that could be instituted with little effort. Following tools are proposed by the author:-

1. **Budgets**: Budgets are most relied tool. They can assist in measuring and evaluating results in comparison to predicted performance
2. **Internal Auditing** - It is invaluable in determining compliance with management policy, in finding areas that need improvement, in discovering how effectively work is performed and whether equipment is utilized efficiently, and in assuring that assets are being safeguarded properly.
3. **Control of Personnel** – This tool is used to assist in controlling personnel costs, evaluating the performance of supervisors, and helping to measure employee morale, include,

counseling, absenteeism reports, job evaluation, merit rating, training courses, exit interviews.

4. **Responsibility Accounting** - Responsibility accounting is essentially a classification of accounts based on and following closely the internal structure of the organization. This tool has been used by the electric and gas utilities for the last 15 or 20 years.
5. **Computers and data-processing equipments**: This tool is opening up an entirely new field for the operation and control of business affairs. The manager's control will be limited only by the stretch of his imagination control as information will be made available quickly and efficiently.
6. **Productivity Accounting**: They are newer tools on which the author's utility is presently working, tools that are expected to be used more and more in the future. Productivity accounting is an attempt to define the different types of work, along with their volumes or units, performed within a particular area of the organization, to develop time standards for each type of work, and to relate this information to the reporting of time for accounting purposes. This system was installed in the service department.

McInnes J.M. (1971). The study is an empirical investigation in the context of Financial Control Systems for Multinational Operation. The study examines Hawkins conclusion of discussion that "*those responsible for foreign operations, need to create Management Control Systems tailored to the peculiar objectives, organisation and environment of their international operations, rather than simply exporting their domestic control systems*." The research investigates whether financial reporting and control procedures undergo change as operations of companies expand to increase its effectiveness in a multinational context. The research entails a survey by mailed questionnaire and by direct interview in selected instances. The questions are asked on techniques of financial control companies use: Analysis of balance sheet and income statement ratios, comparison with profit plan and historical data, comparison of costs with budgets, ROI, Break even analysis, analysis of

manufacturing efficiency, comparison with competition and contribution analysis. Using data from 30 American multinational manufacturing companies moderate in size (Sales in the $100-300 million range), gives findings that there is a very little fundamental difference in the design and use of financial reporting systems.

Bhattacharyya, S. K. (1973). The study brings an issue of goal congruence caused by the process decentralisation. As corporate organizations grow large, decentralisation of operations becomes a critical requirement in the successful management of such enterprises. Logically, one would expect that with delegation of authority, people in the organization would attain greater psychological satisfaction insofar as the degree of freedom in decision- making and the sense of achievement in being able to achieve targeted goals would be greater than in a centralised situation. Surprisingly, in real life, exactly the opposite situation has developed in the last two decades. At lower levels of management and operations, people feel hamstrung by goals and policies which have been set without taking into account their own individual objectives. Participation by individuals in corporate and individual goal setting is one of the most feasible methods for resolving conflicts arising from control systems.

Lorange, Peter (1974). The study dicusses three emerging evolutionary trends for management control. 1) Unstable external environment necessitates a tighter linkage of the management control system to the formal planning system. 2) The instability of the external environment causes a need for a more robust set of control variables. 3) The increasing diversification of large corporations often creates more complex organizational forms which operate in varying environments. Even for smaller organizations these three factors are changing. Similar changes can be identified for public sector organizations. As a result, a clear view of control systems and their basic purposes is needed to build or run organisation effectively.

Vogelpohl Michael J., (1980). The study is about the hierarchy of Management Control Procedures. The study discusses that it is vitally important for an organization to have a means of providing documented, approved methods in areas such as finance. The best solution is a system of manual (non-automated) procedures which are issued through a central authority. Such a system of manual procedures should ideally have 4 levels: 1. statements of policy and directions issued by top management, 2. procedures by which management runs the company, 3. directives for a single department, and 4. instructions affecting individuals in their performance of duties. A company needs to set up a procedures management department responsible directly to the chief executive officer and staffed with those having the well-rounded knowledge of a management generalist. A review by the user department prior to an implementation of any procedure is essential.

Currier, Benjamin A. Jr. (1980). The author discusses that good management requires control to be effective in the long term. While new control "systems" keep developing, controls must be simple. A balanced measurement is essential. In establishing a measurement system, all aspects of the specific responsibilities regarding time service, quality and cost, employee morale, and development of people should be decided. The study discusses that traditional approaches to management control usually fail for public and not-for-profit activities. The type of management control applicable to public and not-for-profit activities depends on four criteria: 1. clarity of objectives, 2. measurability of output, 3. knowledge of effects of interventions, and 4. repetitivity of activity. The paper discusses “Type I” and “Type II” errors and finally relates MCS to organizational adaptation and suggests how to avoid control systems that prevent an organizational system from learning.

Steiss A. Walter. (1982). The author writes that that the concern of private sector for comprehensive procedures to direct and control has been in last fifty years, but the systematic application of management control techniques is more recent phenomenon in the public sector. The author examines the potential transfer of control techniques to government agencies and public originations

drawing heavily from the previous work on management control by other authors. Accounting systems traditionally have served as the major mechanisms of management control in the public sector. The author describes that public sectors have adopted more programmatic approaches to budgeting and fiscal management which does not adequately serve the organisations for long-range goals and objectives. Public organisations in recent years are faced with dynamic conditions of rapidly changing technology and changing client demands. Much of the information appropriate under previous organisational arrangements may have become obsolete. There is a need to build information system around decision centres. Thus, in the public sector an effective information system is to be the essential ingredient in management control systems. A basic objective of MCS in the public sector is to improve the overall efficiency and productivity of government programs. But political pressures frequently override empirical evidence available from formal evaluations. Nevertheless, evaluation of programmes is a critical part of a management control process. Evaluations in the public sector have not realized full potential. There is a need for new techniques and additional incentives for administrators to heed evaluations and use them as management tools for improving performance of programmes.

Merchant, Kenneth A. (1982).The study finds that control systems based on measurement and feedback are not always possible or do not provide the best solutions. A good control system must be oriented to the future and be multidimensional. In some cases, the costs of control tools could outweigh the benefits of control. Some control problems can be avoided through automation, centralization of decision making. Control problems that cannot be avoided, must be determined. Specific actions can be controlled through behavioral constraints, accountability, and pre-action review. Controlling results can involve the use of standards, budgets, and management by objectives. Personnel control problems can be approached through upgrading capabilities, improving communications, and encouraging peer control.

Mullins Lawrence (1983). The study discusses that managerial control systems may be used as a means of checking progress to determine whether the objectives of the organization are being achieved. A management control system has five essential elements: 1. planning 2. establishing standards of performance, 3. monitoring actual performance, 4. comparing actual achievement against the planned, and 5. taking corrective actions.

Kenneth J. Euske (1984). Drawing heavily on works of other writers, the author asserts that no definitive model of MCS exists due to absence of a well-explicated theory on which all models are based. The author states four functions that Management Control support and on which it relies: a) Planning, b) Control, c) Evaluation and d) Measurement.

Jaeger Alfred M., Baliga B. R,(1985). The authors discuss and develop the model of cultural control in contrast with bureaucratic control model. The authors point out that bureaucratic control systems are characterized by a high degree of formalization. Standard Operating Procedures (SOPs) are the central elements written down in the form of manual or rule books. The locus of control tends to be external as standards are externally imposed. Such systems specify fairly precisely an organisational member's decision-making authority. Whereas cultural systems rely on internalization of and moral commitment to the norms, values, objectives and ways of doing things of the organisation. Performance is viewed as a social obligation rather than a response to an externally imposed control system. The study presents a picture of larger Japanese organizations that rely on the cultural control system that are facilitated by their practice of lifetime employment. In the case of Japanese firms having cultural control systems as integral part, problems of strategic adaptation are minimum.

Lorange, Peter; Scott, Morton Michael S. (1986). The study is normative discussion, not based on specific research project. The authors emphasize the use of non-financial control variables and the linkage between planning and control and between control and operations and muti-divisionalised

structure. The authors view that one of the central activities of MCS is to identify those control variables. Control variables come from two major sources:

a) Goals and Objectives

b) Situational Setting (Organisation structure, people, technology and external environment).

The actual choice of control variables depend on choice of key variables in the long-range plans and organisation setting. The key variables are operational measures that reflect the goals of an organisation.

Macintosh, N. B., & Daft, R. L. (1987). The study examines the relationship between the organizational characteristic and the design and use of three elements of management controls which are operating budget, periodic statistical reports, and standard operating procedures. The findings of the study support the hypotheses. Departmental interdependence is associated with emphasis placed on each management control system. Standard operating procedures were an important control device when interdependence was low. In moderate interdependence, the budget and statistical reports were used extensively. When interdependence among departments was high, the role of all three control systems diminished.

Tiong, Robert L. K.(1990). The author writes that various controls that should be provided for all phases of a major project in the context of large-scale construction. He outlines seven controls: 1. cost control, 2. schedule control, 3. quality assurance and quality control, 4. procurement control, 5. design control, 6. change order control, and 7. document control. Cost control involves planning, monitoring, analyzing, and managing. The schedule control process includes input from the project manager, design management, construction management, and project control services. Design control is a difficult activity and is often overlooked by project managers. A change control system should be established to monitor and control changes to the project for the ultimate benefit of the

owners. The essence of document control is to get the correct documents to the correct people at the correct time. These seven controls are vital to the successful completion of projects.

Chow, Chee W. et. al. (1991). The study is an experimental investigation into the effects of management controls and national culture on manufacturing performance. The study is in context of Asian manufacturing firms. The study examines whether Asian manufacturing "*firms' superior performance is caused by their management control systems, the national culture of their employees or the interaction of these two factors."* The results are found to be consistent with cultural individualism and management controls having independent, but not interactive, effects on manufacturing performance.

Rothch, William (1993). The author takes the view that a comprehensive view of MCS should include at least five elements: 1) Performance Measures 2) Strategy 3) Organisational structure 4) Direction and, 5) Motivation. Each of these components reflects management choices, but these choices have implications for other components. Interdependence of the component is a key factor in control system design. When components support each other, the interdependence is a source of strength. When they conflict, there is an absence of support among components; there can be a source of weaknesses.

Graeme L. Harrison, Jill L. McKinnon (1999). The paper studies cross-cultural research in management control systems design. The study aims at understanding the relation between national culture and the design of MCS in different countries. The study examines convergence with respect to the state of understanding of cultural effects on MCS designs. The review identifies that MCS's tendency to not consider explicitly the differential intensity of cultural norms and values across nations.

Smith, Kim Langfield, Smith, David (2003). This paper examines how control mechanisms and trust are used to achieve control in a single case study of an electricity company - Central Energy, an Australian company operating in the electricity industry, which outsourced its information technology function. *"An analysis of the characteristics of the transaction, environment, and parties indicated that the control strategy adopted appeared to be a trust-based pattern of control, rather than a market-based or bureaucratic based pattern. Control was achieved through outcome controls and social controls."* This paper adds to the growing knowledge of the design of control systems and trust in outsourcing relationships.

3.3.3 Studies related to MCS and Strategy

A significant body of literature as explored the effects of strategy on MCS and also a second line of research emphasise effects of MCS on strategy. Ittner and Larcker (2001) suggest that one key element in studying strategy and MCS is to identify the specific factors that lead to strategic success.

Daniel, Shirley J.Reitsperger, Wolf D.(1992). This study examines how MCS can be used to support quality improvements in manufacturing companies. The study is in context of elelctronics firms in US and Japan.

Teall, Howard D. (1992). The author writes that essentially *Management Control* involves the *control* of human behavior and the primary focus is on the *control* of managers in pursuit of the company's strategies. The author brings out four elements of MCS:

i. Corporate strategy
ii. Corporate structure
iii. Responsibility centres
iv. Information system

Each of the four elements of a management control system plays a role in its overall effectiveness and the ultimate success of the management control system, however, depends on the degree of fit or congruence among the four elements.

Goddard, Andrew (1992). The study is in context of organisational control in a developing, community-based, psycho-geriatric service. The paper examines the interrelation-ships between control systems and service development in a complex organizational context. The study highlights three important aspects of control as important: Organisational structure, Decision making process for resource allocation, and information system. The author describes control systems in their contexts and states that control systems are likely to differ significantly, and resultant services are uneven in delivery.

Rajan, M. V. (1992). The study examines the role of management control systems in ensuring that managers choose actions desired by the owner. The researcher uses an abstract model of a multi-divisional firm and shows that certain commonly observed internal accounting procedures can help implement actions, at no additional cost to the owner. Such procedures are useful because they coordinate the actions of division managers by linking their performance evaluation schemes, over and above the links that arise from the production system.

Bruggerman W., Stede, Wim Van Der,(1993). The study integrates the concept of competitive advantage with management accounting and management control framework. The results are based on exploratory research in 18 companies (32 business units). The paper concludes that not all the characteristics of the Management Control process should be fitted to the competitive strategy. Participative budgeting, budget commitment, and monthly variance reporting are desirable in all strategies. The degree of centralisation of divisional control and bottom-up budgeting do not seem to affect any strategic performance.

Jaworski Bernard J. et al.(1993). The authors argue that management control research should examine the simultaneous use of multiple controls. Four alternative "*systems"* of *controls* are identified:

"(1) a traditional bureaucratic management control system with a primary emphasis on formal controls, (2) a clan system with a primary emphasis on informal controls, (3) a low control system, and (4) a high control system. The findings indicate the high control system is associated with highest job satisfaction followed sequentially by the clan, bureaucratic and low control systems. The high control system also produced the lowest levels of person-role conflict and ambiguity. No significant relationship is found between the four systems and job performance."

Simons, Robert (1994). Simon asserts that traditional hierarchical command and control systems are obsolete. He lays out a different manifesto for business leaders. He clustered MCS into four different types of systems. Simon calls these four types of systems as levers of control. The four levers or systems are as follows:

Beliefs Systems: Belief systems communicate core values, purpose, and direction for the organisation.

Boundary Systems: Boundary systems define code of conduct, rules and limits of freedom which must be respected.

Diagnostic Control Systems: Formal feedback systems used to monitor organisational outcomes and correct deviations from preset standards of performance

Interactive Control Systems: Such systems provide feedback to mangers regularly and personally

He gives following key design variables:

Simons' framework relies on the concept of tension. The essence of MCS is to manage the *inherent organizational tension* between creative innovation and predictable goal achievement.

Otley, David T.; Pierce, Bernard J. (1995). The study is about dysfunctional behaviours in auditing firms. A high levels of budget pressure lead to a variety of dysfunctional behaviour which can be difficult to control. This study examines whether the leadership behaviour of supervisors influence subordinates' reaction to control systems. The data are collected through a questionnaire. All audit seniors in three big six audit firms are the respondents. Two forms of dysfunctional behaviour were measured: under-reporting of time and audit quality reduction behaviour. A leadership style was found to be associated with the highest level of dysfunctional behaviour. While the lowest level of dysfunctional behaviour was associated with a style depicting the low structure and high consideration. *"Perceived environmental uncertainty was found to moderate these relationships, and to exercise a stronger moderating effect for audit quality reduction behaviour than for under-reporting of time."*

Kloot, Louise, (1997). This study explores the relationship between MCS and organisational change. The study presents that MCS can facilitate or constrain organisational change. Basic management control and budgeting systems are designed to ensure that problems or errors of environmental fit are detected. *"There are four major constructs associated with organisational learning: knowledge acquisition, information distribution, information interpretation and organisational memory."* MCS design may include features which *"fit each of these constructs, and appropriate system design can assist organisations to learn and survive during periods of change*." The research is based on case studies in two organisations.

Smith Kim Langfield (1997). The paper studies the relationship between management control systems and business strategy. Case study method has been used to examine specific aspects of management control systems and their relationship with strategy. These aspects include cost control orientation, performance evaluation and reward systems, the effect of resource sharing, the role of management control systems in influencing strategic change and the choice of interactive and

diagnostic controls. It is concluded that our knowledge of the relationship between MCS and strategy is limited, providing considerable scope for further research.

3.3.4 Studies related to control practice

Davila, Tony (2000). This study is context of role of MCS in the process of new product development. The study investigates the relationship between project uncertainty, product strategy and management control systems. It also explores whether these systems help in the innovation or hinder product development performance. *"Results support the relevance of the project uncertainty and product strategy.*" The results also show that better cost and design information has a positive association with performance.

Johanson Ulf, et.al. (2001). This study explores the management control of intangibles in three Swedish companies.The most important intangible activities as per author's interpretation included are networks consisting of present and old customers, training programs, flexible work force, company image, meeting of individuals and interaction. The authors say that learning affect intangibles and intangibles are the feedstock of competitive advantage. The competitive advantage depends on excellent stock of tangibles and intangibles.

Nilsson Fredrik (2002). The paper analyses the approach taken by companies for management control following a takeover. The study examines the implications of the design and use of MCSs after a takeover. The study focuses on the key elements that hat make up an MCS: the strategic planning and budgeting system and the performance measurement system. The findings suggest two factors can explain how the management controls systems were designed after an acquisition:

a) Corporate strategy of the acquirer
b) Business strategy of the acquired company.

Lagerstrom, M. (2002). The thesis probed measures of success available and employed in non-profit organizations, and based upon the belief of universality of management control principles. Qualitative approach has been used to carry out this research in order to acquire insight into the ideas and points of view expressed in the interviews. The study finds that

- Management control depends on prevailing situations and circumstances governing each particular organization
- The employment of an ultimate and conclusive MCS fitting all organizations and situations is unrealistic.
- There are a number of control systems such as budget, the accounting system, auditing and project control that can be used

Chenhall, R. H. (2003). The paper finds that management control literature seems to be primarily oriented towards the study of larger firms. While there is evidence in contingency literature for relationships between size, organizational structure, and control-related aspects, only a few studies investigate these relationships. "*The assumption is that management control systems are adopted to assist managers achieve some desired organizational outcomes or organizational goals. The appropriate design(s) of MCS will be influenced by the context in which they operate*."

Kober Ralph, et al.(2003). The paper examines the *"relationship between strategy and MCS over time to study whether MCS changes when there is a change in strategic typology*." The data are collected using questionnaire, supplemented with documentation review and interviews, in a public sector organization that had experienced a strategic change. The results indicated that as strategy changed, the MCS also changed. There was a significant increase in the use of both formal and informal control mechanisms over the period examined. The questionnaire included 27 items on various control system characteristics, which then were grouped into nine control mechanisms as:

1. **Results Monitoring**: These controls focus on outputs. Predetermined standards for outputs are set and performance is measured against these standards.

2. **Cost controls**: These refer to the financial measures used to ensure the efficient and effective execution of operations. The items included: cost centers, variance analysis, tight budget goals

3. **Bureaucratic controls**: These involve the monitoring of subordinates, the setting of standard operating procedures and rules, and establishing lines of authority within the organizational hierarchy.

4. C**ommunications Mechanisms**: These refer to the horizontal and vertical communications that can be either formal or informal.

5. **Resource sharing**: These refer to the control resulting from the working relationships with other divisions.

6. **Tightness of Controls**: These refer to the level of monitoring exerted over operations. The items included: adherence to rules, policies, and plans; virtually all activities monitored by management control systems.

7. **Professional Controls**: These refer to the values, judgment, and ethics internalized by members of the same profession resulting in the need for less monitoring.

8. **Organizational culture**: These refer to informal social structures that support the other control mechanisms in the organization.

9. **Tailoring of controls to specific user needs**: These refer to the presentation and information content tailored to meet division/section requirements.

Cravens David W., et.al. (2004). The paper discuss that selecting an effective form of management control in sales organizations is essential to achieving favorable results from the salesperson. The authors examine an alternative perspective to behavior-based management control in sales organizations. The conceptualization classifies four control combinations consisting of high, bureaucratic, clan, and low management control. The hypotheses are tested using a sample of 1042

salespeople from a broad range of industries and companies. The findings suggest that salespeople who work under a more visible control system (high control) perform better and are more satisfied. They display lower burnout and role stress, compared to salespeople working under bureaucratic, clan, and low control combinations.

Bisbe, Josep, Otley D, (2004). The paper discusses the effects of the interactive use of management control systems on product innovation. This paper examines the relationships among variables using Simons's framework of four levers of control. The paper explicitly distinguishes the different types of effects involved. It is survey-based research, significance is tested. The results do not support the postulate that an interactive use of MCS favours innovation. No evidence is found in favour of an indirect effect of the interactive use of MCS on performance acting through innovation.

Laitinen, E. K., Wingren, T., & Nixon, W. A. (2004). The paper searches for a typology of management control system mix (MCSM) in 110 Finnish technology firms.A postal survey of MCSs is performed and responded by 110 firms and simple statistical tests are used to test the proposed hypotheses. *"The analysis showed that there are four basic types of MCSMs for implementation and change: value-based management systems (change), performance measurement and improvement systems (change), activity- and process-based management systems (change) and production planning systems (change)."*

Ford, M. W., & Greer, B. M. (2005). The paper studies the relationship between management control system usage and planned change achievement. Data were obtained from managers in 22 organizations. The results indicated that managers used management control systems less extensively than other elements of the change process. The study views three variables to operationalising management control systems: performance review and appraisals, rewards systems and outcome monitoring. The study finds that there is a strong relationship between the use of control systems

and implementation success. Overall, the findings suggest that many organizations may under-rate formal controls, particularly those related to outcomes monitoring when managing change.

Li, Y., Li, L., Liu, Y., & Wang, L. (2005). The study focuses on how the environmental complexity influences the choice of management control systems, product development and process decisions. The study is based on the results of a large-scale survey study on business strategy and innovations conducted in China in November 2002 reports that business environment complexity is one of the major reasons leading to strategic change.

Frowa N., et.al. (2005). The study is related to encouraging strategic behavior while maintaining management control. The study suggests that traditional management control systems such as budgetary controls are being 'embedded' within a wider control framework of implementation of the strategy. Consequently, managers increasingly find themselves having to balance their continued exposure to traditional budgetary controls. The data are collected using case study approach. Findings indicate that elements of the formal controls like budgetary controls remain wedded to notions of cybernetics. Managers attempt to pursue their strategic roles become involved in interdependencies and team working which distort line responsibilities and accountabilities. The study suggests that the resulting issues created by these competing concepts are managed through formally directed procedures, and informal channels of social interaction.

Tekavčič, M., Peljhan, D., & Šević, Ž. (2005). The study examines "management control systems-strategy-performance" relationship from a contingency theory point of view. The paper investigates the relationship among MCS, strategy and organisational performance in a particular company. This study upgrades the existing theory about a relationship between contextual and MCS variables. The study also considers how the relationship impacts the organisational performance. Results indicate

that regular use of MCS leads to improved results and concludes that MCS influence the implementation and monitoring of strategies.

Henri, J. F. (2006). The study is about management control systems and strategy from a resource-based perspective. The paper discusses that the current business environment is characterized by fast changes in customers, technologies and competition. Therefore, organizations are required to continuously renew themselves to survive and gain competitive advantage. This study extends the research at the interface between MCS and strategy with the application of a Resource Based View framework. *"The study examines the relationships between the use of management control systems (MCS) and organizational capabilities. More specifically, the study focuses on the diagnostic and interactive uses of one important aspect of MCS, namely performance measurement systems (PMS)."* The results indicate that an interactive use of performance measurement systems fosters specific capabilities by focusing organizational attention on strategic priorities and stimulating dialogue.

Bouillon Marvin L. et. al .(2006). The study examines the importance of goal congruence in management control systems (MCS). "*They use a theoretical framework that draws upon both agency theory and stewardship theory. Two aspects of goal congruence are considered: (1) a manager's voluntary acceptance of an organization's strategy*," and (2) manager consensus regarding their organization's strategy, The authors conclude that goal congruence based upon both strategy acceptance and reinforcing incentives may result in MCS that are less costly and more effective.

Sandino, T. (2007). The study builds on the arguments by Merchant and Ferreira (1985) that MCS are critical to the success for the survival of early stage firms. The study uses data from 40 field interviews and 97 responses from a survey directed to early-stage store-based U.S. retailers. This study gives insights about what choices are made by the entrepreneurs when deciding the type of initial MCS to introduce. The study finds that early-stage firms tend to introduce four categories of

initial MCS based on the purposes: Basic MCS, which are similar across all firms, are used to collect information for planning and establishing basic operations; Cost MCS, which are introduced to achieve operation efficiencies and cost minimization; Revenue MCS, which are used to achieve growth; and Risk MCS, which are used to reduce risks and protect asset integrity.

Herath, Siriyama Kanthi (2007). The paper provides a framework for management control research. The conceptual framework can be used in studying the changing nature of management control in organizations. The framework encompasses four components of the management control system. They are : organizational structure and strategy; corporate culture; management information systems; and core control package. This work is not an empirical investigation of management control. A range of published works has been reviewed to explore the nature of management control. The conceptual framework developed in the paper is useful to both practitioners and researchers of management control and can be used in studying the changing nature of management control in organizations.

Kober Ralph, et.al. (2007). The study examines the interrelationship between management control system (MCS) mechanisms and strategy. The traditional view is that the MCS is shaped by organisational strategy, or there is a passive relationship between MCS and strategy. But contemporary viewpoints suggest that there may be a two-way relationship between the management control system and strategy. MCS shapes and is shaped by strategy. The authors develop two research questions and test them using a public sector entity that has undergone a strategic change. The study is retrospective longitudinal across five years involving archival data, interviews, and a questionnaire. The analysis confirms the existence of a two-way relationship between MCS and strategy. The authors find that the interactive use of MCS helps to facilitate a change in strategy and that MCS mechanisms change to match a change in strategy.

Soobaroyen, T. (2007). The study makes an empirical investigation into the effects of selected management control sub-systems on managers' extent of the dysfunctional behavior. Data were collected through a survey from a sample of functional managers in Australia. *"Specific hypotheses were developed to link two previously identified forms of dysfunctional behavior - information manipulation and gaming – and three typical control sub-systems, namely Standard Operating Procedures (SOP), Budgetary Participation (BP) and Reliance on Accounting Performance Measures (RAPM)."* The results indicated that SOPs are negatively related to gaming and BP has some significant reducing effects on managerial dysfunctional behavior. A higher level of RAPM was is positively related to the extent of managers' information manipulation practices.

Tsamenyi Mathew, et. al. (2008). The study is in context of family-owned businesses. The results are based on a case study of management controls in a family-owned University in Indonesia. The findings of the case study showed that culture and social relations are very influential in the management of the University. *"Decisions such as recruitment, rewards, performance evaluation, and resource allocations are often made in cognisance of social and cultural factors."*

3.3.5 Variables in Management Control Systems

It is seen that there are variety of individual controls that have been employed in various studies for describing the management control systems. A list of MCS variables is culled from review of literature for guiding this study. Variable are presented in table on next page.

Table 5: List of MCS Variables

Researchers	MCS Variables
Rowe Alan J.(1961)	▪ Information system ▪ Decision rules ▪ Feedback mechanisms
Widener Sally K; Selto Frank H (1999),	▪ Internal auditing
Trester R.H. (1965)	▪ Budgets ▪ Control of Personnel ▪ Productivity Accounting
Bhattacharyya, S. K. (1973)	▪ Delegation of authority ▪ Participation by individuals in corporate and individual goal setting
McInnes J.M. (1971)	Financial reporting
Wilson R.M.S. (1973),	▪ Marketing Audit ▪ Marketing Research ▪ Financial control like Budgeting, C-V-P Analysis, Distribution Cost analysis and Ratio analysis
Lorange, Peter (1974)	▪ Formal planning system
Vogelpohl Michael J., (1980)	A system of manual having 4 levels: ▪ Statements of policy and directions ▪ Directives ▪ Instructions ▪ Procedures
Currier, Benjamin A. Jr. (1980)	▪ Performance measures ▪ Development of people
Hofstede, Geert (1981)	Clarity of objectives
Merchant, Kenneth A. (1982),	▪ Use of standards ▪ Use of budgets ▪ Use of Management by objectives ▪ Personnel control:- o Upgrading capabilities o Improving communications o Encouraging peer control
Mullins Lawrence (1983),	▪ Planning ▪ Establishing standards of performance ▪ Monitoring actual performance ▪ Comparing actual achievement against the planned target ▪ Taking corrective actions
Guthrie Kenneth M. (1984),	▪ Data management ▪ Quality assurance
Kenneth J. Euske (1984),	▪ Planning ▪ Control ▪ Evaluation ▪ Measurement
Jaeger Alfred M., Baliga B. R,(1985)	▪ Standard Operating Procedures ▪ cultural systems
Lorange, Peter; Scott, Morton	▪ Goals and Objectives

Michael S. (1986)	▪ Situational Setting (Organisation structure, people in organisation, technology available and external environment)
Macintosh, N. B., & Daft, R. L. (1987),	▪ Operating budget ▪ Periodic statistical reports ▪ Standard operating policies ▪ Procedures
Christensen, David S. (1989),	▪ Performance measurement ▪ Budgets ▪ Comparisons Variance Analysis ▪ Reporting
Tiong, Robert L. K.(1990)	▪ Cost control ▪ Schedule control ▪ Quality assurance ▪ Quality control ▪ Procurement control ▪ Design control ▪ Change order control ▪ Document control
Teall, Howard D. (1992)	▪ Corporate strategy ▪ Corporate structure ▪ Information system ▪ Responsibility centres
Goddard, Andrew (1992)	▪ Organisational structure ▪ Decision making process for resource allocation ▪ and information system
Rothch William (1993),	▪ Performance Measures ▪ Strategy ▪ Organisational structure ▪ Direction ▪ Motivation
Bruggerman W., Stede, Wim Van Der,(1993),	▪ Participative budgeting ▪ Budget commitment ▪ Monthly variance reporting
Jaworski Bernard J. et al.(1993)	▪ Formal controls ▪ Informal controls
Simons Robert (1994)	▪ Beliefs Systems ▪ Boundary Systems ▪ Diagnostic Control Systems ▪ Interactive Control Systems
Louise Kloot, (1997)	▪ Budgeting systems
Johanson Ulf, et.al. (2001)	▪ Recognition ▪ Reporting ▪ Evaluation ▪ Motivation
Lagerstrom, M. (2002)	▪ Budget ▪ Accounting system ▪ Auditing ▪ Project control
Kober Ralph, et al.(2003)	▪ Results Monitoring ▪ Cost controls ▪ Bureaucratic controls ▪ Communications

3.3.6 Studies related to Power Sector

Since the context of this study is power utility, survey of literature also explored studies related to power sector in India. It was found that in past few years, a number of studies cover the power sector. The focus of most of studies is related to policy matters. Studies related to managerial aspects of power sector seem to have received sparse attention. The researcher finds that following studies related to power sector deserve a mention in the review of literature for this study.

Mishra R K et al (2004). The study begins with tracing the significance of Internal Audit (IA) as a control mechanism and highlights that internal audit one of the most important forms of control in both public and private Organisations. The study looked into the adequacy of IA, assessment of IA coverage and various practices of IA currently in operation in State Electricity Boards (SEBs). Data were collected through two different questionnaires. The study concludes that there is need to redesign the currently operating IA system in SEBs with a long term perspective. A framework for IA is proposed to make IA more efficient and effective

Ruet, Joel. (2005). The study examines the functioning of the State Electricity Boards of India and the implications of the new liberalized approach. This study is an extensive work tracing the history of the State Electricity Boards and brings insights into most complex issues such as manpower configurations, thefts, Transmission and Distribution losses (T&D) and other technical aspects. It argues that due to political influence, SEBs have never been able to run professionally. In the new liberalized approach towards electricity sector, SEBs have to undergo specific and structural series of organizational changes, also called enterprisation.

Dossani, R. (2004). The study presents the central issues for electricity sector reform in India. The paper argues that India's current reform policies will not be sufficient to achieve reliable, efficient power because distribution reform has not been done. Undertaking distribution reform is a difficult path to tread because there is limited experience and an absence of global consensus on best

practices, both economic and political. The paper provides a means to policymakers to identify the situation in their respective states and choose a reorganization path that is the best

Ruet, J. (2006). The study analyses privatization of utilities in emerging countries. A case of the privatisation of electricity in Delhi is taken as an example to examine informational problems that arise both before and after the transfer of property. The study proposes a model based on a trade-off between the potential benefits of creating information prior to selling of assets, vs. facing the costs of delays associated with the risks of a state's failure in creating this information prior to privatisation.

Singh, A. (2006). The study discusses major policy and regulatory changes since the early 1990s and enacted Electricity Act 2003. The paper evaluates the reform process in the light of some of the regulatory changes undertaken and discusses the issues involved in introduction of competition in the power sector primarily through development of a market for bulk power.

Dubash, N. K., & Rajan, S. C. (2001). The study provides an analysis of the social and political context in which power sector reforms have taken place in India. The authors raise a question that while a state-led power sector has been responsible for substantial failures, is the design of the reformed sector well aimed at balancing efficiency and profit-making on the one hand and the public interest on the other? The paper discusses the forces that have shaped the reform processes and contributes to an understanding of how the public interest can best be served in the ongoing effort to reshape the power sector.

3.4 Chapter Summary

This chapter provided an overview of the literature review in the field of management control systems. It is seen that theoretically and empirically, the concept of management control systems has received much attention. Various contributions by the scholars and practitioner have been helpful to impressive understanding of the concept. In the evolutionary trend, the concept has evolved

beginning from 1920s with the contributions from accounting, organisational management and strategic management. In the current situation of liberalized environment, there is seen a shift of focus. MCS is now viewed as a tool for strategy implementation and performance management. Various studies indicated that there is no standard model of MCS universally applicable to most of the organisations. There could be a generic or basic MCS which becomes established in all matured organisations, but the various tools and dimensions of MCS depend on a number of contextual factors, including environmental factors. As, the complex nature of modern day business gives rise to the need for effective strategy formulation and its implementation, management control systems play a significant role in achieving set objectives. It is seen that there are a few studies on the power sector. There is no study found dealing with management control of power utility nationally and internationally.

CHAPTER IV

CONCEPTUAL FRAMEWORK

4.1 Introduction

This chapter proposes a conceptual framework to position this research work within the MCS literature. The first section explores the concept and importance of MCS. The following sections investigate what kind of components (variables) are used in the design of MCS and what constitutes and an effective MCS. Then, based on the understanding of theoretical and contextual factors, a suitable conceptual framework is intuitively generated. The conceptual framework proposed aims at serving as guide to structuring the material and offering meaningful interpretation on the observations made.

4.2 Concept of Management Control System

As the term 'Management Control System' is made of three words Management, Control, and System, each word is first described separately and then integrated term 'Management Control System' is explained.

4.2.1 Concept of Control

In the literature, it is found that the notion of control has dominated management writers thinking particularly in 1920s and 1930s. There are numerous definitions of the control concept. Each definition adds new elements and seems to be relevant. Rathe (1960, p.32) noted that there are fifty-seven connotations of the term 'control'. Among various management thinkers, F.W.Taylor (father of scientific management) and Henry Fayol concentrated considerable amount of time on 'controls.'

As the control concept has been approached in multiple ways, some of the key definitions of control are outlined as follows:

According to Henri Fayol (1916)

> *"Control of an undertaking consists of seeing that everything is being carried out in accordance with the plan which has been adopted, the orders which have been given, and the principles which have been laid down. Its object is to point out mistakes in order that they may be rectified and prevented from recurring."*

This definition formulated is considered as one of the first definitions of control that has perpetuated for long time. Urwick (1937) also in principle agreed that control consists in seeing that everything is carried out in accordance with the plan which has been adopted.

According to EFL Breech:

> *Control is checking current performance against pre-determined standards contained in the plans, with a view to ensure adequate progress and satisfactory performance.*

According to Harold Koontz (1958):

> *Controlling is the measurement and correction of performance in order to make sure that enterprise objectives and the plans devised to attain them are accomplished*

According to Flamholtz, E. (1996):

> *"In organisational context, the term Control is the process of controlling or influencing the behavior of people as members of a formal organization to increase the probability that they will achieve organizational goals."*

According to William Newman (cited by Sinha:2009)

> *"Control is one of the basic phases of managing, along with planning, organizing, and leading."*

Anthony (1965) introduced the term '*management* control'and defined it as follows:

> *"Management Control is the process of assuring that resources are obtained and used effectively and efficiently in the accomplishment of the organisation's objectives."*

Various definitions indicate that control is seen as an essential part of the management process and a part of all the managerial efforts of an organization.

4.2.2 Management Control

There are no universally accepted definitions of the words "management" and "control", but the connotation of "management control" is a pragmatic concern for results, obtained through people (Hofstede G.: 1981). Anthony and Govindarajan (2000) defined *management control* as a process in which managers at all levels ensure that the people they supervise implement their intended strategies.

In the official terminology of CIMA, which is world's largest professional body of management accountants, management control is defined as, "All of the processes used by managers to ensure that organisational goals are achieved and procedures adhered to, and the organization responds appropriately to changes in its environment.'

Kaura M. N. (2002) reviewed the work of Anthony R N(1989), Camillus J(1986), Mockler R.J. (1972) and articulated that management control is essentially problem-solving or decision-making scheme where human judgment plays a critical role.

Otley and Berry et al. (1980) define Management Control as monitoring activities and then taking action to ensure that desired ends are attained. They developed their model of Management Control System that involved four conditions:

1. The existence of objectives which is desired
2. A means of measuring process outputs in terms of this objective
3. The ability to predict the effect of potential control actions; and
4. The ability to take actions to reduce deviations from objective

(cited in CIMA course material)

Currier, Benjamin A. Jr. (1980) in his article, *Management Controls,* writes that Management Controls provide means to measure performance, pinpoint areas needing attention, motivate people, and aid in job enrichment.

4.2.3 Management Control Systems

Post Anthony's classic work on control function in 1965, many studies treat management control as system. A system is defined as the framework of processes and procedures that are integrated to fulfill a task or to achieve set objectives. As c*ontrol is* tailored to its organization's goals and resources, it is a logical integration of various control tools (Horngren, C. T 1996). According to Kullvén (1994) and Modell (1998), controls are viewed as being the means leading to an overall control, whereas a set of such controls together constitutes a control system. Merchant and Van Der Stede (2007) also point out that Management Control is a system as well a set of control systems to gather and report data and to evaluate performance. Therefore, the *management* of any organization must develop a *control system* tailored to its organization's goals and resources.

It is found that there a number of useful definitions of Management Control Systems suggested in the literature. Some definitions are too general and other focus on narrower aspects of Management Control Systems. Malcolm et al (1960) commented that Management Control Systems are many

things to many people that a consensus is conspicuous by its absence. Some of the definitions of MCS are outlined here to gain insight into the concept:

Malcolm Donald G., Rowe Alan J. (1960) in their book, *Management Control Systems* p.188, define MCS as "a set of policies, procedures, and information processing which is designed to give direction to activities by clearly establishing goals, by measuring progress toward these goals, and by indicating or initiating corrective action.".

Mockler (1972) defines MCS as "A systematic effort to set performance standards consistent with planning objectives, to design information feedback systems, to compare actual performance with these predetermined standards." This definition emphasised the positive control action and outlined the steps involved in the Management Control Process. It asserts that setting of standards is a most critical aspect of control.

A definition offered by Malmi and Brown (2008, p.29) illustrates the behavioral aspect of management control and MCS; "Those systems, rules, practices, values and other activities management put in place in order to direct employee behavior should be called management controls. If these are complete systems, as opposed to a simple rule (for example not to travel in business class), then they should be called MCSs".

Anthony views MCS as one of the tools that managers use in implementing desired strategies. His framework outlines other three tools to implementing strategies as: Organizational Structure, Human Resources Management and Organisational Culture. He viewed MCS in terms of a distinct and hierarchical relationship. He states that,

"Management control fits between strategy formulation and task control in several respects. Strategy formulation focuses on the long run, task control focuses on short-run operating activities, and management control is in between" (Anthony, 1998:6).

MCS in terms of distinct and hierarchical relationship is is diagrammatically represented in the figure

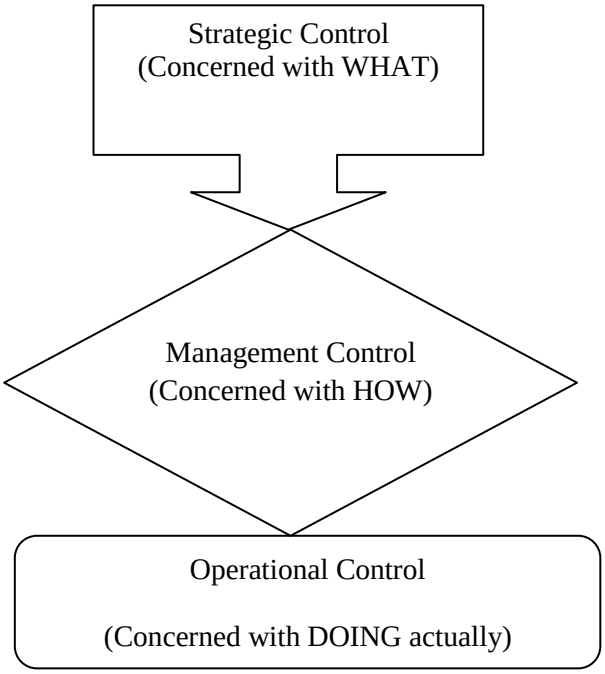


Figure 15: Hierarchy of Management Control

Strategic control is about deciding on the validity of strategic goals and objectives of the organization. *Management Control* symbolizes the notion of effectiveness in carrying out managers tasks. It is the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives. *Operational Control* is the process of assuring that specific tasks are carried out effectively and efficiently. All the three functions are intimately bound up. Robert R. Anthony was primarily concerned with the middle function. Many scholars view Anthony's contribution to control literature as classic because it has changed the paradigm of thinking about MCS. Later, Anthony & Young (1999) view MCS as a 'black box' meaning by an operation whose exact nature cannot be observed. In other terms, MCS involves the behavior of managers, and these behaviors cannot be expressed by equations.

Maciariello Joseph A, Kirby Calvin J. (1994) define MCS as "a set of interrelated communication structures that facilitates the processing of information for the purpose assisting managers in coordinating the parts and attaining the purpose of an organization on a continuous basis."

Armesh H. (2010) defines a MCS as a system which gathers and uses information to evaluate the performance of different organisational resources like human, physical, financial and the organisations a whole considering the organisational strategies (p. 193).

In summation, most of the authors coincide in highlighting the fact that management control is a process which managers use subjectively in order to influence the performance and behaviour of the people forming an organisation in order to put into practice the strategies of the organisation so that it may attain its objectives (Anthony, 1990; Collins, 1982), both effectively and efficiently.

4.2.4 The Nature of Management Control Systems

The function of the management is to manage organisational activities efficiently and effectively to achieve the desired performance levels. Management control systems facilitate the achievement of that desired performance levels. A management control system assists managers in planning and controlling the activities of the organization. A management control system is the means by which senior managers ensure that subordinate managers, efficiently and effectively, strive to attain the company's objectives. Management Control System can be tight or loose, formal and informal. The degree or frequency of monitoring the activities of organisation relates to whether Management Control System is loose or tight. The literature on Management Control focuses mainly on formal controls; however, both formal and informal controls co-exist in a large organisation. Formal controls are usually based on rules, procedures, and manual. They are more visible and more easily measurable. Informal Controls is how managers use the system and they are very often linked to management style, beliefs, self-control, and organisational culture. The emphasis of both formal and informal controls remains on the achievement of organisational goals. Management control systems involve a number of activities in an organisation. Various activities may include a) Planning b) Coordinating c) Communicating d) Evaluating, and e) Influencing people in various formal and informal ways to work towards the goals of the organisation. According to Anthony

and Govindarajan (2006), Management control systems involve five major activities namely, planning, budgeting, evaluation, performance measurement and management compensation.

4.3 What Constitutes Effective Management Control Systems?

Koontz (1958) stated that control is most effective when directed to factors that were strategic to the appraisal of performance. Pradhan and Rao (2000) bring out prerequisites to the effective MCS. According to them, MCS to be effective must have following aspects:

- Professional Management
- Commitment of Top Management
- Fair and just system of evaluation: MCS must be fair and equitable on the executives otherwise it will demoralize them.
- Effective Management Information System (MIS): MIS goes hand in hand with MCS. Timely accurate and adequate reporting ensures proper information for decision makers.
- Effective delegation and responsibility commensurate with authority
- A proper balance between decentralization and centralization
- Role Clarity relating to objectives and working of MCS amongst managers
- Appropriate organisational structure
- The decision-making process in MCS has to link with organisational goals and personnel goals to motivate the managers and evaluate them better.
- Planning and budgeting are essential pillars of MCS Budgeting is a concrete expression of planning
- Review of Management Control Systems: MCS should constantly be reviewed.

4.4 Purpose of Management Control System

A firm implements MCS to ensure that appropriate strategies are implemented to attain its goals. MCS in a sense brings about the unity of purpose in an organisation (Das S C, 2011). It is designed

to assist managers in planning and controlling the activities and personnel of the organization. The main purpose of Management Control Systems is to assist management in coordinating the activities of the firm and steering those activities towards achievement of the firm's overall purposes, goals and objectives (Maciariello and Kirby, 1994, p.49). Anthony & Govidrajan (2007, p.2) describe that long-term success of an organisation depends on good strategies and more importantly; systems and processes that energize the employees to execute those strategies effectively. The degree of control varies with the situation and stability of the organisation. Without enough *control systems* in place, confusion and chaos can overwhelm an organization. Mullins Lawrence (1983) maintains that managerial control systems may be used as a means of checking progress to determine whether the objectives of the organization are being achieved. Horngren et al. (1996) outline the purposes of a management control system in terms of

- Clearly communicate the organization's goals
- Ensure that every manager and employee understands the specific actions required of him/her to achieve organizational goals
- Communicate the results of actions across the organization
- Ensure that the management control system adjusts to changes in the environment

Widener (2007); Merchant & Otley, 2007 state that Management Control Systems (MCS) have the purpose of providing information useful in decision-making, planning and evaluation. Kloot (1997) points out that management control exists to ensure that organisations achieve their objectives.

4.5 Importance of Management Control System

MCS have been argued to facilitate growth. For instance, Covin & Slevin, 1997; Galbraith, 1982; Kazanjian, 1988; Simons, 1999 have argued that the growth and survival of a firm depends on its ability to deal with the internal challenges of complexity, turmoil and increasing needs for coordination through the proper design of organizational structures and management control systems**.**

Anthony & Govindranajn (2007) emphasize the importance of MCS by illustrating that part of the reason for the demise of many companies such as Tyco, Global Crossing, Worldcom and Enron is lapse in controls (p.2). Further, they affirm that MCS is a must in any organisation (include Non-profit organisation) that practices decentralization. Flamholtz (1996) points out that

"Organizations require control because they consist of people with different interests, different tasks, and different perspectives. The efforts of people require integration and direction and this, in turn, creates the need for control. In the absence of a system for motivating performance toward organizational goals, people are likely to make decisions and act in ways that fulfill their own personal needs and goals, not necessarily the organization's."

According to Merchant and Otley (2007) "an MCS is designed to help an organization adapt to the environment in which it is set and to deliver the key results desired by stakeholder groups". MCS are therefore intended to help the organization to motivate employees to make decisions and to take actions which are in the organization's best interest (Chow, Shields & Wu, 1999).

4.6 Components of Management Control Systems

Malmi and Brown (2008) argue that control systems come in many shapes and forms, no two systems are alike. In many companies, there is often a set of MCSs, and this has in earlier research been called an MCS package. The reason it is more accurate to call it an MCS package instead of just an MCS is that the different MCSs often have been implemented at different times and for different purposes. Thus, it upholds Carlos (1988) views that the concept of MCS operates as package, and different control systems may be used for the achievement of different types of organisational performance.

Merchant and Van der Stede (2007) also state that an MCS can be one system as well as a set of control systems. Mullins Lawrence (1983) gives 5 essential elements of MCS as i) planning what is

desired, ii) establishing standards of performance, iii) monitoring actual performance, iv) comparing actual achievement against the planned target, and v) taking corrective actions.

The MCS also may comprise the financial control system, the management accounting system, and the human resources system (Merchant 1998; Horngren et al. 1997; Simons 1992). According to Oliver & Anderson (1994), a control system consists of managers' monitoring, directing, evaluating and rewarding activities. Decisions about "the levels of monitoring and direction and the methods of evaluating and rewarding should be treated as interrelated decisions that *collectively* describe management's control system" (p. 54).

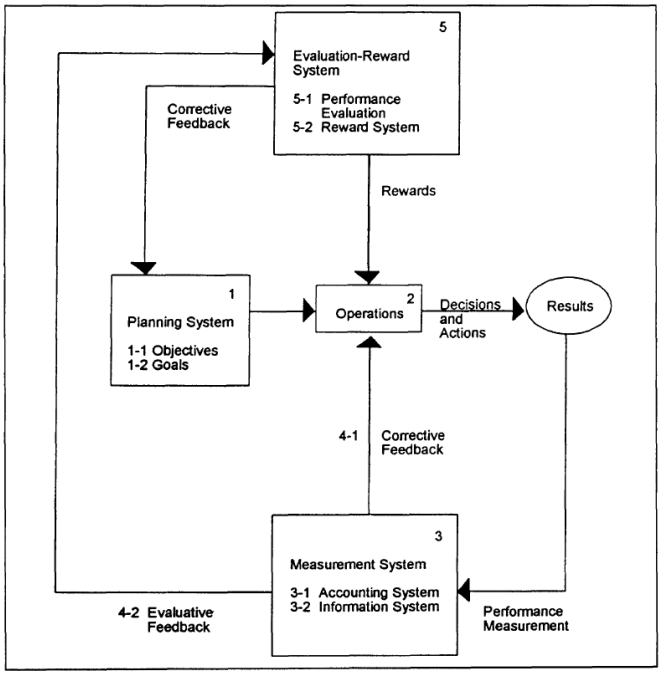
William (1993) takes the view that a comprehensive view of MCS should include at least five elements: Performance Measures, Strategy, Organisational Structure, Direction and Motivation. Further, he states that when components of MCS support each other, the interdependence is a source of strength. When they conflict or absence of support among components, there can be a source of weaknesses.

Flamholtz's (1996) provides a framework of control that provides an insight into what constitutes MCS. The framework consists of three parts:

1. a 'core control system',
2. organizational structure, and
3. organizational culture.

The core control system consists of six components as diagrammatically represented in figure

(1) Planning subsystem: Planning involves setting goals and objectives in each key functional area for which the individual or the work unit is held responsible. From the perspective of a control system, objectives and goals are intended to facilitate both *ex-ante* and *ex-post* control.



(2) **Operational subsystem**: This refers to the on-going system for performing the functions required for day-to-day organizational activities. It includes the behaviors exhibited by the individual and the group or larger organizational units.

(3) **Measurement Subsystem**: A measurement sub-system monitors the extent to which goals and standards have been achieved so that organizational members may be provided with corrective and evaluative feedback. The overall measurement system includes accounting system with financial and nonfinancial measures of organizational performance.

(4) **Feedback System:** Feedback consists of information about operations and their results. Feedback may be corrective or evaluative. Corrective feedback is information about the performance. Evaluative feedback is information about how well the operational system is doing.

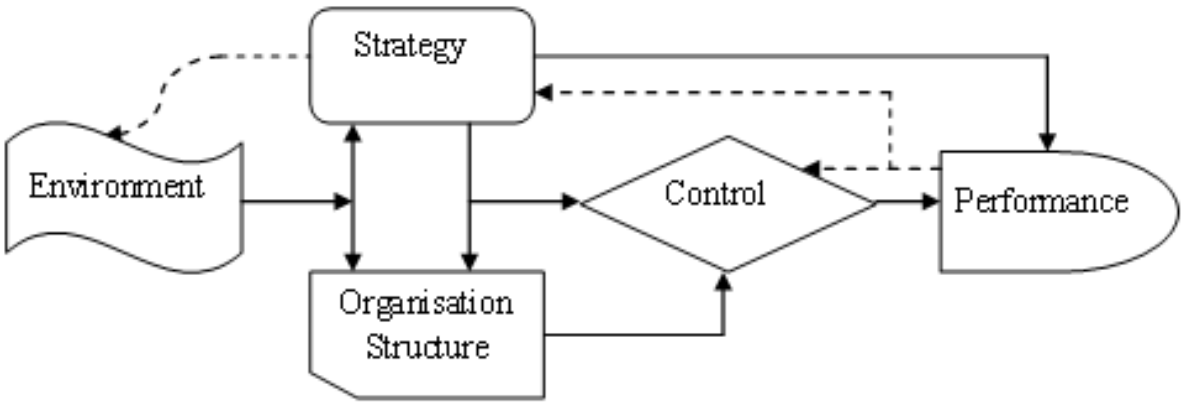
(5) **Evaluation- reward system**: The evaluation-reward system refers to the mechanisms for performance assessment and the administration of rewards.

(6) **The outcome element**: This means performance (e.g. sales volume), work attitudes (e.g. satisfaction), and other outcomes such as turnover and absenteeism.

Malmi & Brown's (2008) proposes that the MCS package can be separated into five groups; cultural controls, planning, cybernetics controls, rewards and compensations and administrative controls. Cultural control can be used to control the behavior of employees with certain desired values. The organizational culture may sometimes be beyond the control of managers but is indeed a control system when it is used to control the behavior of employees. Cybernetics controls include budgets, financial and non-financial measures. Administrative Controls direct behavior through the organization of individuals and groups. Such controls can be separated into three categories; organization structure, governance structure and policies and procedures.

Daft and Macintosh (1984) propose that an MCS consists of six components: Strategic Plan, Long-term plan, annual operating budget, periodic reports, performance appraisal and policies and procedures.

Norman Macintosh's (1994) in one of his influential textual work - *Management Accounting and Control Systems: An Organizational Behavior Approach* (1994 p.87), present control framework as represented in figure below



From the framework, it is observed the linkages between strategy, control and organisational performance. *Norman B. Macintosh states that c*ongruent matching of the environment, strategy and organisational structure variables with the control system is essential to achieve performance.

Otley's (1999) presents a framework for management control that consists of six components namely, objectives, strategies and plan, target setting, rewards and information flows. The framework is represented in the figure below.

This framework is fairly straightforward compared to other models.

Anthony and Govindarajan (2009) state that MCS consists of five elements i) Strategic Planning ii) Budgeting iii) Performance measurement iv) Financial Performance evaluation v) Incentive and compensation systems (cited by Horngren et al. 2008 p.431). Effective control should have linkage to strategy, the acceptance by employees and support from top management for actions.

4.7 Proposed framework for study

Numerous MCS framework are available in the literature. Various frameworks provide us insight into what constitutes MCS package. Scholars such as Flamholtz, E. G., Das, T. K., & Tsui, A. S. (1985), find that various MCS frameworks may be confusing regarding the meaning of the construct as well as the measurement of relevant variables. Otley (1999) and Chenahall (2003) argued that there is no universally applicable system of Management Control and choice of appropriate control techniques depend on circumstances surrounding a specific organisation. Scholars such as Fisher, 1998; Flamholtz, 1983; Otley, 1999; Bedford, 2006; Malmi & Brown, 2008 state that instead of focusing on a single MCS element or practice (such as Balanced Scorecard or budget) alone a broader package approach should be taken when studying and considering management control systems. Drawing from the available literature and keeping in mind research objectives and issues in the power sector, we propose following framework for this study.

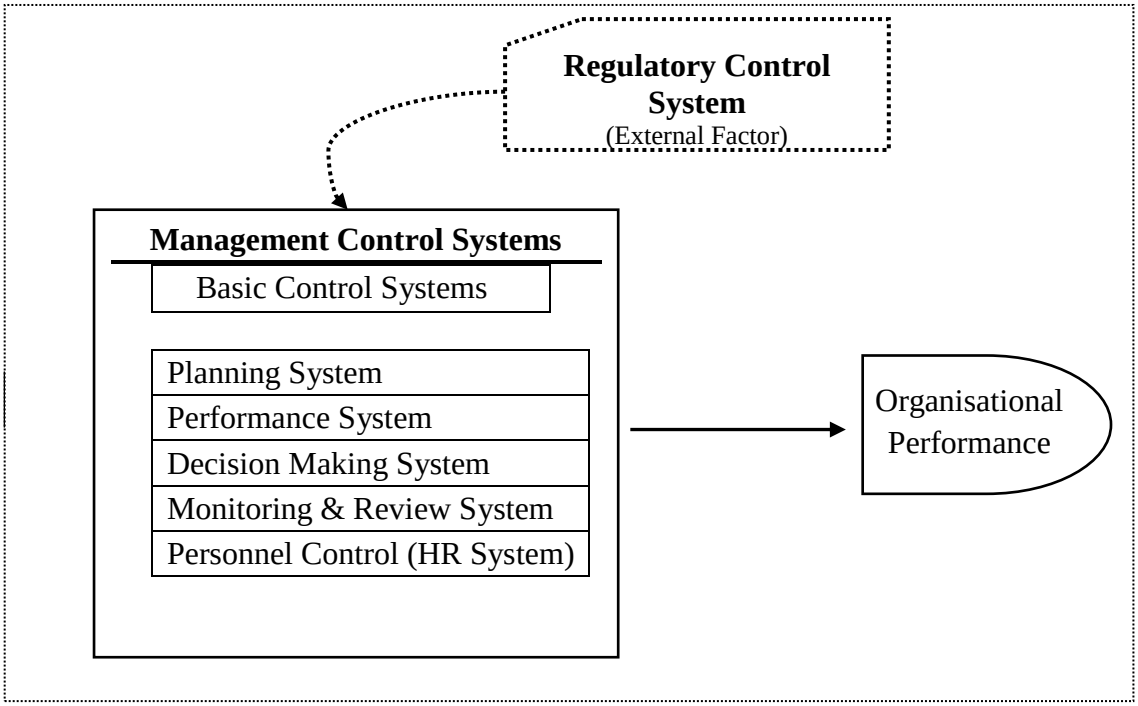


Figure 16: Proposed Conceptual Framework

The proposed framework visualizes MCS in terms of six subsystems. All the six subsystems are intertwined constituting an overall MCS of an organisation. The antecedent role of various control tools results in performance. Therefore, the term 'organisational performance' is used to indicate MCS effectiveness. MCS of an organisation is influenced directly or indirectly by various external factors. The institution of independent regulatory commission in the post-reform period is an important phenomenon in the power sector. The researcher assumes a positive effect of regulatory control systems on MCS effectiveness which is to be scientifically tested.

Basic Control System: The trend of huge power distribution losses (as discussed in chapter 2) led to a question whether basic or generic control systems in power distribution utilities are inadequate. The researcher considered four elements under Basic Control Systems namely, budget control, quality control, cost control, and internal audit. These individual controls normally exist in all matured organisations and are similar across all firms (Sadino, 2007).

Budget Control: Budgets are a form of cybernetic controls that are central to, as well as a foundation of, MCS in most organizations (Malmi and Brown, 2008).

Quality Control: Quality control is the process of setting standards, appraising conformance to those standard, acting when standards are exceeded and planning for improvements in standards. With the concept of Total Quality Management (TQM), Quality Controls (QC) have become one of the important subsystems integrated with overall control systems.

Cost control: Low-cost production is one of the goals of most organizations to attain improved competitive position. An efficient cost control system point out the importance of cost-effectiveness of electricity distribution utilities (Savolainen and Svento:2008).

Internal Audit: Internal audit is considered as one of the most important forms of control in both public and private organisations. Internal audit is much more important in the case of SEBs, which are even today virtually public monopolies. As a public utility, their costs and tariff, and resulting standards of service provided to the users affect considerably the entire operation of the economy (Mishra et.al.2004).

Planning System: Planning system can serve as a way of setting goals for the organization itself and as well as the different functions of the organization. Hence, it is an ex-ante form of control that guides or directs employees. It is the main carrier for promoting goal congruence between the individual and the organization (Flamholtz et al., 1985). Long-range planning has a more strategic focus with the planning of goals and actions for the medium or long run (Malmi and Brown, 2008).

Decision Making System: Decision-making systems are formally laid out by a firm's organizational structure. A hierarchical system for decision making has advantages such as clarity of authority and communication line but also has disadvantages. The power sector has a legacy of the bureaucratic system. Bureaucracies slow down the decision-making process because communication and requests must travel up and then back down the chain of command. Berglund, M., & Rapp, G. (2010) uphold

that participative style of management has significant influence over individual managers and methods of achieving goals.

Performance Management System: Performance Management System (PMS) is a major key element of MCS (Henri, 2006). PMS are collections of financial and non-financial performance indicators which managers use to evaluate their own performance, or their subordinates performance or their unit's performance. In establishing a PMS, one must decide upon objectives, including all aspects of the specific responsibilities regarding: 1. time service, 2. quality and cost, 3. employee morale, and 4. development of people.

Human Resource System: An ideal control model should regulate both ability and motivation of employees (Walsh and Seward, 1990). According to Snell (1992), input controls (recruitment and training) can be used to regulate employees' working abilities, while behaviour (i.e. standard operating procedures) and output controls (i.e. use of incentives) can be used to regulate employee's motivation. Motivation may also be achieved by training, work related education or different types of rewards (Merchant and Van der Stede 2007). Salary and bonuses are perhaps the most common form of rewards. But rewards can also be non-monetary, and positive or negative. Positive rewards refer to things that employees appreciate and negative rewards refer to punishments or just absence of positive rewards. Some examples of positive rewards, except salary and bonuses, are: autonomy, power, recognition, promotions, titles, job security, vacations, time off and stock options. Examples of negative rewards are interference in the job from superiors, loss of job, no promotion, zero salary increase and public humiliation (Merchant and Van der Stede, 2007).

Monitoring & Review: Monitoring & Review is an essential part of MCS. The reporting system is designed as a tool to support monitoring and review. The performance reports generated by reporting systems are examined by the management to control operations.

Detailed Proposed Conceptual Framework: A detailed conceptual framework is presented in figure. Various individual controls are culled from review of literature and contextual factors.

Categories of MCS	Individual Control Systems
Basic Control Systems	Budget Control
	Cost control
	Quality Control
	Internal Audit
Planning System	Weightage to long term plan
	Breaking annual plans
	Guidelines
	Standard formats
	Time schedule
	Participation in Planning
Decision Making System	Clarity of Authority & Responsibilities
	Delegation of power
	Degree of Involvement
	Suggest to the higher authority
Performance Management System	Efficacy of policies
	Degree of Tolerance
	Degree of Cooperation
	Degree of compliance
	Degree of support
	Target setting
HR System (Personnel Control)	Goal Congruence
	Transfer Policy
	Sponsoring for training
	Effectiveness of training
	Performance Appraisal System
	Performance-Reward Link
Monitoring & Review	Frequency of reports
	Usefulness of periodic reports
	Handling Performance gaps
	Functioning of monitoring and review system
Regulatory Control	Percentage of Correct Metering Customer Complaint Cell System of identifying cost of service Improvement in Customer Services Performance improvement

Organisational Performance

Figure 17 : Detailed Conceptual Framework

4.8 Summary

From the various definitions of MCS, it is clear that the MCS is a broad concept. It is a generic term encompassing multiple control functions that can be used for different and varying purposes (Abernethy and Brownell 1997; Khandwalla 1972; Merchant 1985, 1998; Simons 1990). However, various scholars highlighted that the key role of MCS is to facilitate strategy implementation. Based on understanding of the literature, a conceptual framework is generated as a research tool for examining the structure and operation of MCS in power distribution utilities in India. The framework has been inductively generated from the observation of issues in power sector (as discussed in preceding chapter 3) and from the reflections on the frameworks which have been used by other scholars to examine MCS in different organisational settings. As a limitation, researcher fully understands that proposed framework would restrict gathering information from the sample and would not be able to explore various other dimensions of MCS. However, the proposed framework will be capturing the MCS essence central to research questions.

Chapter V

RESEARCH METHODOLOGY

5.1 Introduction

In the previous chapter a literature review was completed to explore different dimensions of management control system. It is found that (theoretically and empirically) the concept of Management Control has received much attention. Management control systems play a significant role in achieving organisational objectives. This chapter describes the research methodology adopted to fulfill the objectives of the study. The chapter explains the research objectives, research design, the scope and limitations of the study, data collection, sampling technique and data analysis procedure followed in carrying out the research..

5.2 Purpose of the Study

The purpose of the research is to study the MCS practices in power distribution utilities in India. As discussed in chapter 2 that power distribution losses are high and despite several reform measures taken by the GOI, the desired results are not yet achieved. This study makes an attempt to probe into whether MCS are adequate in power distribution utilities in the post reform period. The study developed and implemented a survey to collect and analyse the data. Hypotheses are framed to examine the association between MCS and organisational performance, effect of Independent Regulatory Control in facilitating the MCS effectiveness, and MCS differences in public and private power distribution utilities. Descriptive statistics have been used to identify what control tools are adequate or inadequate. The study contributes by suggesting implementable model (mainly suitable for state-owned power distribution utilities) and directions for future research.

5.3 Research Questions

Given the issues and challenges in power distribution utilities, discussed in chapter 2, and building on the theoretical and empirical studies discussed in chapter 3, the study has chosen to use certain research questions to formulate and test the hypotheses. The research questions that are relevant to the study are:

1) What are major developments in Indian power sector in the post reform period?
2) Is management control system in the context of power distribution utilities positively associated with the organisational performance?
3) Is independent regulatory control system introduced in the post reform period facilitating for effectiveness of Management Control Systems?
4) Are practices of Management Control Systems in public and private power distribution utilities are significantly different?
5) What are facilitating factors for effective Management Control Systems?

5.4 Objectives of the Study

The main objectives of this research are twofold: to examine the association between Management Control Systems and Organizational Performance in context power distribution utility and to investigate whether the new regulatory control system in post reform period has facilitated the effectiveness of MCS. The MCS differences of public and private power distribution are also explored. The specific objectives of the study are represented diagrammatically as in Figure below:

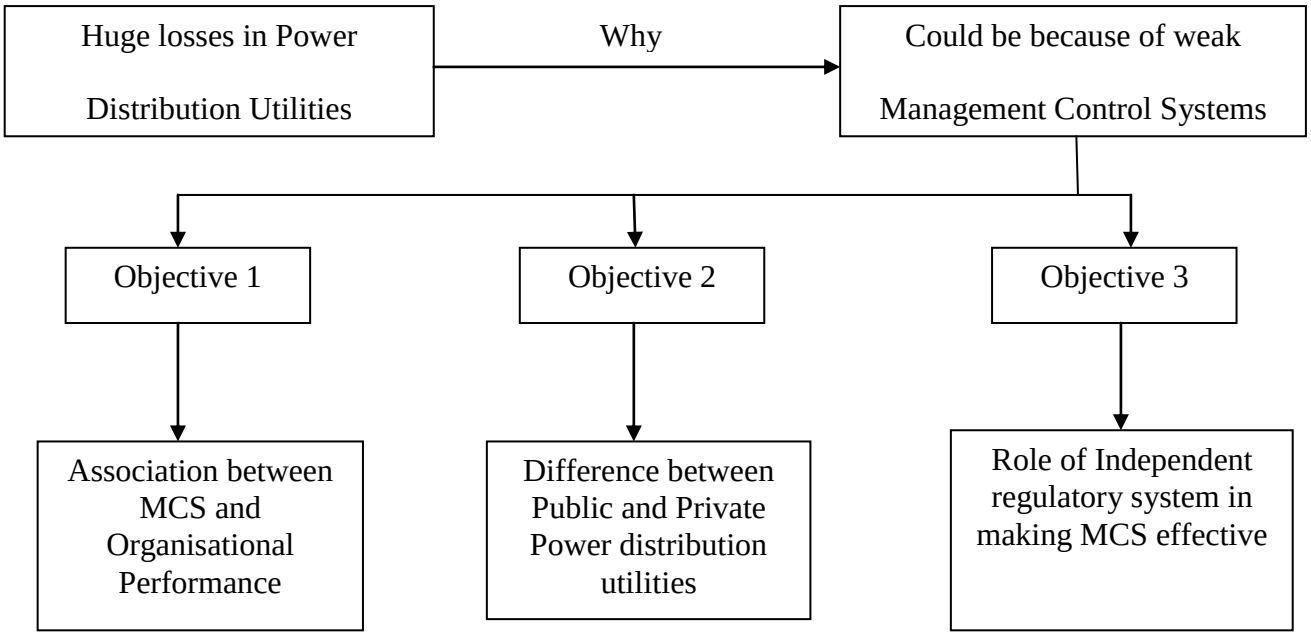


Figure 18: Diagrammatic Representation of Objectives of the Study

5.5 Development of Hypotheses

Important research questions were converted into testable hypotheses. The theoretical references, organizational characteristics, external environmental factors were examined while forming the hypotheses.

5.5.1 Management control systems and Organisational Performance

Management control systems have been recognised as important in the formulation and implementation of strategies (Dent, 1990; Bromwich and Bhimani, 1994). MCS are means by which senior managers ensure that subordinate managers, efficiently and effectively, strive to attain the company's strategy. A firm actually uses MCS to ensure that appropriate strategies are implemented to attain its goals. For instance, scholars such as Anthony & Govindrajan (2009), Flamholtz (1996), state that MCS is one of the levers for a company’s overall strategy implementation. Implementation of strategy leads to organisational performance. According to Steiss Alan Walter (1982), a basic objective of MCS in the public sector is to improve the overall efficiency and productivity of

government programs. An effective *control system* motivates the kind of managerial behavior that senior management itself would adopt in achieving its strategic objectives. The proper design and use of management control system is instrumental in successful implementation and consequently contribute to better organisational performance (Simons 1987). But the effect of management control systems upon performance is difficult to predict. High motivation and job satisfaction are generally functional outcomes since they increase the amount of managerial energy available to an organization which in ways has high organisational value. From this theoretical background emerges, the main hypothesis as

***H1*: Management control systems are associated with organisational performance**

MCS consists of various subsystems. Based on various subsystems chosen for this study following sub-hypothesis are also proposed to be tested.

H1a: There is positive correlation between basic management control systems and organisational performance.

H1b: There is positive correlation between planning systems and organisational performance.

H1c: There is positive correlation between performance management systems and organisational performance.

H1d: There is positive correlation between decision making systems and organisational performance

H1e: There is positive correlation between monitoring and review systems and organisational performance

H2f: There is positive correlation between HR systems and organisational performance

5.5.2 MCS and External Factor (Regulatory Control System)

It has been argued that a firm's external environment may influence the design of its control system (Lowry, 1990; Fitzgerald et al. 1997; Brigall, 1997). Regulators with legally granted authority administer the rules of control and enforce compliance on firms within its jurisdiction (Gilliland and

Manning 2002). In post reform period, GOI has promulgated Electricity Regulatory Commission Act, 1998 for setting up of Independent Regulatory Commission. Section 82 of the Electricity Act 2003 states that "Every State Government shall, within six months from the appointed date, by notification, constitute for the purpose of this Act, a Commission for the State to be known as the (name of the state) Electricity Regulatory Commission." Main functions of Regulator in Power Sector are outlined as follows:

- Issue of licenses
- Approval of tariffs
- Evaluate and resolve consumer complaints
- Issue rules and regulations
- Enforce performance standards for licensees
- Monitor the functioning of licensees
- Collect reports from licensees and publish the information to the public

Certain regulatory requirements are outlines as follows:

i) **Regulatory Management Information System (RMIS):** Section 59 of the Electricity Act 2003 requires distribution company to furnish information with respect to level of performance. Key Parameters of Regulatory Management Information System are as follows: Power Supply Position, Cost of Supply, Financial Data, Sales and Revenue Data, Action Plan for Reducing T&D Losses in urban and industrial feeders, Meter Testing and details of Non-Working Defective Meters.

ii) **Tariff Regulation:** Section 61 of the Electricity Act 2003 specifies the terms and conditions for the determination of tariff. Under section 62, regulatory commission shall determine the tariff in accordance with provisions of the Act for supply of electricity, transmission of electricity, wheeling of electricity and retail sale of electricity.

iii) **Metering:** Under section 55 of Electricity Act 2003, no distribution company shall supply electricity, after the expiry of two years from the appointed date, except through installation of correct meters in accordance with the regulations. This is to ensure proper accounting and audit in trading of electricity. Section 56 provides for disconnection of supply in default of payment by any person.

iv) **Standards of performance:** Under section 57 of Electricity Act 2003, the Appropriate Regulatory Commission shall specify standards which are required to be met by licensee Distribution Company.

Thus, power distribution utilities in India are faced with new regulatory system in the post reform period. The utilities are required to comply with the regulatory standards and operate in competitive environment. The preceding arguments lead to following hypothesis:

H 2: **Independent regulatory control system in the post reform period has facilitated in the effectiveness of management control systems of power distribution utilities.**

5.5.3 MCS in Public vs. Private sector

Electricity is considered as a typical example of natural monopoly. It means that leaving it to free market is not going to work well. It would be a wasteful duplication. Being an essential service, it has been dominated by public sector and heavily regulated. In view of huge inefficiencies in the State Electricity Boards (SEBs) and increasing demand of electricity, the sector has been opened to private sector participation. A few private sector licensees like BSES, Tata Power, and Torrent Power exist but their operations are largely confined to urban areas. While SEBs' performance levels are dismal, private power distribution utilities are relatively performing well. There could be various reasons for the good performance of private power distribution utilities, the interest of this study is to find whether management control practices in private power distribution utilities are different compared to public power distribution utilities.

Hence the third hypothesis proposed to be tested is:

H 3: Practices of management control systems differ in public and private power distribution utilities.

5.5.4 Factors facilitating Management Control Systems

A number of studies indicate that the success of MCS depends on a large number of factors such as organisational culture, organizational structure, strategy, leadership style, reward and incentive system, performance appraisal system and training. Then, there are some generic or basic control systems like budgeting, internal audit, quality control and cost control which are considered as invaluable and most relied tools of management control that assist in effective implementation of Management Control Systems. It is in this context, the fourth hypothesis is proposed as:

H 4: There are facilitating and non-facilitating factors for successful implementation of Management Control Systems

5.6 Research Design

The study describes phenomenon of interest and surveys into potential reasons for certain systems and processes in the organisation. A descriptive design was found to be well-fitting. The data are cross-sectional for final analysis. A survey was administered to a selected sample from a specific population (power distribution utilities). Qualitative data were also gathered for a case study with an aim to validate survey data findings and enrich understanding of MCS complexity.

5.6.1 Population and Sample

There are 73 power distribution utilities in India comprising ED (Electricity Department), PD (Private Distribution Company) CD (Corporatised Distribution Company) and SEB (State Electricity Board). A typical hierarchical structure in a power distribution company is depicted in figure below

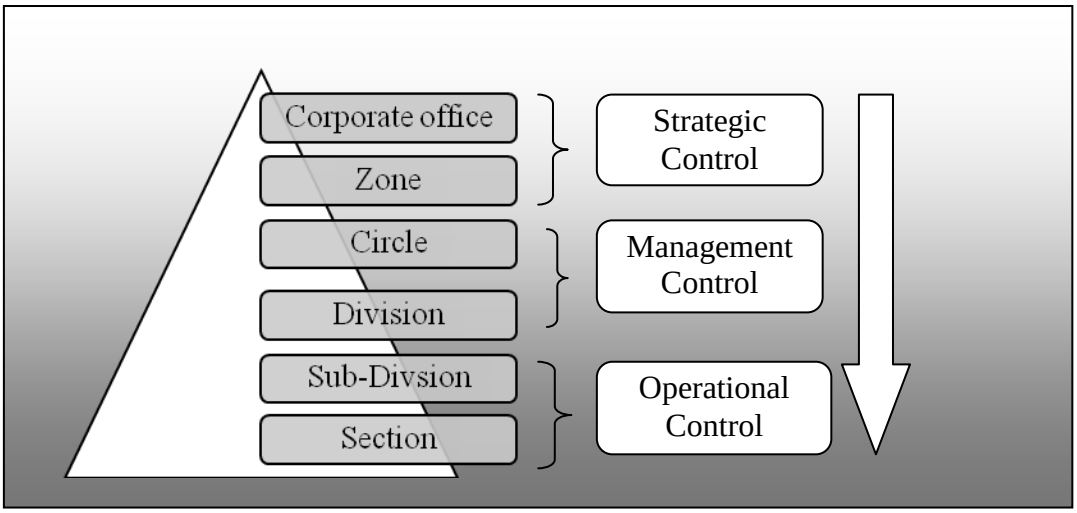


Figure 19: A typical hierarchical structure in a power distribution company

The research population for this study consists of *first, middle* and *top* level executives working in public and private distribution utilities. First level includes designations like Junior Engineers (JE), Deputy Engineers (DE), Sub-Divisional Officer (SDO), and Deputy Manager. Middle level includes designations like Executive Engineer, and Superintendent Engineer (SE). Top level includes Chief Engineers (CE), Executive Directors.

5.6.2 Sample Unit

Sample unit for the study is a respondent responsible for the performance of unit i.e. section/sub-division/division/circle/zonal office/corporate office. Appropriately the respondent is Junior Engineer/ Deputy Engineer/Executive Engineer/ Superintendent Engineer/ Chief Engineer /Director.

5.6.3 Geographical Distribution of the Population

The target population has different characteristic features. For example, there are low performing states (UP, Bihar) and high performing states (Gujarat, Andhra Pradesh). There are hilly areas (Himachal, J&K) and plain agricultural dominated areas (Haryana, Punjab). There are a few private power distribution companies operating in Kolkata, Mumbai, Ahmadabad, Surat, Noida, Delhi, and Orissa catering to approximately 15% of consumers. And there are state-owned power distribution utilities catering to approximately 85% of consumers. For ease and convenience in co-ordination of

policy matters, the Ministry of Power demarcated Indian electricity system into five regions: northern, western, southern, eastern and northeastern regions. The northern region includes the states of Delhi, Haryana, Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Rajasthan, Uttar Pradesh and Punjab. The western region includes the states of Chhattisgarh, Gujarat, Madhya Pradesh, Maharashtra, Goa and Diu & Daman. The southern region includes the states of Andhra Pradesh, Karnataka, Kerala, Lakshadweep, A & N Islands and Pondicherry. The eastern region includes the states of Bihar, Jharkhand, Orissa, West-Bengal and Sikkim. The northeastern region includes the states of Assam, Meghalaya, Manipur, Arunachal Pradesh, Mizoram, Tripura and Nagaland. As the study focuses all India characteristics, the sample composition is carefully determined so that it is representative of all the major geographic regions.

5.6.4 Sampling Frame

For the study, state-owned power distribution utilities located in Himachal, J&K, UP, Assam, Gujarat, Andhra Pradesh, Haryana, Punjab, Madhya Pradesh, Chhatisgargh, Rajasthan, Karnataka, Kerala, Maharashtra etc. and private power distribution companies located in Delhi, Noida, Orissa, Mumbai, Ahmadabad were selected. The list of power distribution utilities is comprehensive and exhaustive.

5.6.5 Sample Size

Estimating the sample size for this study was a crucial decision because population size (first level, middle level and top level executives engaged in power distribution) is not clearly known. Then, there are various formulas to compute sample size. Theoretical references were very useful in while deciding for the sample size. For example, Ruddick, Sherwood and Stevens (1983, p.80) give rules of thumb: “No sample should be less than 40. However, one obtains diminishing returns when sample size increases beyond about 300.” Krejcie & Morgan (1970) provides a table as a useful guideline which recommends sample size for general research activities applicable to any defined population. From the table, recommended sample size for a population of 10000 is 370, for 1000000 it is 384. The rule of thumb that one obtains diminishing returns when sample size increases beyond

about 300 appears to apply in the table. Large samples are prohibitively expensive in terms of time and money (Ghyoot, 1994). The study considered a sample size of 500 adequate with a purposive sampling approach. The researcher observed that characteristics of population seem to have some heterogeneity and variance; therefore it was essential to ensure that sample size is representative of the whole population. The heterogeneity appears to be due to following three factors:-

First, there are State-wise variations in Aggregate Technical and Commercial (AT&C) loss levels. The levels of losses are dependent on socio-economic-political situation in each state. For example, Haryana and Punjab states represent agriculture domination and very often the state governments declare free power for agricultural use. CRISIL report categorises various States in India based on four levels of AT&C losses namely, less than 20%, 20-30%, 30-40% and above 40%. (Annexure 1)

Secondly, public and private power distribution utilities have different operational areas with different consumer mix. Private power distribution utilities are mostly confined to urban areas.

Thirdly, for co-ordination in policy matters, the GOI has demarcated Indian Electricity System into five regions namely, Northern, Southern, Eastern, Western and North Eastern.

Purposive sampling was thought about to be appropriate for a true representation of the total population. For the composition of sample, the researcher considered AT&C loss level as the main criteria to capture heterogeneity and variance in the population. AT&C losses across country vary, ranging from 7% to 70%. The national average of AT&C loss level hovers around 26 per cent. For ease and convenience, the entire population was divided into three parts based on AT&C loss level: below 20%, 21 to 30% and above 30%. This approach to purposive sampling process resulted in 412 usable questionnaires.

5.7 Instrumentation

The study incorporates the collection of both primary and secondary data. Secondary data were obtained through different electronic databases such as EBSCO, Science Direct, JSTOR, ProQuest using the keywords "Control", "Control System", "Management Control", "Management Control System", MCS", "power sector". Textual and other print form of material was obtained from libraries of premier management institutes, ISB and IIM-A. Keeping in mind the research objectives, relevant research papers, articles and textual material for the literature review were studied. However, articles not relevant were also useful in developing understanding beyond the scope of research. Secondary data were also gathered from the magazines like power line, government websites, and newspapers. Primary data has been collected through a structured questionnaire. The questionnaire was pre-tested on 33 respondents and minor modifications were made to the questionnaire on the basis of pre-testing.

5.7.1 Designing the questionnaire

The questionnaire's design consisted of several stages. It started from the theory i.e. review of literature. Review of literature was helpful in understanding the nature of concept and identification of relevant variables. The first draft of questionnaire was experts' reviewed. Then questionnaire was pre-tested for the quality and subsequently resulted in a final version. Figure 20 summarizes the process of designing the questionnaire.

Figure 20: Process of designing the questionnaire

The questionnaire's basic set-up was subjected to the experts review to ensure face and content validity. The experts consulted for the valuable comments had rich experience in training, research and consulting in Indian power sector. Based on their feedback, appropriate questions were included in the

final questionnaire design. Final draft of the questionnaire was intricately designed to study the MCS practices from the perspective of organizational performance dimension.

5.7.2 Measurement of Variables

Dependent Variable: Dependent variable was measured through the perceived usefulness and importance of all the items considered in MCS. Items concerning MCS were based on theoretical and contextual references. MCS has thirty five items under six different dimensions and Independent Regulatory Control (external factor) has five items. Table below lists out the variables.

***Independent Variables*:** Overall perception of MCS in their organisation is the single independent variable. The antecedent role of various control tools results in performance. Therefore, the term 'organisational performance' is used to indicate MCS effectiveness.

Table 6: List of items in Questionnaire

Sr. No.	Subsystems	Measurement
1	**Basic Control Systems**	1. Cost control 2. Internal audit 3. Quality control 4. Budgetary control
2.	**Planning System**	1. Long term planning 2. Weightage to long term plan 3. Breaking annual plans periodic levels 4. Guidelines are issued for preparing the plans. 5. Standard formats used for preparing plan 6. Time schedule for preparing plans 7. Participation in planning process
3.	**Decision Making System**	1. Clarity of authority and responsibilities 2. Delegation of power 3. Degree of involvement in decision making 4. Suggestion to higher authority
4.	**Performance Management System**	1. Policies and procedures in achieving targets. 2. Degree of tolerance for failures to achieve performance 3. Degree of co-operation from other departments in performance of task. 4. Compliance with procedures not enhancing performance

		5. Higher level management support
5.	**HR System**	1. Degree of goal congruence 2. Transfer as per skills and capability 3. Sponsoring for training programme 4. Effectiveness of training programme 5. Linkage of performance with reward 6. Performance appraisal system
6.	**Monitoring & Review System**	1. Degree of effectiveness in functioning of monitoring and review system 2. Frequently of reports 3. Usefulness of periodic reports 4. Handling performance gaps
7.	**Independent Regulatory Control**	1. Percentage of correct metering 2. Establishment of customer complaint cell 3. System of identifying cost of service 4. Improvement level in customer services 5. Performance improvement

Respondents were asked to indicate on a 4-point scale, the degree of emphasis on the statements that best described the type of MCS emphasized in their organisation. The items were factor analyzed to test for uni-dimensionality using principal components analysis (PCA) as the extraction method. The Bartlett test and the KMO measure of sampling adequacy indicate suitability for factor analysis. All items load well in excess of 0.5 were retained in the analysis

5.7.3 Pilot Study

After designing the questionnaire on the Likert's method, a pilot test was conducted on sample of 33 executives (JE, DE, EE, and Deputy Managers) from public and private power distribution companies. The executives were from different parts of India. They were participants in a training programme. During the process, inputs through informal interactions were also obtained. The pilot study was conducted with a view to find out the reliability and validity of the tool and also to eliminate any ambiguity so that executives do not feel any difficulty in responding to the items in MCS scale. Bi-polar likert scale was decided to avoid central tendency bias. Total score for each subject was calculated. The sum of the item credits represents the individual total score.

5.7.4 Tests of Validity of the Questionnaire

Cronbach alpha was calculated for pilot study to measure the internal consistency and reliability of the instrument. The value of Cronbach alpha came as 0.625. Thus, the instrument was considered reliable for the study.

Reliability Statistics	
Cronbach's Alpha	N of Items
.628	53

The reliability of the various dimensions of MCS was also checked and found it well above the lower limits of acceptability, generally considered to be around 0.50 to 0.60 (Nunnally, 1978).

5.8 Survey administration

Basically there are two ways to administer a survey, the written questionnaire and the personal interview (Brownell: 1995). For the study, a questionnaire was sent out to solicit perception regarding each component of MCS. In setting up a sampling strategy, following important challenges were kept in mind.

a. As the survey was extensive covering all India, the response rate could be low.
b. There should not be selection bias.
c. Purposive sampling should capture heterogeneity and variance in population and represent the total population

5.8.1 Data Collection

The respondents for the data collection are all the executives working in power distribution companies who are positioned in the organisational hierarchy at the first/middle/top level. Geographically, a sample of power distribution companies located in Himachal, J&K, UP, Assam, Gujarat, Andhra Pradesh, Haryana, Punjab, Madhya Pradesh, Chhattisgarh, Rajasthan, Karnataka, Kerala, Maharashtra, Delhi, Noida, Orissa, Mumbai, Ahmedabad are covered. The sampling unit in this study is any junior

engineer, deputy engineer, executive engineer, superintendent engineer, chief engineer, director who is working in the power distribution utility. A total of 1350 questionnaires were sent out to power distribution utilities. Reminder was sent after two to three weeks to follow up and improve the response rate. Emails and telephone were also used to make them understand the purpose of the research and assure them that the data so provided will be used only for academic research. Information was finally gathered through questionnaire and qualitative data were gathered through semi structured interviews and interactions. Total 473 filled in questionnaires were received out of which 412 were usable, the rest were discarded due to incomplete information. Thus, with the assistance of various people, data w collected from the respondents working in the selected power utilities.

5.8.2 Sampling Methodology

Purposive sampling was adopted to capture wide range of perceptions relating to the subject of study. Power distribution utilities were grouped into categories based on AT&C loss levels, nature of ownership (public or private) and geographical spread. With the estimated response rate of around 25%, questionnaires ranging from 1000 to 1500 were planned to be sent out, depending on the size of the power distribution companies in terms of approximate geographical area served and consumer mix.

5.8.3 Modus Operandi

The study pursues both public and private power sector distribution utilities. The target population is executives/managers (first/middle/top level) deployed in field units and at corporate office, who are responsible for performance of defined activities in their company. To ensure high response rate, Managing Director (s)/HR Department of selected power distribution utilities were approached first with a request to issue permission letter for collection of data for academic research. In some cases such as Andhra Pradesh, Gujarat, Himachal Pradesh, and Karnataka, official permission letter allowing the researcher to collect data from field units were successfully obtained. Some state-owned utilities allowed by way of informal communication and some did not respond. Most of the data are collected

through personally approaching officials in field units, corporate office, academic institutes & training centres (Engineering Staff College of India, MDI- Gurgaon, Gujarat Energy Training Research Institute, and School of Management Studies at University of Hyderabad). In a few cases such as Orissa, Kerala, J&K, and Assam, data were collected through postal and electronic mail. Respondents were briefed about the purpose of the study through a covering letter attached with questionnaire and verbally also. Respondents were assured that each respondent's identity will be protected.

5.9 Data Analysis Procedure

The data collected for the study were first sorted out and verified through the process of eliminating the uncompleted questionnaires. The questions and responses were coded and entered in the computer using Microsoft Excel software. Then the descriptive and inferential statistics have been used to analyse the data and to draw the valuable inferences from that analysis. Percentage analysis was carried out to identify pattern of responses and to understand how well the questions could tap the concept in the survey instrument. The hypotheses were tested using statistical tools such as t–test, correlation and regression. For this purpose, SPSS 19.0 statistical software was used to do required statistical analysis.

5.10 Limitations

While the study is comprehensive in nature, it is subjected to certain limitations, as follows:

i. The first factor concerns the components of MCS. While the variables of interest were measured and the relation between MCS and performance is explored, it is possible that other components of MCS, as conceptualised in literature, can also be reliable for measuring the effectiveness of MCS.

ii. The second factor concerns with the geographical spread of field units of power distribution utilities. The sample size and response rate may have potentially omitted responses at the expense of generalisability of results.

5.11 Summary

The chapter described the methodology of research. It began with the purpose of study, research questions and the formulation of hypothesis. Research design has been presented. The questionnaire design, its validation and administration were discussed. Questionnaire for survey data and case study for qualitative data have been considered. The chapter brings out the sampling process will and procedure for analyzing the data to draw the valuable inferences. Next chapter presents that data analysis and interpretation.

CHAPTER VI

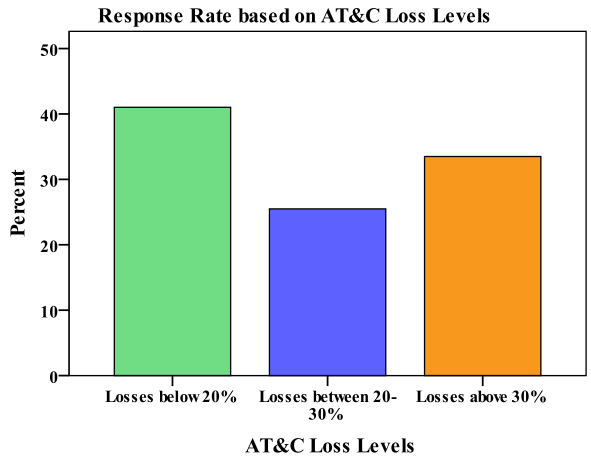
ANALYSIS OF RESULTS

6.1 Introduction

This *chapter* presents the data collected from the respondents from public and private power distribution utilities both. The data were collected and then processed in response to the problems posed in chapter 1 of this thesis. The results of the data analyses are presented into four sections. Section I of the chapter focuses on Percentage Analysis, Section II on Hypothesis Testing, and Section III on Content analysis of open ended question and finally Section IV is a case study of a state-owned power distribution utility presented as supplement to this chapter. The case study is an attempt to validate findings of survey data related to main research questions and additionally enrich our understanding of MCS complexity through qualitative data.

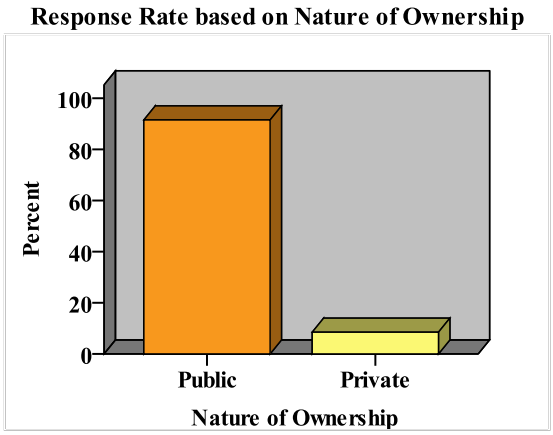
6.2 The Questionnaire Response Rate

The overall questionnaire response rate was 34.81%, (470/1350), of which 30.5 % (412/1350) were usable. Figure depicts the actual response rate based AT&C losses, nature of ownership and geographical area.



Response Rate based on AT&C loss level		
	Frequency	Percent
Losses below 20%	169	41.0
Losses between 20-30%	105	25.5
Losses above 30%	138	33.5

Figure 21 : Response Rate based on AT&C loss level



Response Rate based on Nature of Ownership		
	Frequency	Percent
Public	377	91.5
Private	35	8.5

Response based on geographical area	
Northern Region	Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, and Uttar Pradesh
Western Region	Gujarat, Maharashtra, Madhya Pradesh, and Chattisgarh,
Southern Region	Andhra Pradesh, Karnataka, and Kerala
Eastern Region	Orissa, Assam, and Meghalaya

Figure 22: Response Rate based on Nature of Ownership

It can be observed that responses are across and quite balanced, and representative of the entire population in terms of capturing heterogeneity and variation. As discussed in chapter 2 that power distribution is largely covered by public distribution utilities, the ratio of response rate is in sync with the actual scenario.

6.3 Demographic Profile

Demographic profile is an essential part for any research study. It is preliminary information about the respondents of the study. The study's population is composed of all the employees (first level, middle level and top level) of the power distribution utilities in India both public and private sector.

The profile of the respondents was looked upon in terms of designation, lengthy of service, nature of ownership control, education attainment, and place of posting. The results are presented below:

Table 7: Demographic Profile

	Categories	Frequency	Percent
Nature of Ownership	Public	377	91.5
	Private	35	8.5
Place of Posting	Head Office	82	19.9
	Field Unit	330	80.1
Length of Service	0-5 years	82	19.9
	6-10 years	62	15.0
	11-15 years	53	12.9
	16-20 years	53	12.9
	Above 20 years	162	39.1
Hierarchy	First level	171	41.5
	Middle level	193	46.8
	Top level	46	11.2
Educational Attainment	Engineering	101	75.5
	Engineering with Management education	311	24.5

6.4 Testing Reliability of Instrument

The measurement of items included in the survey and their transformation into variables has been subject to reliability and validity analysis. Following tests were run for the reliability of instrument.

6.4.1 Cronbach's alpha

The measure of internal consistency considered is Cronbach's alpha. The Instrument used in this study had a Cronbach's Alpha score of .629 in the pilot study. And the results of final survey are presented in table ….

Table 8: Reliability Statistics

	Cronbach's Alpha	N of Items
Management Control Systems	.821	32
Regulatory Control	.630	5

According to Nunnally (1978) an alpha score larger than 0.6, is generally acceptable. The Cronbach Alpha for items in Management Control Systems is .821and for Regulatory control .630

6.4.2 Factor Analysis

Factor analysis contributes towards reliability and validity assessments (Carmines & Zeller, 1979). The principal component analysis was run to filter data for meaningful analysis. Though various dimensions of MCS have been decided based on the theory and contextual factors, however, it is essential to identify the variables that are less meaningful before proceeding to final data analysis. For this Principal component analysis was used on SPSS 19.0 to identify items with less loading. It was found that except three items the remaining items had significant loading (values more than 0.5). The less loading items were neglected while doing further data analysis.

Percentage Analysis

This section summarizes the responses of the respondents and identifies trends in responses with the help of percentage analysis.

6.5 Percentage Analysis

Likert scales are among the most frequently used instruments in questionnaire surveys. The study used the four point likert scale for getting psychometric responses on various factors and MCS practices in power distribution utilities, from the executives (First, Middle and Top level) respondents working in both public and private power distribution utilities. The weights assigned for statistical analysis of this scaled data are as follows:

- ⇒ Strongly Agree/Very Good/Always/ Very High =4
- ⇒ Agree/Good/Frequently /High= 3
- ⇒ Disagree/Poor/Rarely/Low =2
- ⇒ Strongly Disagree/Very Poor/Never/Very Low = 1

The mid-range of the scale as a 'neutral' option, "neither agree nor disagree", "not sure" or some phrase like that was not included in the scale in order to avoid *central tendency bias* (there is a tendency for participants to respond towards the middle of the *scale*).

Percentage analysis is a useful way of displaying the frequency of data. It has been bee used to visualize the comparison of relative frequency. The relative frequency expressed as a percentage value (out of 100) and is calculated as follows:

$$\%f = \frac{f}{n} \times 100$$

where: f →frequency of responses

n→ total number of responses within the variable

6.5.1 Basic MCS

This part in the survey was intended to verify from the respondents whether basic controls in their organisation are functioning efficiently. Four categories of Basic MCS were hypothesised, namely, *Budget Control, Cost control, Quality control,* and *Internal Audit.* Results are presented as follows:

Table 9: Basic MCS

To what extent do you agree or disagree on efficient functioning of following control systems in your organization?							PERCENTAGE	
	Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
Budget Control	2.8514	.71462	5.08	19.88	60.48	14.58	24.95	75.05
Cost Control	2.6177	.75279	7.70	33.03	49.13	10.03	40.725	59.15
Quality Control	2.5768	.82711	12.38	28.60	48.50	10.60	40.975	59.10
Internal Audit	2.8586	.67520	2.70	22.58	59.48	14.28	25.275	73.75

From the table it is observed that approximately 74-75 per cent respondents have an affirmative answer to internal audit and budget control.

6.5.2 Performance Management System

This part in the survey was intended to verify from the respondents whether performance management system in their organisation is adequate. Six individual control tools were hypothesised and results are presented as follows:

Table 10: Policies and procedures in achieving targets

Policies and procedures followed in your company are helpful in achieving targets						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.8514	.71462	5.08	19.88	60.48	14.58	24.95	75.05

From the table it is observed that 75 per cent respondents have an affirmative answer the policies and procedures helpful in achieving targets.

Table 11: Degree of Tolerance in failures to achieve performance target

Failures to achieve performance target(s) is tolerated in your unit.						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.7193	.90304	10.6	26.5	42	20.9	37.1	62.9

From the table it is observed that 63 per cent respondents have an affirmative answer that failure to achieve performance target(s) is tolerated in their unit.

Table 12:Co-operation from other departments in performance of task

Employees in your company get co-operation from all other wings/ departments of the company in performance of your task.						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.8719	.77195	3.7	26.7	47.8	21.8	30.4	69.6

From the table it is observed that approximately 70 per cent respondents have an affirmative answer that employees in their organisation get co-operation form all other wings/ departments in performance of your task.

Table 13: Complying with procedures that do not enhance performance

Your organisation believes in complying with certain procedures which you may believe they do not enhance performance?						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.3376	.72027	12.38	44.88	38.38	4.38	57.25	42.75

From the table it is observed that approximately 43 per cent respondents have an affirmative answer that their organisation believe in complying with certain procedures which you may believe they do not enhance performance

Table 14: Higher Level Management Support

Higher level management support you in performance of your task or activity						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.7811	.79703	4.5	32.9	43.3	19.3	37.4	62.6

From the table it is observed that approximately 63 per cent respondents have an affirmative answer that higher level management support you in performance of task or activity.

Table 15: Setting Targets at Lower Operational Levels

The objectives / goals/ targets in your organisation are set at following levels						PERCENTAGE	
Mean	Std. Deviation	Zone Level	Circle Levels	Division Levels	Sub-division	Feeble	Vigorous
2.8278	1.26078	25.8	12.4	16.3	45.5	38.2	61.8

From the table it is observed that approximately 62 per cent respondents have an affirmative answer that targets in their organisation are set at lower levels.

6.5.3 Decision Making System

This part in the survey was intended to verify from the respondents whether decision making system in their organisation is adequate. Four individual control tools were hypothesised and results are presented as follows:

Table 16: Clarity in Authority and Responsibility

Authority and responsibilities of employees in your company are identified clearly and precisely						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.8564	.86233	6.1	26.7	42.7	24.5	32.8	67.2

From the table it is observed that 67 per cent respondents have an affirmative answer that authority and responsibilities in their organisation are identified clearly and precisely

Table 17: Delegation of Power

Existing delegation of power is adequate for achieving your targets						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.6139	.91277	12.4	31.8	38.1	17.7	44.2	55.8

From the table it is observed that approximately 56 per cent respondents have an affirmative answer that existing delegation of power is adequate for achieving the targets.

Table 18: Participation in Decision Making

Your organisation involves you in the process of taking important decisions in your jurisdiction						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
1.8075	.76610	40.4	37.5	20.7	1.4	77.9	22.1

From the table it is observed that only 22 per cent respondents have an affirmative answer that they involved in important decisions of their jurisdiction.

Table 19: Suggestion to higher authority

You suggest to the higher authority for improvement of outdated procedures				
	Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
	3.2525	1.30699	25.3	74.7

From the table it is observed that approximately 75 per cent respondents have an affirmative answer that they suggest to the higher authority for improvement of outdated procedures in their organisation.

6.5.4 Planning System

This part in the survey was intended to verify from the respondents whether planning system in their organisation is adequate. Six individual control tools were hypothesised and results are presented as follows:

Table 20: Weightage long term plan in the formulation of annual plans

How much Weightage is given to long term plan in the formulation of annual plans						PERCENTAGE	
Mean	Std. Deviation	Very low	Low	High	Very high	Feeble	Vigorous
2.6448	.77136	12.03	25.13	51.33	11.53	37.15	62.85

From the table it is observed that approximately 63 per cent respondents have an affirmative answer that weightage is given to long term plan in the formulation of annual plans.

Table 21: Breaking Annual Plan into Periodic Plans

Are annual plans broken into: half yearly/ quarterly/ monthly/ weekly						PERCENTAGE	
Mean	Std. Deviation	Half yearly	Quarterly	Monthly	Weekly	Feeble	Vigorous
2.4896	.76809	12.95	30.15	51.25	5.65	43.1	56.9

From the table it is observed that approximately 57 per cent respondents have an affirmative answer that annual plans are broken into weekly /monthly.

Table 22: Procedure in Formulation of Plan

	Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
Guidelines for preparing the plans	3.5194	1.11584	17.5	82.5
Standard formats for preparing plans	3.4485	1.18122	19.4	80.6
Time schedule for preparing plans	3.3281	1.26476	23.65	76.35
Participation in Planning Process	2.8655	1.45664	38.35	61.65

From the table it is observed that an overwhelming majority (above75%) have affirmative answer that guidelines are issued for preparing, standard formats are used for preparing plans, and there is time schedule for preparing plans.

6.5.5 Monitoring & Review System

This part in the survey was intended to verify from the respondents whether Monitoring & Review system in their organisation is adequate. Six individual control tools were hypothesised and results are presented as follows:

Table 23: Frequency of Reports

How frequently you get reports in the course of performing your job						PERCENTAGE	
Mean	Std. Deviation	Yearly	Quarterly	Monthly	Weekly	Feeble	Vigorous
2.7608	1.03450	25.43	43.13	12.33	19.13	68.55	31.45

From the table it is observed that approximately 31 per cent respondents have an affirmative answer that frequently of reports in the course of performing job either weekly/ monthly which indicates that reporting systems is not vigorous.

Table 24: Dealing with Performance Gaps

How are performance gaps or deficiencies dealt with in your organisation		Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
1	Review Meetings are held	3.4049	1.20189	20.0	80.0
2	Punishment/Disincentive is given	2.2973	1.49914	44.4	55.6
3	Guidance is given	3.2886	1.28149	24.4	75.6
4	Training is given	3.2886	1.46103	37.2	62.8

From the table it is observed that Review Meetings and Guidance are mostly used in dealing with performance gaps.

Table 25: Functioning of monitoring and review system

Where would you rate the functioning of monitoring and review system in your organisation						PERCENTAGE	
Mean	Std. Deviation	Very low	Low	High	Very high	Feeble	Vigorous
2.5668	.71683	8.2	33.7	51.6	6.5	41.9	58.1

From the table it is observed that approximately 52 per cent rate high and only 6.5 per cent rate very high about functioning of monitoring & review system

6.5.6 HR System

This part in the survey was intended to verify from the respondents whether Human Resource system in their organisation is adequate. Six individual control tools were hypothesised. They were: Sponsor for Training Programme & its effectiveness, appropriate deployment of manpower, employee performance appraisal, performance recognition, and degree of congruence in organisational and personal career goals. Results are presented as follows:

Table 26: Sponsorship to Training Programme

Does your organisation sponsor you for training or development programmes			
Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
3.6220	1.00658	12.5	87.5

From the table it is observed that an overwhelming majority of approximately 88% have affirmative answer that their organisation sponsors for training or development programmes.

Table 27: Effectiveness of Training Programme

After participation in training programmes your performance is improved						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.7849	.79891	7.3	28.4	45.6	18.7	35.7	64.3

From the table it is observed that approximately 64 per cent respondents have an affirmative answer that performance is improved after participation in training programme

Table 28: Transfer Policy

Do you believe that your organisation deploy (post/transfer) employees according to their skills and capability			
Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
2.0691	1.44543	63.7	36.3

From the table it is observed that approximately 36 per cent respondents have an affirmative answer that deploy of manpower is according to skills and capability.

Table 29: Performance Recognition

Are employees recognized by your organisation for their performance			
Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
2.6103	1.51493	54.5	45.5

From the table it is observed that approximately 46 per cent only respondents have an affirmative answer to that their organisation recognize their employees.

Table 30: Performance Appraisal System

Are you satisfied with the Performance Appraisal System of Employees in your company?						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.4730	74798	9.22	35.92	50.72	4.12	45.15	54.85

From the table it is observed that approximately 55 per cent have affirmative answer that performance appraisal system is satisfactory.

Table 31: Degree of Goal Congruence

You are able to achieve your career goals while working for your company goals.						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.6667	.89480	9.48	34.78	35.78	19.98	44.25	55.75

From the table it is observed that approximately 56 per cent respondents have an affirmative answer that they are able to achieve their career goals while working for organisational goals.

6.5.7 Regulatory Effect on MCS

This part in the survey was intended to verify from the respondents whether Independent Regulatory Commission introduced in post reform has facilitated in the effectiveness of MCS of power distribution utilities. State Electricity Regulatory Commission (SERCs) issues Standard of Performance (SOPs) regulations from time to time. Five individual factors were considered to understand the effect of independent regulatory control system namely, percentage of correct metering, customer complaint/grievance redressal system, system of identifying cost of service, improvement in customer services, and improvement in control of activities. Results are presented as follows:

Table 32: System of Identifying Cost of Service

Is there any system of identifying cost of service for each type of customer in your jurisdiction?			
Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
2.4845	1.50186	50.6	49.4

From the table it is observed that 49 per cent only respondents have an affirmative answer to that there is system of identifying cost of service for each type of customer in their jurisdiction

Table 33: Customer Complaint/Grievance Redressal System

. Does your jurisdiction has a Customer Complaint/Grievance Redressal System?			
Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
3.7187	.88731	11.05	88.95

From the table it is observed that an overwhelming majority of approximately 89 per cent respondents have an affirmative answer to that there is Customer Complaint/Grievance Redressal System in their jurisdiction.

Table 34: Customer services

Customer services over last five years has improved in your organisation						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
3.0403	75437	4.3	16.2	52.6	26.9	20.5	79.5

From the table it is observed that an overwhelming majority of approximately 80 per cent respondents have an affirmative answer to that customer services over last five years have improved in their organisation.

Table 35: Percentage of Correct Metering

Indicate the percentage of correct metering in your jurisdiction						PERCENTAGE	
Mean	Std. Deviation	<25%	26 -50%	51- 75%	76%- 100%	Feeble	Strong
3.6955	.56820	2.88	4.08	22.78	70.28	6.95	93.05

From the table it is observed that approximately 93 per cent respondents have an affirmative answer to that percentage of correct metering to above 50 per cent. 70 per cent respondents have an affirmative answer percentage of correct metering between 76%- 100%.

Table 36: Improvement in control

Regulatory Commission facilitated controlling in improving the performance of your company.						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.9723	.73974	3.83	19.83	53.33	23.03	23.65	76.35

From the table it is observed that overwhelming majority (approximately 76 per cent) of respondents have an affirmative answer to that Regulatory Commission has facilitated controlling in improving the performance of their company.

Ranking Based on Weighted Score

To gain a better understanding about effect of Independent Regulatory Commission towards its contribution on which factor has been high, a weighted score was calculated (Table) for computing ranking . The results are as follows

Table 37: Ranking Based on Weighted Score

Rank	Category	Survey Responses					Weighted Score					Ranking
		SD	D	A	SA	Total	SD	D	A	SA	Total	
1	Customer Redressal System	34	0	0	355	412	34	0	0	1420	1454	88.23
2	Correct Metering	4	9	86	282	412	4	18	258	1128	1408	85.44
3	Improvement in Customer Services	14	63	213	107	412	14	126	639	428	1207	73.24
4	Improvement in Control	12	78	216	91	412	12	156	648	364	1180	71.60
5	Cost of Service	192	0	0	196	412	192	0	0	784	976	59.22

From the table it is observed that overall Independent Regulatory Commission has facilitated controlling in improving the performance of power distribution utilities. Very high effect is observed on Customer Redressal System and Correct Metering.

6.5.8 Summary of Percentage Analysis

Table presents summary of percentage analysis classifying all individual control into four categories.

Table 38: Summary of Percentage Analysis

	Positive Assertion Above 75%	**Positive Assertion 50 to 74 %**	**Negative Assertion 25 to 49 %**	**Negative Assertion Below 25 %**
1	Budget Control	Internal Audit	Complying with procedures not enhancing performance	Participation in important decisions
2	Policies and procedures helpful in achieving targets	Cost Control	Frequency of Reports	-
3	Suggest to the higher authority	Quality Control	Manpower deployment	-
4	Guidelines for preparing the plans	Failures to achieve performance target(s) is tolerated in your unit.	Performance Recognition	-
5	Standard formats for preparing plans	Co-operation form other departments in performance of task		-
6	Time schedule for preparing plans	Higher level management support you in performance of your task or activity	-	-
7	Review Meetings are held	The objectives / goals/ targets in your organisation are set at following levels	-	-
8	Guidance is given	Clarity in Authority and Responsibility	-	-
9	Sponsorship to Training Programme	Delegation of Power	-	-
10	-	Weightage long term plan	-	-
11	-	Breaking Annual Plan into Periodic Plans	-	-
12	-	Participation in Planning Process	-	-
13	-	Training is given	-	-
14	-	Effectiveness of Training Programme	-	-
15	-	Performance Appraisal System	-	-
16	-	Degree of Goal Congruence	-	-

From the summary table it is observed that there are some individual controls that are inadequate and some require further strengthening. Five individual controls which can said to be woefully inadequate are listed out as follows:

- Distribution utilities seem to emphasise more on complying with procedures. This could be due to legacy of bureaucratic control system in State- owned power distribution utilities.
- Reporting system is not generating adequate reports to support MCS
- Human resource is the main key input for effective MCS. For the efficient utilization of human resource it is important that manpower deployment is efficient. From the data, it is seen that the system of manpower deployment is inefficient.
- Employee performance recognition system constitutes positive behavior and actions. From the data, it is seen that the system of performance recognition is also inefficient.
- There is lack of employee participation in important decisions. Such practice restricts not only the initiative and creativity of employee but also affects job satisfaction and higher productivity.

Hypothesis Testing

In this section, main and sub hypothesis framed in chapter I are tested using statistical tools. Correlation and regression analysis was performed to test H1 and H2. The format to test hypotheses is estimated as

$Y = a + bX + e_1$

Where Y= Discom Performance

X = Management Control System

6.6 Hypothesis Testing

6.6.1 Management Control System and Organisational Performance

H0: Management Control System is not positively associated with organisational performance.

H1: Management Control System positively associated with organisational performance.

Table 39: Correlation between Management Control System and Organisational Performance

		Mean MCS	Organisational Performance
Mean MCS	Pearson Correlation	1	.495**
	Sig. (2-tailed)		.000
	N	412	412
Organisational Performance	Pearson Correlation	.495**	1
	Sig. (2-tailed)	.000	
	N	412	412
**. Correlation is significant at the 0.01 level (2-tailed).			

In connection with hypothesis 1, correlation analysis was conducted between Management Control System and Organisational Performance. Results of the correlation analysis show that correlation coefficient between Management Control System and Organisational Performance is 0.495, and the *p- value* for two-tailed test of significance is 0.000. This figure suggests that there is a positive relationship between Management Control System and Organisational Performance.

Regression analysis-Management Control System and Organisational Performance

Table 40: Model summary Regression analysis- Management Control System

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.495a	.245	.243	.610

Table 41: ANOVA regression analysis: Management Control System and Organisational Performance

ANOVA[b]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48.463	1	48.463	130.362	.000[a]
	Residual	149.075	401	.372		
	Total	197.538	402			

Table 42: Coefficients regression analysis- Management Control System and Organisational Performance

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.666	.187		3.566	.000
	Mean MCS	.769	.067	.495	11.418	.000
a. Dependent Variable: Organisational Performance						

The table 40 provides the *R* and R^2 values. The *R* value represents the simple correlation and is 0.495 (the "**R**" Column), which indicates a high degree of correlation. The R^2 value (the "**R Square**" column) indicates how much of the total variation in the dependent variable (Organisational Performance) can be explained by the independent variable (Management Control System). In this case, approximately 25% can be explained, which is large.

Table (**ANOVA** table 41) reports how well the regression equation fits the data (i.e., predicts the dependent variable). The "**Sig.**" column indicates the statistical significance of the regression model that was run. Here, $p < 0.0005$, which is less than 0.05, and indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., it is a good fit for the data).

The **Coefficients** table (Table 42) provides us with the necessary information to predict Organisational Performance from Management Control System, as well as determine whether Management Control System contributes statistically significantly to Organisational Performance. In this case, the coefficient for Management Control System (t=.495) is significantly different from 0 because its p-value is 0.000, which is smaller than 0.05. The result shows that Management Control System is significantly related to Organisational Performance. Thus, hypothesis 1 is accepted.

Hierarchy of sub hypothesis tested

H1 a: There is positive correlation between Basic Control Systems and Organisational Performance

H1b: There is positive correlation between Performance Management System and Organisational Performance

H1c: There is positive correlation between Decision Making System and Organisational Performance

H1 d: There is positive correlation between basic control systems and Organisational Performance

H1 e: There is positive correlation between basic control systems and Organisational Performance

H1 f: There is positive correlation between basic control systems and Organisational Performance

Table below presents Correlation between different components of Management Control System and Organisational Performance.

Table 43: Summary of correlation between different components of Management Control System and Organisational Performance

Sr. No.	Components of MCS	Pearson Correlation	Sig. (2-tailed)	N	Result
1	Basic Control System	.392**	.000	412	Accepted
2	Performance Management System	.343**	.000	412	Accepted
3	Decision Making System	.287**	.000	412	Accepted
4	Planning Control System	.250**	.000	412	Accepted
5	Monitoring & Review System	.453**	.000	412	Accepted
6	Human Resource Control System	.471**	.000	412	Accepted

**. Correlation is significant at the 0.01 level (2-tailed).

From the above table, it is observed that there is positive correlation between different components of MCS namely, Basic Control Systems, Performance Management System, Decision Making System, Monitoring & Review System, and Human Resource Control System with the Organisational Performance. Hence, it is inferred that different components of MCS contribute towards the effectiveness of MCS in different measure.

Partial Correlation analysis for Control Variables

Partial correlation analysis was performed to ensure that there is no violation of assumptions of linearity. Control variables considered were: Place of Posting, Education Level and Hierarchy. Results are presented below:

H0: There is relationship between the perceived level of satisfaction and MCS controlling the variables namely, Place of Posting, Education Level and Hierarchy**.**

H1: There is no relationship between the perceived level of satisfaction and MCS controlling the variables namely, Place of Posting, Education Level and Hierarchy**.**

Table 44: Results Partial Correlation analysis for Control Variables

Control Variables			Organisational Performance	Overall MCS	Place of Posting	Education Level	Hierarchy
-none-[a]	Organisational Performance	Correlation	1.000	**.525**	**-.031**	**-.078**	**.058**
		Significance (2-tailed)	.	.000	.534	.116	.243
Place of Posting & Education Level & Hierarchy		df	0	410	410	410	410
	Organisational Performance	Correlation	1.000	**.524**			
		Significance (2-tailed)	.	.000			
		df	0	407			
	Overall MCS	Correlation	**.524**	1.000			
		Significance (2-tailed)	.000	.			
		df	407	0			

There is significant evidence to reject null hypothesis and conclude that there is strong negative partial correlation between the MCS (M= 2.8914, SD= .40078) and the perceived level of satisfaction with MCS (M= 2.7696 SD= .68630)while controlling for management education (M=1.7549 SD=0.43070) and place of posting (M=1.8010 SD=0.39976) , r (.524) = -.031, -.078 , .058 p <.01).

Interpretation: The purpose of testing this hypothesis was to determine whether there is a positive association between MCS and Organisational Performance. Main hypothesis with hierarchy of sub hypotheses were tested. Dependent variable was the perceived usefulness and importance of all the items considered in the MCS package and independent variable was overall perception of MCS in organisation. The results indicate that organisational performance is dependent of management control systems.

Discom's performance (Y) = *f* (MCS)

It means that effective MCS should lead to higher level of performance in organisation.

6.6.2 Regulatory control and the effectiveness of management control system

H0: Regulatory Control is not positively associated with Management Control System

H2: Regulatory Control is positively related with Management Control System

Correlation between Regulatory Control and Management Control System

Table 45: Correlation between Regulatory Control and Management Control System

		Regulatory Control	Mean MCS
Regulatory Control	Pearson Correlation	1	.227**
	Sig. (2-tailed)		.000
	N	412	412
Mean MCS	Pearson Correlation	.227**	1
	Sig. (2-tailed)	.000	
	N	412	412
**. Correlation is significant at the 0.01 level (2-tailed).			

In connection with hypothesis 2, correlation analysis was conducted between Regulatory control and Management Control System. Results of the correlation analysis show that correlation coefficient between Regulatory control and Management Control System is .227, and the *p- value* for two-tailed test of significance is 0.000. This figure suggests that there is positive relationship between Regulatory control and Management Control System.

Regression analysis: Regulatory Control and Management Control System

Table: Model summary regression analysis- Regulatory Control and Management Control System

Table 46: Model Summary -Regulatory Control and Management Control System

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.227[a]	.052	.049	.478
a. Predictors: (Constant), Regulatory Control				

Table 47: ANOVA regression analysis: Regulatory Control and MCS

ANOVA[b]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.097	1	5.097	22.288	.000[a]
	Residual	93.767	410	.229		
	Total	98.864	411			
a. Predictors: (Constant), Regulatory Control b. Dependent Variable: Mean MCS						

Table 48: Coefficients regression analysis Regulatory Control and MCS

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.666	.187		3.566	.000
	Mean MCS	.769	.067	.495	11.418	.000
a. Dependent Variable: Organisational Performance						

The coefficient of determination (R^2) is .052 indicating that 5% of the variation in Management Control System can be explained by Regulatory Control. The significance of the relationship between Regulatory Control and Management Control System can be explained through t-statistics and their associated p-values. The coefficient for Regulatory control (t=.495) is significantly different from 0 because its p-value is 0.000, which is smaller than 0.05. The result shows that Regulatory control is significantly related to Management Control System. Thus, hypothesis 2 is accepted.

6.6.3 Difference in MCS practices of public and private power distribution utilities

H0: There is no significant difference between MCS practices of public and private power distribution utilities.

H3: There is significant difference between MCS practices of public and private power distribution utilities.

The independent t-test was used to compare the means between two unrelated groups on the same dependent variable. The table provides useful descriptive statistics and actual results from the independent t-test for the public and private power distribution companies.

Table 49: t-test difference between public and private

	Type of Organisation	N	Mean	Std. Deviation	t- value	Sig.
Management Control Systems	Public Discom	367	2.8022	.45672	-2.478	.014
	Private Discom	35	3.0008	.41780		
	Total	412	2.8191	.45644		

From the above table it is seen that the group means are significantly different because the value in the "Sig. (2-tailed)" row is less than 0.05. Because of this, it can be concluded that there is a statistically significant difference between MCS practices of public and private power distribution utilities. Mean diagram of Management Control Systems depicts the difference between MCS practices of public and private sector.

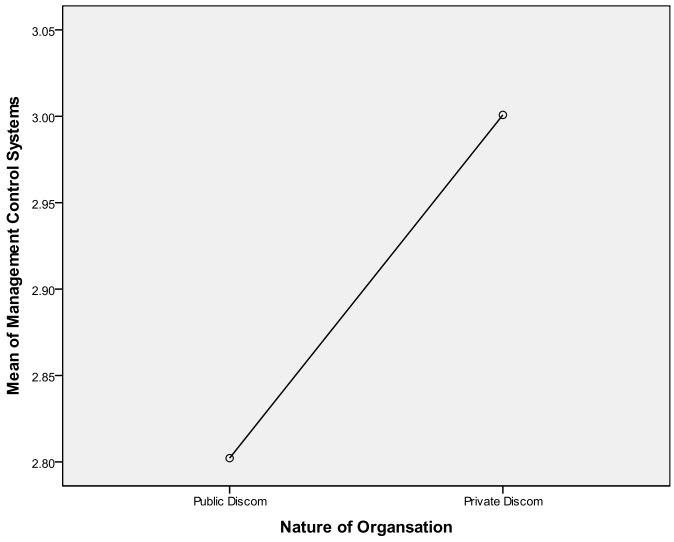


Figure 23: Mean Diagram of Public and Private Power discoms

It is observed that mean value (M=3.0, SD = 0.41780) of private power discom is higher than public power distribution companies (M=2.80, SD = 0.45672). It indicates that MCS of private power distribution is relatively more effective compared to public power distribution companies. As more effective MCS is translated into better organisational performance. Further hypothesis was tested to confirm the proposition:

H0: There is no significant difference between organisational performance of public and private power distribution utilities.

H3a: There is significant difference between organisational performance of public and private power distribution utilities.

The table provides useful descriptive statistics and actual results from the independent t-test for the public and private power distribution companies.

Table 50: Independent t-test for the public and private power distribution companies

	Type of Organisation	N	Mean	Std. Deviation	t- value	Sig.
Organisational Performance	Public Discom	367	2.7493	.68739	-2.546	.011
	Private Discom	35	3.0571	.63906		
	Total	412	2.7761	.68807		

An independent-samples t-test was conducted to compare organisational performance (perceived MCS effectiveness) of public and private power distribution utilities. There was a significant difference in the scores for private (M=3.05, SD=.639) and public (M=2.74, SD=0. 687) conditions; t (410) = -2.546, p = 0.011. Thus, the calculated t - value is found to be significant at 0.05 level of confidence and it is observed that the mean scores of private power distribution utilities are more than the government. The general hypothesis has predicted that MCS practices in private power distribution utilities differ. Second hierarchical level of hypotheses were also tested in order to find

out which (factors) components of MCS are actually lading to positive difference and which are not. Following sub-hypotheses were tested

Difference in Basic Control Systems

***H0*:** There is no significant difference between basic control systems of public and private power distribution utilities.

***H3b*:** There is significant difference between basic control systems of public and private power distribution utilities.

Table 51: Difference in Basic Control Systems

		N	Mean	Std. Deviation	t-Value	df	Sig. (2-tailed)
Basic Control Systems	Public	377	2.7021	.58253	-2.600	410	.010
	Private	35	2.9643	.41632			

An independent-samples t-test was conducted to compare basic control systems of public and private power distribution utilities. There was a significant difference in the scores for private (M=2.96, SD=.416) and public (M=2.70, SD=0. 582) conditions; t (410) = -2.60, p = 0.010. Because of this, it can be concluded that there is a statistically significant difference between BCS practices of public and private power distribution utilities. Thus, hypothesis 3b is accepted.

Difference in Performance Management System

***H0*:** There is no significant difference between Performance Management System of public and private power distribution utilities.

***H3c*:** There is significant difference between Performance Management System of public and private power distribution utilities.

Table 52: Difference in Performance Management System

		N	Mean	Std. Deviation	t-Value	df	Sig. (2-tailed)
Performance Management System	Public	377	2.8326	.51025	-1.273	410	.204
	Private	35	2.9473	.50323			

An independent-samples t-test was conducted to compare Performance Management System of public and private power distribution utilities. There was a significant difference in the scores for private (M=2.95, SD=.503) and public (M=2.83, SD=0.510) conditions; t (410) = -1.273, p = 0.204. Because of this, it can be concluded that there is a no statistically significant difference between PMS practices of public and private power distribution utilities. Thus, hypothesis 3c is not accepted.

Difference in Decision Making System

H0: There is no significant difference between Decision Making System of public and private power distribution utilities

H3d: There is significant difference between Decision Making System of public and private power distribution utilities

Table 53: Difference in Decision Making System

		N	Mean	Std. Deviation	t-Value	df	Sig. (2-tailed)
Decision Making System	Public	377	2.6058	.58246	-2.103	410	.036
	Private	35	2.8228	.60071			

An independent-samples t-test was conducted to compare Decision Making System of public and private power distribution utilities. There was a significant difference in the scores for private (M=2.82, SD=.600) and public (M=2.61, SD=0. 582) conditions; t (410) = -2.103, p = 0.036.

Because of this, it can be concluded that there is a statistically significant difference between DMS practices of public and private power distribution utilities. Thus, hypothesis 3d is accepted.

Difference in planning system

H0: There is no significant difference between Planning Control System of public and private power distribution utilities

H3e: There is significant difference between Planning Control System of public and private power distribution utilities

Table 54: Difference in planning system

		N	Mean	Std. Deviation	t-Value	df	Sig. (2-tailed)
Planning Control System	Public	377	2.9900	.60368	-3.556	410	.000
	Private	35	3.3633	.47641			

An independent-samples t-test was conducted to compare Planning Control System of public and private power distribution utilities. There was a significant difference in the scores for private (M=3.36, SD=.476) and public (M=2.99, SD=0. 603) conditions; t (410) = -3.556, p = 0.000. Because of this, it can be concluded that there is a statistically significant difference between planning system practices of public and private power distribution utilities. Thus, hypothesis 3e is accepted.

Difference in Monitoring & Review System

H3f: There is no significant difference between Monitoring & Review System of public and private power distribution utilities

H3f: There is significant difference between Monitoring & Review System of public and private power distribution utilities

Table 55: Difference in Monitoring & Review System

		N	Mean	Std. Deviation	t-Value	df	Sig. (2-tailed)
Monitoring & Review System	Public	377	2.9976	.67188	.540	410	.590
	Private	35	2.9334	.67692			

An independent-samples t-test was conducted to compare Monitoring & Review System of public and private power distribution utilities. The hypothesis did not reach significant level. The difference in the scores for private (M=2.93, SD=.676) and public (M=2.99, SD=0.672) conditions; t (410) = -5.40, p = 0.590. These results suggest that there is no significant difference between Monitoring & Review System of public and private power distribution utilities. Thus, hypothesis 3f is not accepted.

Difference in Human Resource System

H0: There is no significant difference between Human Resource Control System of public and private power distribution utilities

H3g: There is significant difference between Human Resource Control System of public and private power distribution utilities

Table 56: Difference in Human Resource System

		N	Mean	Std. Deviation	t-Value	df	Sig. (2-tailed)
Human Resource System	Public	377	2.6706	.68588	-2.567	410	.011
	Private	35	2.9780	.58088			

An independent-samples t-test was conducted to compare Human Resource Control System of public and private power distribution utilities. There was a significant difference in the scores for private (M=2.97, SD=.580) and public (M=2.67, SD=0. 686) conditions; t (410) = -2.567, p = 0.011. These results suggest that there is significant difference between HR System of public and private power distribution utilities. Thus, hypothesis 3g is accepted.

Differences in ranking of performance target

Difference between MCS practices of public and private sector is also investigated with another important variable i.e. ranking of performance target. The question whether there is a significant concordance or discordance in ranking of performance targets was analysed with the help of following hypothesis.

H0: There is no statistically significant relationship between the median performance target rankings of public power distribution utilities and the median performance target rankings of private power distribution utilities.

H3h: There is statistically significant relationship between the median performance target rankings of public power distribution utilities and the median performance target rankings of private power distribution utilities.

For rank ordered data Kendall's Tau and Spearman's rank correlation coefficient statistical test are usually used. The table provides actual results from Kendall's Tau and Spearman's rank correlation for the public and private power distribution utilities.

Table 57: Differences in ranking of performance target

Correlations				
			Public	Private
Kendall's tau_b	Public Power Distribution Utility	Correlation Coefficient	1.000	-.099
		Sig. (2-tailed)	.	.074
		N	1890	195
	Private Power Discom	Correlation Coefficient	-.099	1.000
		Sig. (2-tailed)	.074	.
		N	195	195
Spearman's rho	Public Power Distribution Utility	Correlation Coefficient	1.000	-.127
		Sig. (2-tailed)	.	.076
		N	1890	195
	Private Power Discom	Correlation Coefficient	-.127	1.000
		Sig. (2-tailed)	.076	.
		N	195	195

Results show that correlation co-efficient is negative, meaning that no agreement between public and private with respect to target setting but it has statistical significance as the p-value 0.74 is more than 0.05. It was essential to further look into the items of concordance or discordance individually. Percentage analysis was carried out to rank the performance target and also to find out whether distribution loss reduction is first and foremost common goal for both public and private power distribution utilities. The actual results are presented below:

Table 58: Order of Importance of Targets

Performance Targets/ Parameters	Order of Importance (Rank)	
	Public	Private
Loss Reduction	1	1
Metered sales	2	3
Demand Raised	3	2
Revenue collected	4	4
Energy drawls	5	5
Distribution Transformer Failure	6	6

It is interesting to note while there is overall no perfect correspondence between public and private power distribution utilities, however, with respect to Loss Reduction and Distribution Transformer Failure , there is seen a tie. Hence, it can be concluded that there are some differences in goal setting priorities of public and private power distribution utilities.

In summation, it can be concluded that the hypotheses that there is no significant difference between MCS practices of public and private sector is rejected. It is interpreted that in all probabilities the difference between public and private discom is statistically different and the results are not chance finding.

6.6.4 Summary of Hypothesis Tested

Results of all the hypotheses tested are summarized in table as follows

Table 59: Summary of Hypotheses Tested

Sr. No.	H	Test	Mean	SD	N	Sig. P<0.05	Result
1	H1	Regression	2.8162	.44193	412	.000	Accept
2	H2	Regression	3.3405	.45832	412	.000	Accept

Sr. No.	H	Test	N	Sig. P<0.05	Result
3	H3	t-Test	412	.014	Accept
4	*H3a*	t-Test	412	.011	Accept
5	*H3b*	t-Test	412	.010	Accept
6	*H3c*	t-Test	412	.204	Reject
7	*H3d*	t-Test	412	.036	Accept
8	*H3e*	t-Test	412	.000	Accept
9	*H3f*	t-Test	412	.590	Reject
10	*H3g*	t-Test	412	011	Accept
11	*H3h*	Kendal Tau	412	.074	Reject

Various hypotheses tested in context of power utility indicate that higher effectiveness of MCS means higher performance. Hence, it is concluded that if power distribution utilities focus on making MCS more effective, there are potential benefits.

Analysis of Open-Ended Question

To better understand and complement analysis of the quantitative survey data, qualitative analysis of open-ended questions was also included in the questionnaire.

6.7 Analysis of Open-Ended Question

Five open-ended questions that were included to capture respondents' own views about making the MCS more effective in their organisation were as follows:

Question 22: Please list suggestions to improve performance appraisal system of your organisation.

Question 23: Please list suggestions to improve Human Resource Management in your organisation.

Question 34: Please give reasons if reports are not or less helpful

Question 35: Please give reasons if reports are not or less helpful

Question 39: Please offer suggestions for improving controls in your organisation

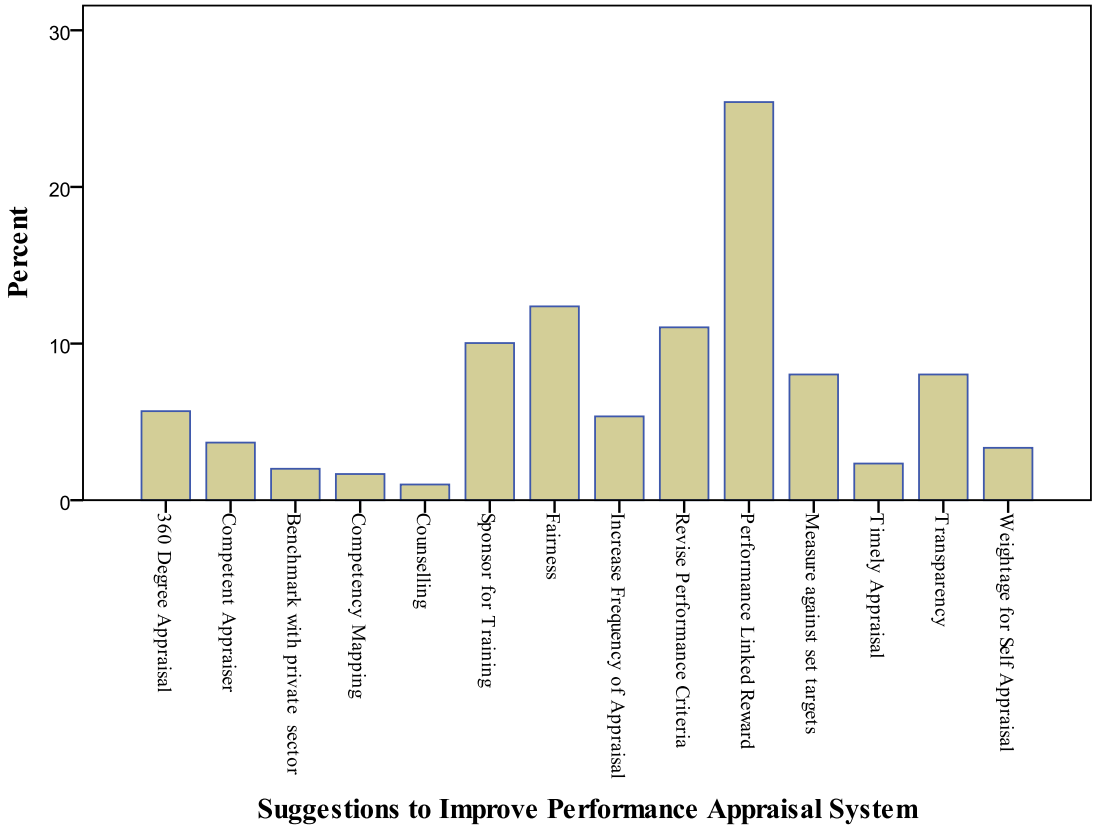
There were a total of 1624 comments. All the suggestions were read to get a sense of themes and develop categories. Then, each respondent's comments were coded and content analysis was run. Frequency count was made and bar diagram prepared to find out areas of concern in improving the overall MCS of power distribution utilities. All comments summarized are presented as follows

6.7.1 Performance Appraisal System

Table below presents the frequency of suggestions

Table 60: Suggestions on Performance Appraisal System

Suggestions ↓	Frequency	Percent
There should be 360 Degree Appraisal System	17	5.7
Performance Appraiser should be a competent person	11	3.7
Company should benchmark with private discoms	6	2
Competency Mapping	5	1.7
Counselling should be there	3	1
Company should sponsor for training	30	10
System should equitable and fairness	37	12.4
Frequency of Appraisal should be increased	16	5.4
Performance Criteria in appraisal should be revised.	33	11
Performance should be linked to reward	76	25.4
Measure employee performance against set targets	24	8
Appraisal should be timely	7	2.3
There should be transparency in appraisal system.	24	8
Some weightage for Self Appraisal be incorporated	10	3.3
Total	299	100



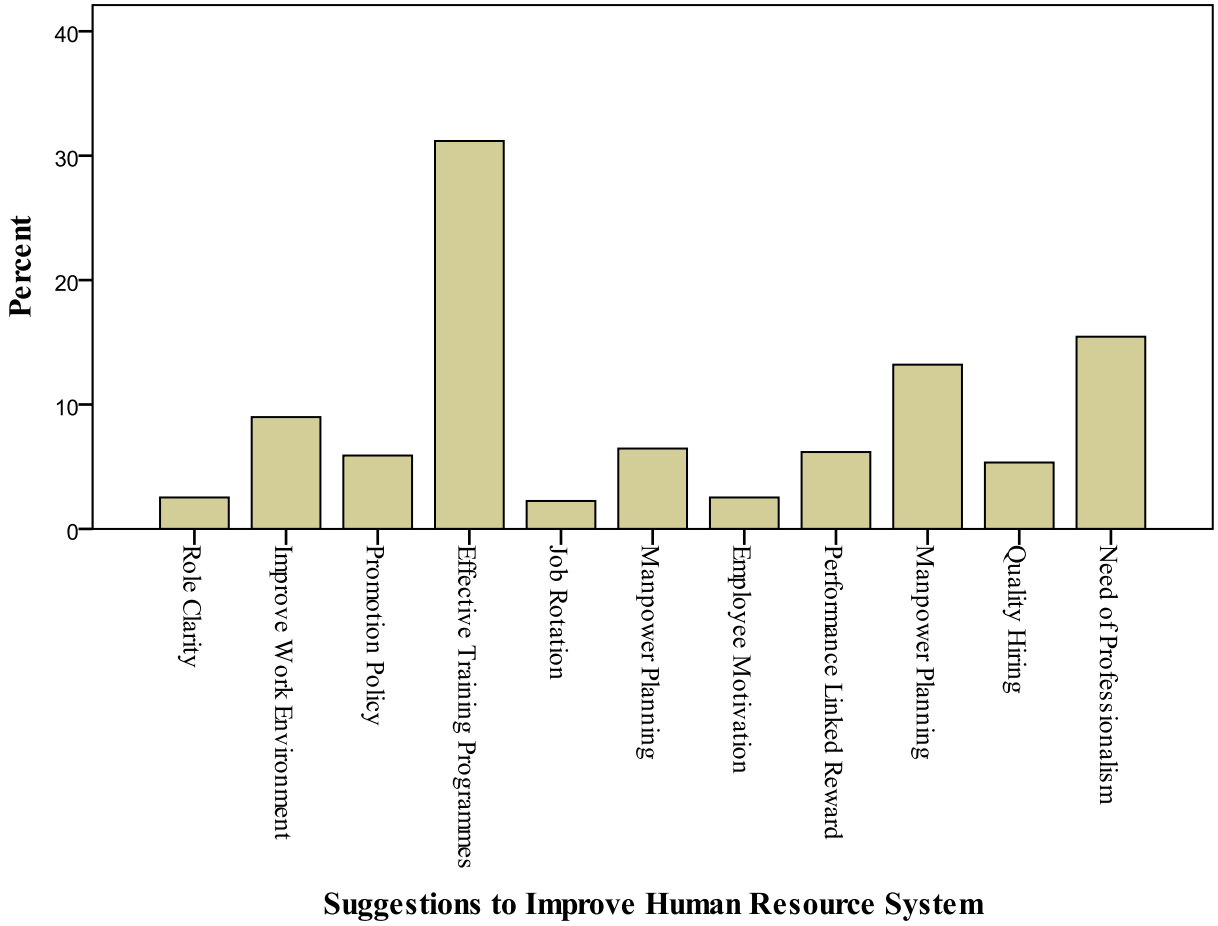
From the figure it is observed that performance linked reward have the highest number (76%) of observations. This indicates that employees are not motivated through appropriate incentive mechanism. Other factors - fairness, training, revision of performance criteria and transparency are also suggested to improve the performance appraisal system.

6.7.2 Human Resource System

Table 61: Suggestion to Improve Human Resource System

Suggestions ↓	**Frequency**	**Percent**
Role Clarity	9	2.5
Improve Work Environment	32	9
Promotion Policy	21	5.9
Training Programmes should be effective	111	31.2
Introduce job rotation	8	2.2
Deploy manpower according to skills and talent	23	6.5

There should be variety of employee motivation schemes	9	2.5
Performance should be linked to reward	22	6.2
Manpower is inadequate, while no of customers are increasing	47	13.2
Quality Hiring – recruit right candidates	19	5.3
There is need of professionalism in HR system	55	15.4
Total	356	100

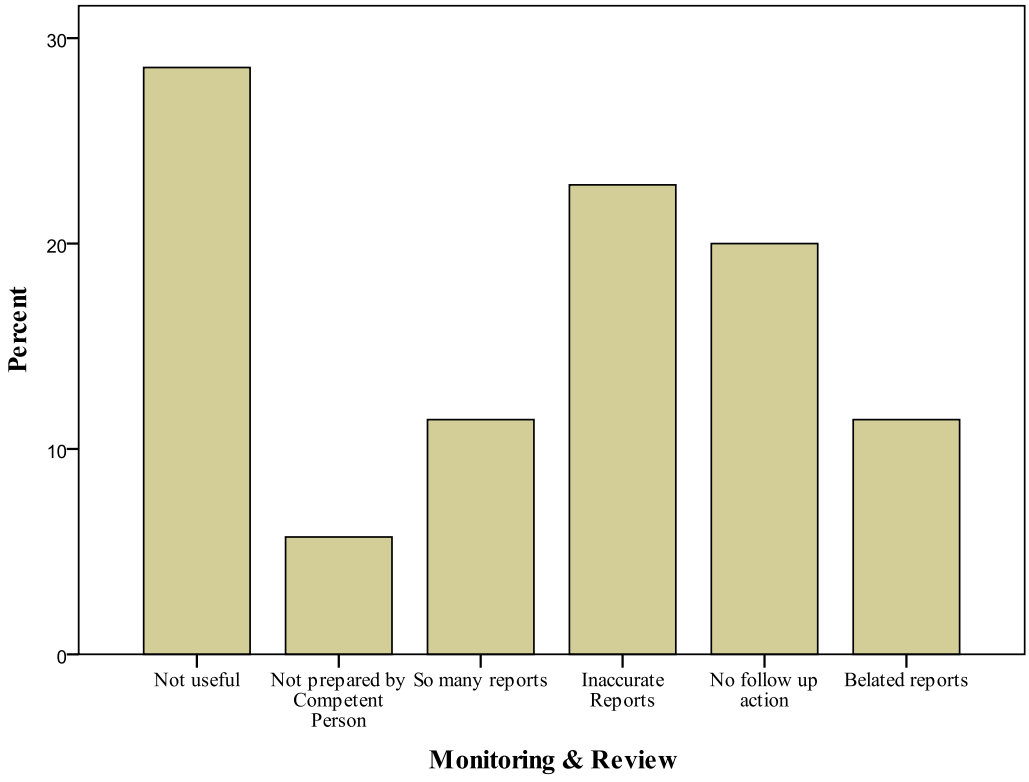


From the figure it is observed that effective training and professional HR system are relatively more emphasised by the respondents

Monitoring & Review System

Table 62: Suggestion to Improve Monitoring & Review

Suggestions→	Reports Not useful	Not prepared by Competent Person	So many reports	Inaccurate Reports	No follow up action	Belated reports	Total
Frequency	10	2	4	8	7	4	35
Percent	28.6	5.7	11.4	22.9	20	11.4	100

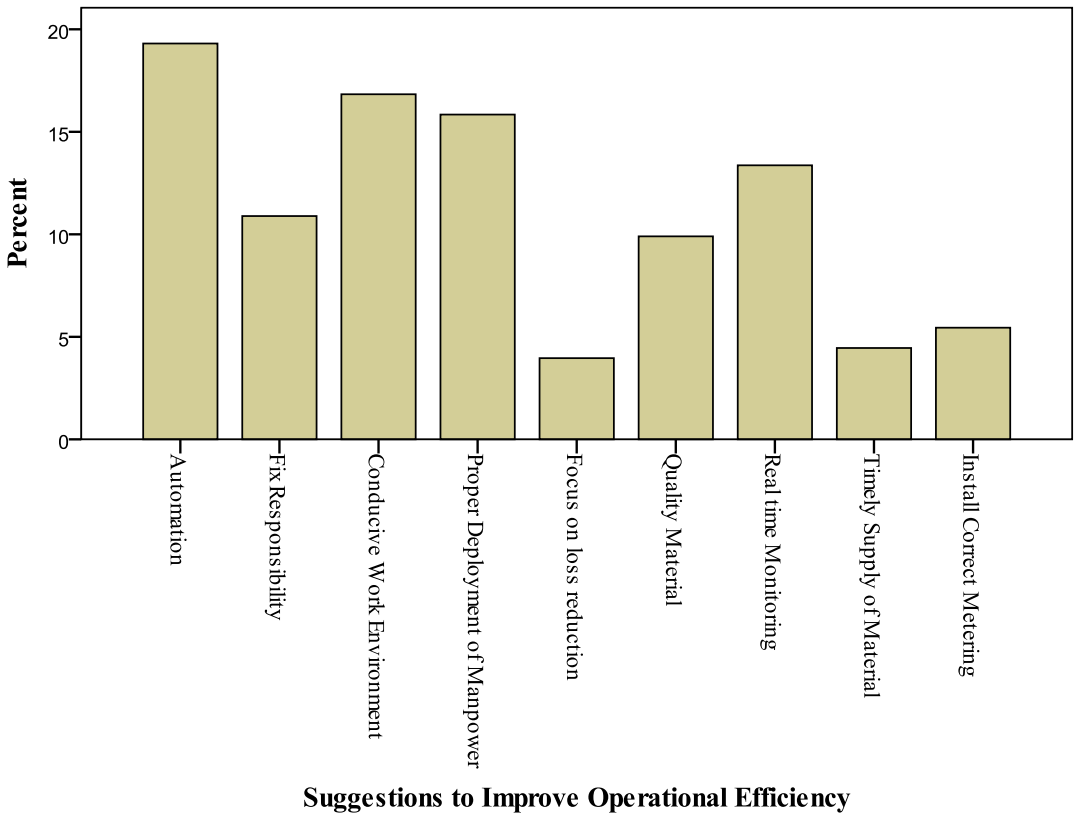


From the figure it is observed that there is need to improve the reporting system. Information generated need to be accurate and useful and follow up actions are called for.

6.7.3 Operational Efficiency

Table 63: Suggestion to Improve Operation Efficiency

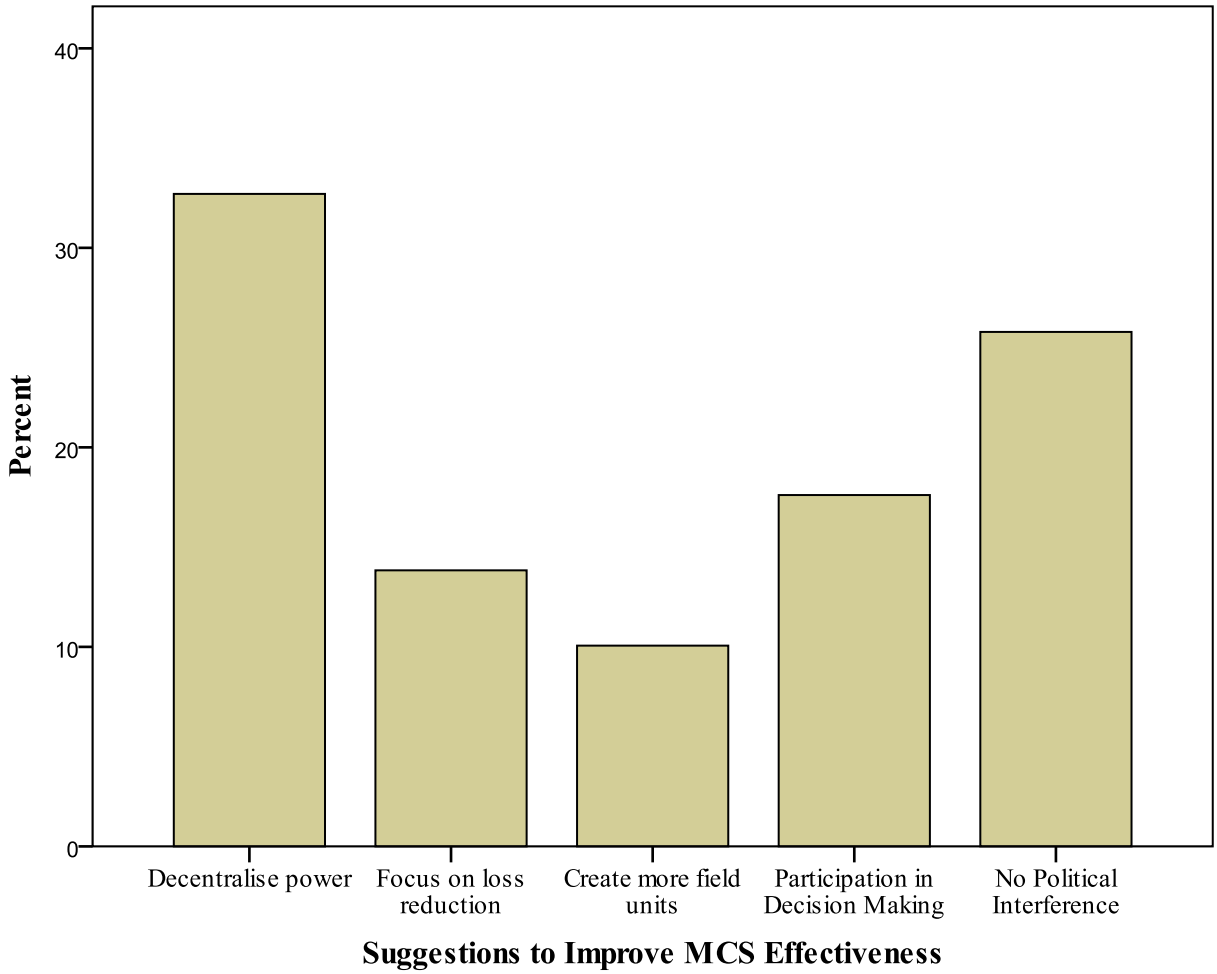
Suggestions ↓	Frequency	Percent
Automation	39	19.3
Fix the responsibility	22	10.9
Create conducive work environment	34	16.8
Properly deploy manpower	32	15.8
Focus on loss reduction	8	4
Procure quality material	20	9.9
Monitoring should be real-time	27	13.4
Timely Supply of Material	9	4.5
Install Correct Metering	11	5.4
Total	202	100



6.7.4 MCS effectiveness

Table 64: Suggestion to Improve MCS Effectiveness

Suggestions →	Decentralise power	Focus on loss reduction	Create more field units	Participation in Decision Making	No Political Interference	Total
Frequency	52	22	16	28	41	159
Percent	32.7	13.8	10.1	17.6	25.8	100



6.8 Summary

Cronbac alpha, factor analysis and final sample response data indicated that sample data are reliable and credible. Existing MCS of power distribution utilities has certain inadequacies. Many elements of MCS require additional development. Inferential analysis indicated that there is positive association between MCS and Organisational performance, and Independent Regulatory Commission has positively facilitated effectiveness of MCS. Further, it is found that there are differences in MCS practices of public and private power distribution utilities. MCS of private power distribution is relatively more effective and hence higher organisational performances of private power distribution utilities further support this assertion. In content analysis of open ended questions, it is found that majority of suggestions given by respondents relate to Human Resource. It is inferred that power distribution utilities need to improve manpower planning, transparency, effectiveness of training on technical and non- technical areas for increasing the effectiveness of MCS.

6.9 A Case Study of Madhya Gujarat Vij Company Limited

6.9.1 Introduction

In previous section, the findings of overall survey data indicated a positive assertion about association between Management Control Systems and Organisational Performance, and also positive effect of Independent Regulatory Control in facilitating the effectiveness of Management. This section presents a case study of a state-owned unbundled power distribution company. A separate case study attempts to check convergence or divergence and validate findings of overall survey data. Additionally, this case study would also provide an opportunity to get deeper understanding of MCS complexity.

6.9.2 Data collection

To form this case study, both quantitative and qualitative primary data have been gathered. The instrument used and modus operandi followed was same as has been used for overall survey. Qualitative data were gathered from interviews with key informants, direct observation, excerpts from personal discussions. Data collection also involved reports and publications such as annual reports as well as material provided by the interviewee. While collecting qualitative data, interactions were not electronically recorded due to reservations and resistance exhibited by the respondents and for research objectives to get more accurate information and point of views. The interviews were semi-structured which gave flexibility to query the interviewees when clarifications about any particular answer were required. To avoid possible misunderstandings during interactions, respondents were told about the objective of study and concept of management control. This approach helped in structure and form of interview to shape in the course of interview and also get more subtle information about issues.

6.9.3 Criteria for Choice of the Case Company

While choosing the case company, two important factors were considered. First, the case company should largely represent the population, and second, it should be a most likely case to reveal interesting insight into the MCS. Four main criteria for choosing the company are summarized in table below

Ownership	Unbundled Entity	Size of the Company	Performance of Company
State Government	Yes	Large jurisdictional area & all categories of consumers	High

A state-owned unbundled power distribution company located in Gujarat was chosen based on certain criteria which are summarized in table below. The case company chosen is Madhya Gujarat Vij Company Limited (MGVCL) located in Gujarat. The location of case company was decided based on various factors. Firstly, among various States, Gujarat is found as one of states showing consistently higher rating on power sector performance. The **s**weeping power reforms implemented by the Gujarat State turned around the Gujarat Electricity Board from making heavy losses to making healthy profits. ***Table 1*** is an evidence of the big leap that Gujarat power sector witnessed.

Table 65: Gujarat Power Sector Turnaround

	2000-01	2010-11
Demand Supply Gap(MW)	500	+2114
Profit/(Loss)*	(2246)	533
Revenues*	6280	21895
T&D Losses(%)	35.27	20.13
PLF(%)	66.7	79
Average Realisation per unit	2.70	4.52

. *Figures in Crores

Per capita consumption of electrical energy in Gujarat is almost double (1519.12 units in 2011-12) of National Average of 778.63 units. Gujarat supplies near 24-hour electricity not only to its large cities and towns but to the 18,000 villages, too. According to a survey in 2009, Gujarat's power distribution

companies (DISCOMs) are delighting their customers (Morris et al.2012). In 2005, a CRISIL-ICRA comparative study declared the Gujarat State-owned power companies (GUVNL-group) as the second best performing state power utility in the country, nominally behind Andhra Pradesh.

6.9.4 Restructuring of Gujarat Electricity Board (GEB)

As a part of the reform process, Gujarat Electricity Board (GEB) in Gujarat was unbundled. As a result, Electricity Generation is entrusted to Gujarat State Electricity Corporation Limited (GSECL), Electricity Transmission has been entrusted to the Gujarat Energy Transmission Company(GETCO). Distribution network in the state has been split up among four distribution companies, which cater to the northern, central, southern, and western parts of the state respectively. Gujarat Urja Vikas Nigam Limited (GUVNL) is the holding company of subsidiaries. GUVNL is the single bulk buyer in the state as well as the bulk supplier to distribution companies and also responsible to carry out the trading function in the state. The figure below is post reform institutional structure of power sector in Gujarat:

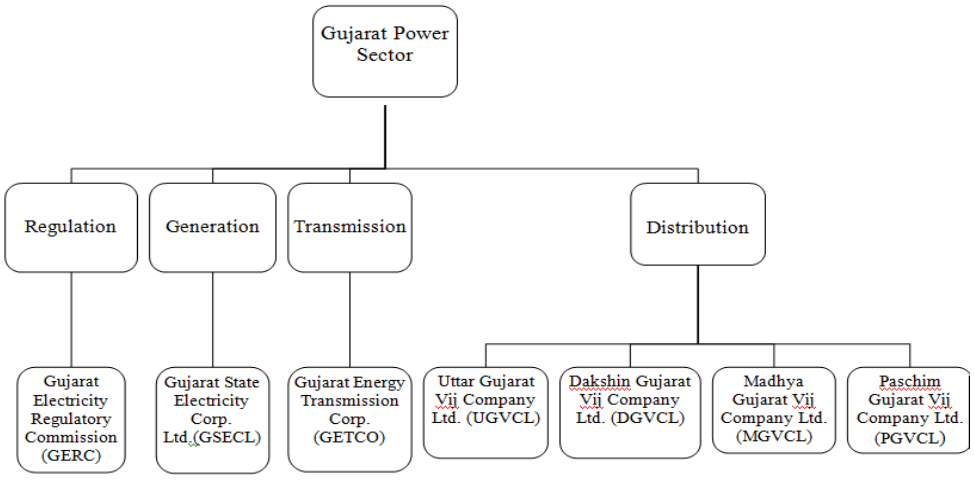


Figure: Institutional structure of power sector in Gujarat

Figure 24 : Institutional Structure of Power Sector in Gujarat

Table shows performance level (AT&C Losses) of all the four distribution companies.

Table 66: DISCOM wise AT& C losses

State	Utility	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Gujarat	DGVCL	15.23	16.11	15.23	13.08	15.12	14.14
	MGVCL	17.17	14.98	15.27	14.83	13.14	14.94
	PGVCL	32.74	31.78	32.35	26.75	14.4	30.41
	UGVCL	17.23	16.31	18.89	7.20	28.03	14.37
Total		**22.81**	**22.04**	**22.81**	**15.47**	**17.67**	**18.47**

Among four distribution companies, Madhya Gujarat Vij Company (MGVCL) is chosen as a case company. The company is a Distribution Licensee within the meaning of Section 2(17) of Electricity Act 2003 and wholly owned subsidiary of GUVNL – a holding company. The company is registered under the Companies Act 1956, with the objectives of distribution of electricity in the central parts of the State of Gujarat. The business affairs are managed from the Corporate Office at Vadodara. Table below gives a snapshot of details:

Table 67: Snapshot of details MGVCL

Particulars	Details (as on 30.09.2010)
District Covered	Vadodara-Kheda-Anand-Panchmahal-Dahod
Total Area in Sq.Km.	23,854 Sq KM
Total Consumers	2593746 Nos.
No. of Towns	42 Nos.
No. of Villages	4,305 Nos.
Total Circles	4 Nos.
Total Division Offices	17 Nos.
Total O&M Sub-Division Offices	86 Nos.
Total Sub-Stations	121 Nos.

The company is responsible for reliable and affordable power distribution to residential areas, commercial complexes, street lights, water works, agriculture, traction as well as industries. The

consumers' mix consists of various categories such as residential, commercial, industrial, and agricultural and others consisting of around 25 lacs consumers which are served by 4 circles. Residential category of consumers consists of the largest consumer base followed by commercial & then agriculture. Both these categories are subsidised and affect the revenue of the company. The industrial consumption is around 40% which is beneficial for MGVCL and 16% is agriculture consumption.

6.9.5 Data Analysis

The results of the data collected from case company are presented. A total of 44 questionnaires were usable for analysis. Percentage analysis was used to identify frequencies and percentages. The hypotheses were tested with statistical tool (correlation and regression) with the level of significance at 0.05 to determine the significance of relationships among selected variables. The fundamental goal of this analysis was to cross check convergence or divergence from the overall survey findings.

6.9.5.1 Percentage Analysis

Basic MCS

Results of four categories of basic MCS hypothesised, namely, *Budget Control*, *Cost control*, *Quality control*, and *Internal Audit* are presented as follows:

Table 68: Percentage Analysis -Basic MCS

To what extent do you agree or disagree on efficient functioning of following control systems in your organization?							PERCENTAGE	
	Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
Budget Control	3.0000	57060	00	15.9	68.2	15.9	15.9	84.1
Cost Control	2.7500	.65147	00	36.4	52.3	11.4	36.4	63.7
Quality	2.8409	.52576	00	22.7	70.5	6.8	22.7	77.3

Control								
Internal Audit	2.8182	.58161	00	27.3	63.6	9.1	27.3	72.7

From the table it is can be concluded that basic MCS are adequate in the company.

Performance Management System

Results of six individual controls hypothesised are presented as follows:

Table 69: Policies and procedures in achieving targets

Policies and procedures followed in your company are helpful in achieving targets						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
3.3182	.56126	00	4.5	59.1	36.4	4.5	95.5

From the table it is observed that approximately 96 per cent respondents have an affirmative answer to the policies and procedures helpful in achieving targets.

Table 70: Degree of Tolerance in failures to achieve performance target

Failures to achieve performance target(s) is tolerated in your unit.						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.0227	.76215	2.3	27.3	50.0	20.5	29.6	70.5

From the table it is observed that approximately 71 per cent respondents have an affirmative answer to that failure to achieve performance target(s) is tolerated in the company.

Table 71:Co-operation from other departments in performance of task

Employees in your company get co-operation from all other	PERCENTAGE

wings/ departments of the company in performance of your task.							
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.9318	.66114	00	25.0	56.8	18.2	25.0	75.0

From the table it is observed that 75 per cent respondents have an affirmative answer to that employees get co-operation form all other departments of the company in performance of task.

Table 72: Complying with procedures that do not enhance performance

Your organisation believes in complying with certain procedures which you may believe they do not enhance performance?						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.2727	.62370	2.3	2.3	34.1	61.4	4.6	95.5

From the table it is observed that approximately 96 per cent respondents have an affirmative answer that the company complies with certain procedures which do not enhance performance.

Table 73: Higher Level Management Support

Higher level management support you in performance of your task or activity						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
3.2045	.73388	00	18.2	43.2	38.6	18.2	81.8

From the table it is observed that approximately 82 per cent respondents have an affirmative answer to that higher level management support in performance of task or activity.

Table 74: Target setting at lower operational levels

The objectives / goals/ targets in your organisation are set at following levels						PERCENTAGE	
Mean	Std. Deviation	Zone Level	Circle Levels	Division Levels	Sub-division	Feeble	Vigorous
2.5455	.76111	6.8	34.1	54.5	4.5	40.9	59.1

From the table it is observed that 59 per cent respondents have an affirmative answer to that targets in the company are set at division and sub-division levels

Decision Making System

Results of four individual controls hypothesised are presented as follows:

Table 75: Clarity in Authority and Responsibility

Authority and responsibilities of employees in your company are identified clearly and precisely						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.9318	.72810	2.3	22.7	54.5	20.5	25.0	75.0

From the table it is observed that 75 per cent respondents have an affirmative answer to that authority and responsibilities in the company are identified clearly and precisely.

Table 76: Delegation of Power

Existing delegation of power is adequate for achieving your targets						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.8864	.78402	4.5	22.7	52.3	20.5	27.3	72.8

From the table it is observed that 73 per cent respondents have an affirmative answer to that existing delegation of power is adequate for achieving the targets.

Table 77: Participation in Decision Making

Your organisation involves you in the process of taking important decisions in your jurisdiction						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
1.8409	.68005	31.8	52.3	00	15.9	84.1	15.9

From the table it is observed that only 16 per cent respondents have an affirmative answer to that their views are considered in important decisions taken in their jurisdiction

Table 78: Suggest to higher authority

Do suggest to the higher authority for improvement of outdated procedures?				
	Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
	3.2500	1.31406	25.0	75.0

From the table it is observed that 75 per cent respondents have an affirmative answer to that they suggest to the higher authority for improvement of outdated procedures in the company.

Planning system

Results of six individual controls hypothesised are presented as follows:

Table 79: Weightage long term plan in the formulation of annual plans

How much Weightage is given to long term plan in the formulation of annual plans						PERCENTAGE	
Mean	Std. Deviation	Very low	Low	High	Very high	Feeble	Vigorous
2.3182	1.19637	18.2	18.2	59.1	4.5	36.4	63.6

From the table it is observed that approximately 64 per cent respondents have an affirmative answer to that weightage is given to long term plan in the formulation of annual plans.

Table 80: Breaking annual plan into periodic plans

Are annual plans broken into: half yearly/ quarterly/ monthly/ weekly						PERCENTAGE	
Mean	Std. Deviation	Half yearly	Quarterly	Monthly	Weekly	Feeble	Vigorous
2.5455	.76111	6.8	34.1	54.5	4.5	40.9	59.1

From the table it is observed that 59 per cent respondents have an affirmative answer to that annual plans are broken into weekly /monthly.

Table 81: Procedure in formulation of plan

Item No.	Individual control	Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
1	Guidelines for preparing the plans	1.1591	.47949	20.5	79.5
2	Standard formats for preparing plans	1.1591	.47949	20.5	79.5
3	Time schedule for preparing plans	1.3182	.56126	36.4	63.6
4	Participation in Planning Process	2.5682	1.53104	52.3	47.7

From the table it is observed that an overwhelming majority (above75%) have affirmative answer to that guidelines are issued and standard formats are used for preparing plans.

Monitoring & Review System

Results of six individual controls hypothesised are presented as follows:

Table 82: Frequency of Reports

How frequently you get reports in the course of performing your job						PERCENTAGE	
Mean	Std. Deviation	Yearly	Quarterly	Monthly	Weekly	Feeble	Vigorous
3.0455	1.75147	20.5	6.8	36.4	36.3	27.3	72.7

From the table it is observed that approximately 73 per cent respondents have an affirmative answer to that frequently of reports in the course of performing job weekly/monthly.

Table 83: Dealing with Performance Gaps

How are performance gaps or deficiencies dealt with in your organisation		Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
1	Review Meetings are held	1.1136	.32104	11.4	88.6
2	Punishment/Disincentive is given	1.5682	50106	43.2	56.8
3	Guidance is given	1.0782	.36736	9.1	90.9
4	Training is given	1.2662	.44120	25.0	75.0

From the table it is observed that mostly (75- 91%) respondents have an affirmative answer to that review meetings, guidance, and training are used in dealing performance gaps.

Table 84: Functioning of monitoring and review system

Where would you rate the functioning of monitoring and review system in your organisation						PERCENTAGE	
Mean	Std. Deviation	Very low	Low	High	Very high	Feeble	Vigorous
2.8864	.57933	00	22.7	65.9	11.4	22.7	77.3

From the table it is observed that 66 per cent respondents rated high and 11 per cent rated very high about the overall functioning of monitoring & review system in their company.

HR System

Results of six individual controls hypothesised are presented as follows:

Table 85: Sponsorship to training programme

Does your organisation sponsor you for training or development programmes?			
Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
4.0000	00000	00	100

From the table it is observed that all the respondents (100%) have affirmative answer to that the company sponsors them for training and development programmes.

Table 86: Effectiveness of Training Programme

After participation in training programmes your performance is improved						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.9091	.52020	00	18.2	72.7	9.1	18.2	81.8

From the table it is observed that approximately 82 per cent respondents have an affirmative answer to that training programmes are effective i.e. after participation performance is improved.

Table 87: Transfer Policy

Do you believe that your organisation deploy (post/transfer) employees according to their skills and capability			
Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
2.4318	1.51577	52.3	47.7

From the table it is observed that approximately 48 per cent respondents have an affirmative answer to that the company deploys employees according to their skills and capability.

Table 88: Performance Recognition

Are employees recognized by your organisation for their performance?			
Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
2.9091	1.45982	36.4	63.6

From the table it is observed that approximately 64 per cent only respondents have an affirmative answer to that the company recognises their employees.

Table 89: Performance Appraisal System

Are you satisfied with the Performance Appraisal System of Employees in your company						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.7045	.66750	6.8	20.5	68.2	4.5	27.3	72.7

From the table it is observed that approximately 73 per cent are satisfied with existing performance appraisal system in the company.

Table 90: Degree of Goal Congruence

You are able to achieve your career goals while working for your company goals.						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.9773	.76215	2.3	22.7	50.0	25.0	25.0	75.0

From the table it is observed that 75 per cent only respondents have an affirmative answer to that they are able to achieve personal career goals while working for the company goals.

Regulatory Effect on MCS

Results are presented as follows:

Table 91: System of Identifying Cost of Service

Is there any system of identifying cost of service for each type of customer in your jurisdiction?			
Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
2.8976	1.61821	38.7	61.3

From the table it is observed that approximately 61 per cent respondents have an affirmative answer to that there is system of identifying cost of service for each type of customer in the company.

Table 92: Customer Complaint/Grievance Redressal System

. Does your jurisdiction has a Customer Complaint/Grievance Redressal System?			
Mean	Std. Deviation	Negative Assertion Percent	Positive Assertion Percent
3.9181	.47760	2.3	97.7

From the table it is observed that an overwhelming majority of approximately 98 per cent respondents have an affirmative answer to that there is Customer Complaint/Grievance Redressal System in their jurisdiction.

Table 93: Improvement in customer services

Customer services over last five years has improved in your organisation						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
3.4773	.54936	00	2.3	47.7	50.0	2.3	97.7

From the table it is observed that an overwhelming majority 98 per cent respondents have an affirmative answer to that customer services over last five years have improved in their organisation .

Table 94: Percentage of Correct Metering

Indicate the percentage of correct metering in your jurisdiction						PERCENTAGE	
Mean	Std. Deviation	<25%	26 -50%	51- 75%	76%- 100%	Feeble	Strong
3.8632	.34855	00	00	18.3	81.7	00	100

From the table it is observed that approximately 82 per cent respondents have an affirmative answer to that percentage of correct metering is above 76 per cent.

Table 95: Facilitated controlling

Regulatory Commission facilitated controlling in improving the performance of your company						PERCENTAGE	
Mean	Std. Deviation	Strongly Disagree	Disagree	Agree	Strongly agree	Negative Assertion	Positive Assertion
2.8182	.81477	4.6	22.7	56.8	15.9	27.3	72.7

From the table it is observed that overwhelming majority of 73 per cent respondents have an affirmative answer to that independent regulatory system has facilitated controlling in improving the performance of their company.

Comparison of case and overall survey findings

Table 96: Comparison of Basic MCS

	Overall Survey Findings				Case Study Findings			
	Mean	Std. Deviation	Negative Assertion	Positive Assertion	Mean	Std. Deviation	Negative Assertion	Positive Assertion
Budget Control	2.85	.71462	24.95	75.05	3.00	57060	15.9	84.1
Cost Control	2.61	.75279	40.725	59.15	2.75	.65147	36.4	63.7
Quality Control	2.57	.82711	40.975	59.10	2.84	.52576	22.7	77.3
Internal Audit	2.85	.67520	25.275	73.75	2.81	.58161	27.3	72.7

The information provided in above table reveals very little difference in Internal Audit and Cost Control. Budget control has approximately 10% more and quality control has approximately 13% more positive assertion in the case company.

Comparison of performance management system

Table 97: Results - Comparison of Performance Management System

		Overall Survey Findings				Case Study Findings			
Item No.		Mean	Std. Deviation	Negative Assertion	Positive Assertion	Mean	Std. Deviation	Negative Assertion	Positive Assertion
1	Policies and procedures	2.8514	.71462	24.95	75.05	3.3182	.56126	4.5	95.5
2	Tolerance to achieve performance target	2.7193	.90304	37.1	62.9	2.0227	.76215	29.6	70.5
3	Co-operation from other departments	2.8719	.77195	30.4	69.6	2.9318	.66114	25.0	75.0
4	Complying with procedures	2.3376	.72027	57.25	42.75	2.2727	.62370	4.6	95.5
5	Higher Level Management Support	2.7811	.79703	37.4	62.6	3.2045	.73388	18.2	81.8
6	Setting Targets at Operational Levels	2.8278	1.26078	38.2	61.8	2.5455	.76111	40.9	59.1

The information provided in above table reveals that case company has higher positive assertion on all individual controls except for an item no 6 (setting targets at operation levels) where the difference is negligible.

Comparison of decision making system

Table 98: Results -Comparison of decision making system

		Overall Survey Findings				Case Study Findings			
Item		Mean	Std. Deviation	Negative Assertion	Positive Assertion	Mean	Std. Deviation	Negative Assertion	Positive Assertion
1	Clarity in Authority and Responsibility	2.8564	.86233	32.8	67.2	2.9318	.72810	25.0	75.0
2	Delegation of Power	2.6139	.91277	44.2	55.8	2.8864	.78402	27.3	72.8
3	Participation in Decision Making	1.8075	.76610	77.9	22.1	1.8409	.68005	84.1	15.9
4	Suggest to the higher authority	3.2525	1.30699	25.3	74.7	3.2500	1.31406	25.0	75.0

With regard to decision making system, the information provided in above table reveals that case company has slightly higher positive assertion on item no 1 and 2, lower in item 3 and negligible difference in item 4.

Comparison of Planning System

Table 99: Results - Comparison of Planning System

		Overall Survey Findings				Case Study Findings			
Item No.		Mean	Std. Deviation	Negative Assertion	Positive Assertion	Mean	Std. Deviation	Negative Assertion	Positive Assertion
1	Weightage long term plan	2.6448	.77136	37.15	62.85	2.3182	1.19637	36.4	63.6
2	Breaking Annual Plan into Periodic Plans	2.4896	.76809	43.1	56.9	2.5455	.76111	40.9	59.1
3	Guidelines for preparing the plans	3.5194	1.11584	17.5	82.5	1.1591	.47949	20.5	79.5
4	Standard formats for preparing plans	3.4485	1.18122	19.4	80.6	1.1591	.47949	20.5	79.5
5	Time schedule for preparing plans	3.3281	1.26476	23.65	76.35	1.3182	.56126	36.4	63.6
6	Participation in Planning Process	2.8655	1.45664	38.35	61.65	2.5682	1.53104	52.3	47.7

With regard to planning system, the information provided in above table reveals that there is negligible difference from item no. 1 to 4; whereas case company has approximately 10% lower positive assertion in item 5 and 6.

Comparison of monitoring & review system

Table 100: Results - Comparison of monitoring & review system

		Overall Survey Findings				Case Study Findings			
Item No.		Mean	Std. Deviation	Negative Assertion	Positive Assertion	Mean	Std. Deviation	Negative Assertion	Positive Assertion
1	Frequency of Reports	2.7608	1.03450	68.5	31.5	3.0455	1.75147	27.3	72.7
2	Review Meetings are held	3.4049	1.20189	20.0	80.0	1.1136	.32104	11.4	88.6
3	Punishment/Disincentive is given	2.2973	1.49914	44.4	55.6	1.5682	50106	43.2	56.8
4	Guidance is given	3.2886	1.28149	24.4	75.6	1.0782	.36736	9.1	90.9
5	Training is given	3.2886	1.46103	37.2	62.8	1.2662	.44120	25.0	75.0
6	Functioning of monitoring and review	2.5668	.71683	41.9	58.1	2.8864	.57933	22.7	77.3

With regard to monitoring & review system, the information provided in above table reveals that case company has slightly higher positive assertion in all the items and very high difference is seen in the item no 1 (frequency of reporting system).

Comparison of HR System

Table 101: Results - Comparison of HR System

		Overall Survey Findings				Case Study Findings			
Item No.		Mean	Std. Deviation	Negative Assertion	Positive Assertion	Mean	Std. Deviation	Negative Assertion	Positive Assertion
1	Sponsorship to Training Programme	3.6220	1.00658	12.5	87.5	4.0000	0.00000	00	100
2	Effectiveness of Training Programme	2.7849	.79891	35.7	64.3	2.9091	.52020	18.2	81.8
3	Transfer Policy	2.0691	1.44543	63.7	36.3	2.4318	1.51577	52.3	47.7
4	Performance Recognition	2.6103	1.51493	54.5	45.5	2.9091	1.45982	36.4	63.6
5	Performance Appraisal System	2.4730	74798	45.15	54.85	2.7045	.66750	27.3	72.7
6	Degree of Goal Congruence	2.6667	.89480	44.25	55.75	2.9773	.76215	25.0	75.0

With regard to HR System, the information provided in above table reveals that case company has slightly higher positive assertion in all the items and high difference is seen in the item 6 (degree of goal congruence).

Comparison of regulatory control effect

Table 102:Comparison of regulatory control effect

		Overall Survey Findings				Case Study Findings			
		Mean	Std. Deviation	Negative Assertion	Positive Assertion	Mean	Std. Deviation	Negative Assertion	Positive Assertion
1	System of Identifying Cost of Service	2.4845	1.50186	50.6	49.4	2.8976	1.61821	38.7	61.3
2	Customer Complaint Redressal System	3.7187	.88731	11.05	88.95	3.9181	.47760	2.3	97.7
3	Customer services	3.0403	75437	20.5	79.5	3.4773	.54936	2.3	97.7
4	Percentage of Correct Metering	3.6955	.56820	6.95	93.05	3.8632	.34855	00	100
5	Improvement in control of activities	2.9723	.73974	23.65	76.35	2.8182	.81477	27.3	72.7

With regard to regulatory control effect, the information provided in above table reveals that case company has slightly higher positive assertion in all the items and negligible difference is seen in the item 5 (Improvement in control of activities).

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6.9.5.2 Hypothesis Testing

Management Control System and Organisational Performance

H0: Management Control Systems are not positively associated with organisational performance.

H1: Management Control System are positively associated with organisational performance.

The results of regression analysis for testing are presented in the following tables

Correlation analysis-Management Control System and Organisational Performance

Table 103: Correlation between MCS and Organisational Performance

		Organisational Performance	MCS
Organisational Performance	Pearson Correlation	1	.417**
	Sig. (2-tailed)		.005
	N	44	44
MCS	Pearson Correlation	.417**	1
	Sig. (2-tailed)	.005	
	N	44	44
*. Correlation is significant at the 0.05 level (2-tailed).			

In connection with hypothesis 1, correlation analysis was conducted between Management Control System and Organisational Performance. Results of the correlation analysis show that correlation coefficient between Management Control System and Organisational Performance is 0 .417, and the *p- value* for two-tailed test of significance is 0.005. This figure suggests that strength of relationship between Management Control System and Organisational Performance.

Regression analysis-Management Control System and Organisational Performance

Table 104: Model summary Regression- MCS and Organisational Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.417[a]	.174	.154	.29530
a. Predictors: (Constant), mean_mcs				

Table 105: ANOVA regression analysis: MCS and Organisational Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.769	1	.769	8.822	.005[a]
	Residual	3.662	42	.087		
	Total	4.432	43			
a. Predictors: (Constant), mean_mcs b. Dependent Variable: Organisational Performance						

Table 106: Coefficients regression analysis- MCS and Organisational Performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.668	.489		3.412	.001
	mean_mcs	.490	.165	.417	2.970	.005
a. Dependent Variable: Organisational Performance						

The above tables provide the *R* and R^2 values. The *R* value represents the simple correlation and is 0.417(the "**R**" Column), which indicates a moderate degree of correlation. The R^2 value (the "**R Square**" column) indicates how much of the total variation in the dependent variable (Organisational Performance) can be explained by the independent variable (Management Control System). In this case, 17 % can be explained.

Table (**ANOVA** table 105) reports how well the regression equation fits the data (i.e., predicts the dependent variable). The "**Sig.**" column indicates the statistical significance of the regression model that was run. Here, $p < 0.005$, which is less than 0.05, and indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., it is a good fit for the data). The **Coefficients** table (Table 106) provides us with the necessary information to predict Organisational Performance from Management Control System, as well as determine whether Management Control System contributes statistically significantly to Organisational Performance. In this case, the coefficient for Management Control System (t=.417) is significantly different from 0 because its p-value is .005, which is smaller than 0.05. The result shows that Management Control System is significantly related to Organisational Performance. Thus, hypothesis 1 is accepted.

Effect of Regulatory Control in facilitating the Effectiveness of MCS

***H0*:** Regulatory Control is not positively associated with Management Control System.

H2: Regulatory Control is positively associated with Management Control System.

The results of regression analysis for testing are presented in the following tables

Table 107: Correlation between MCS and Regulatory Control System

		mean_mcs	mean_rc
mean_mcs	Pearson Correlation	1	.455**
	Sig. (2-tailed)		.002
	N	44	44
mean_rc	Pearson Correlation	.455**	1
	Sig. (2-tailed)	.002	
	N	44	44

*. Correlation is significant at the 0.05 level (2-tailed).

In connection with hypothesis 2, correlation analysis was conducted between Regulatory control and Management Control System. Results of the correlation analysis show that correlation coefficient between Regulatory control and Management Control System is .455, and the *p-value* for two-tailed test of significance is .002. This figure suggests that there is moderate degree of relationship between Regulatory control and Management Control System

Table 108: Model summary Regression analysis- MCS and Regulatory Control System

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.455[a]	.207	.188	.24580
a. Predictors: (Constant), mean_rc				

Table 109: ANOVA regression analysis: MCS and Regulatory Control System

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.285	1	.285	5.755	.021[a]
	Residual	2.081	42	.050		
	Total	2.366	43			
a. Predictors: (Constant), mean_rc b. Dependent Variable: mean_mcs						

Table 110: Coefficients regression analysis- MCS and Regulatory Control System

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.030	.280		7.255	.000
	mean_rc	.270	.082	.455	3.310	.002
a. Dependent Variable: mean_mcs						

The coefficient of determination (R^2) is .20 indicating that 20% of the variation in Management Control System can be explained by regulatory control. The significance of the relationship between regulatory control and management control system can be explained through t-statistics and their associated p-values. The coefficient for Regulatory control (t=.455) is significantly different from 0 because its p-value is .002, which is smaller than 0.05. The result shows that Regulatory control is significantly related to Management Control System. Thus, hypothesis 2 is accepted.

Table 111: Comparison of results of case company and survey

	Overall Results			**Case study Results**		
Hypothesis	Correlation	R Square	t- value Sig.	Correlation	R Square	t- value Sig.
Management Control System and Organisational Performance	.495	.245	.000	.417	.174	.005
Management Control System and Regulatory Control Systems	.227	.052	.000	.455	.207	.002

6.9.6 Discussion

Percentage analyses indicate that mean values of almost all the individual controls are slightly higher side compared to overall survey i.e. positive assertions percentage is a little higher. The researcher explored possible reasons for such score by analyzing archival records, annual reports and other documents of the case company and also gathered qualitative data through interactions

and interviews with select executives at corporate office, field office and at training centre. Some of the plausible reasons are listed out as follows:

Budget Control

It is found that the budgeting system in the company operates on traditional incremental approach which has caused b budgetary slack. The Managing Director of the company shows great concern about budgetary slack. He says ".. *our staff, mostly technical people, needs training as to how to prepare a proper budget* ..". The researcher was requested to design a customized training module for their staff. Interactions with field executes indicated that there is no shortage of budget. Almost all the interviewees agreed that the degree of budgetary participation (BP) has improved after the reforms and unbundling.

Planning System

The company is following a bottom up planning process to identify requirements for renovation & modernization (R&M) and addition of new capacity in the network. MGVCL prepares business plans for three years ahead that takes cognizance of strengths and weaknesses of the company and also captures the role of the company in Gujarat power sector and its technical and commercial relationships with the other utilities operating in the state. The figure shows a SWOT analysis of company for Business Plan FY 2011-12 to 2015-16

	Helpful *In achieving the objective*	Harmful *In achieving the objective*
Internal Origin Attributes of the Organisation	**STRENGTHS** ✓ Experienced Manpower ✓ Wide Spread Network ✓ Operation efficiency ✓ DSM Measures ✓ Novel Initiatives ✓ Uninterruptible quality power supply ✓ Branding of MGVCL by MoP	**WEAKNESSES** ✓ Commercial Arrangement ✓ Treatment of agricultural subsidy ✓ Irrational Tariff structure ✓ Ageing Distribution Infrastructure ✓ Ageing Employees
Extemal Origin Attributes of the Environment	**OPPORTUNITIES** ✓ Distribution Franchisee in Rural areas/ other states ✓ Contracting Power supply ✓ New business Opportunities ✓ CDM benefits ✓ Ancillary Services ✓ Eliminating Peak Deficit ✓ Joint Ventures ✓ Competitive Bidding ✓ Non-conventional energy	**THREATS** ✓ Non Discriminatory Open Access ✓ Regulatory Risk & inconsistencies ✓ Deemed distribution licensee provision to SEZ area ✓ Parallel licensee ✓ Sensitivity to operational variations ✓ Railway Consumer to tie up with NTPC ✓ Locked in long term PPA's based on market projections

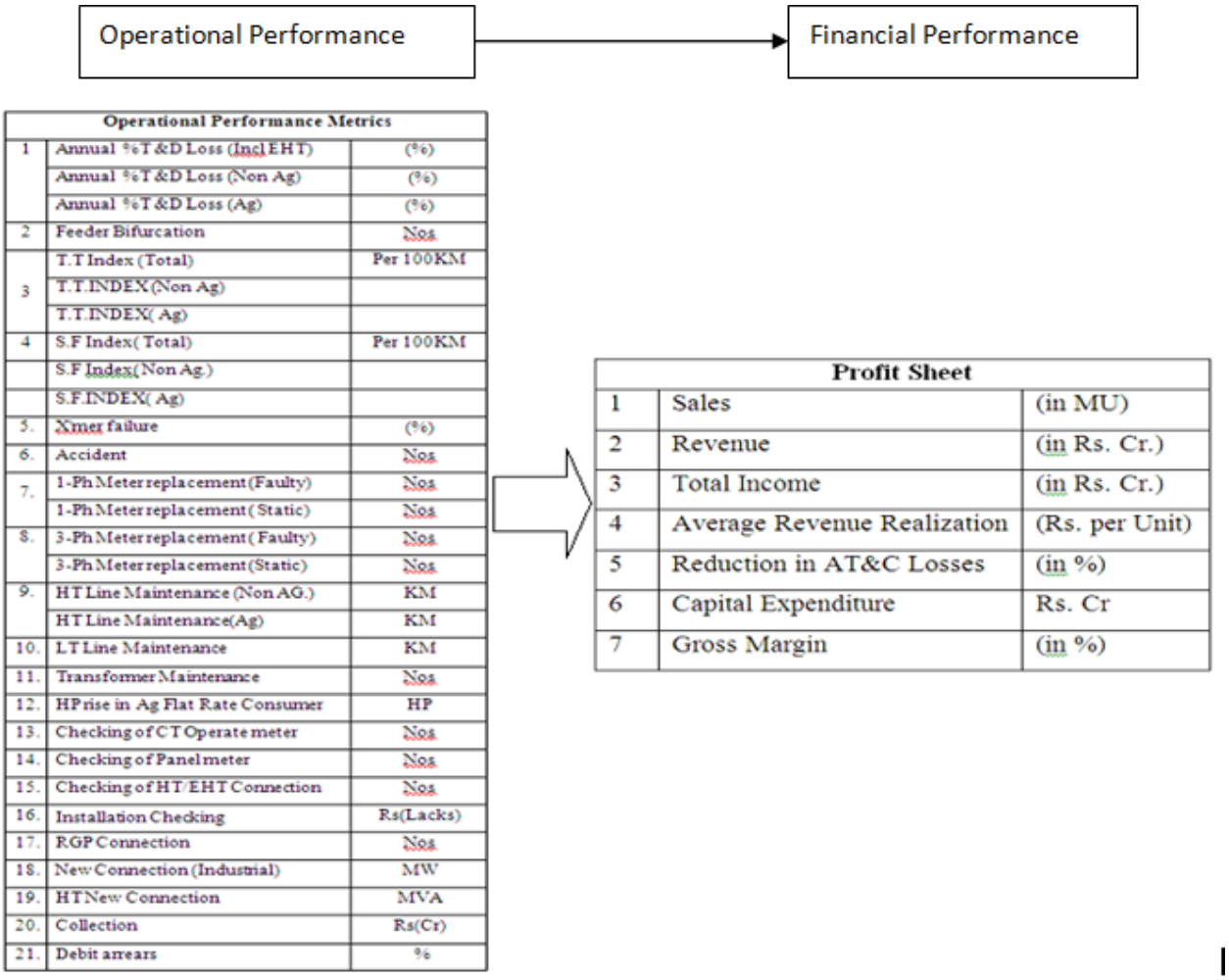
Figure 25: SWOT Analysis MGVCL

It is observed that planning system of the company is partly shaped by the new regulatory system. For instance, as per the Forum of Regulators' recommendation, "*Distribution licensees should submit the Business Plan and power purchase plan, for approval of the Commission, at least six months prior to submission of MYT petitions*." Gujarat Electricity Regulatory Commission (GERC) directed that distribution licensees in State should develop a comprehensive Business Plan to be filed along with the Multi Year Tariff (MYT) filings. The case company prepares Business Plan for the projection period of three years.

Performance Management System

As per the document received from the company, it is found that the company is using 21 operational performance metrics and the profit sheet contains seven parameters of performance

(figure). It is inferred that the various operational and financial metrics used by the company are facilitating the sharpening of focus on managing the performance.



Operational Performance Metrics		
1	Annual %T&D Loss (Incl EHT)	(%)
	Annual %T&D Loss (Non Ag)	(%)
	Annual %T&D Loss (Ag)	(%)
2	Feeder Bifurcation	Nos
3	T.T Index (Total)	Per 100KM
	T.T.INDEX (Non Ag)	
	T.T.INDEX(Ag)	
4	S.F Index(Total)	Per 100KM
	S.F Index(Non Ag.)	
	S.F.INDEX(Ag)	
5.	Xmer failure	(%)
6.	Accident	Nos
7.	1-Ph Meter replacement (Faulty)	Nos
	1-Ph Meter replacement (Static)	Nos
8.	3-Ph Meter replacement (Faulty)	Nos
	3-Ph Meter replacement (Static)	Nos
9.	HT Line Maintenance (Non AG.)	KM
	HT Line Maintenance(Ag)	KM
10.	LT Line Maintenance	KM
11.	Transformer Maintenance	Nos
12.	HP rise in Ag Flat Rate Consumer	HP
13.	Checking of C T Operate meter	Nos
14.	Checking of Panel meter	Nos
15.	Checking of HT/EHT Connection	Nos
16.	Installation Checking	Rs(Lacks)
17.	RGP Connection	Nos
18.	New Connection (Industrial)	MW
19.	HT New Connection	MVA
20.	Collection	Rs(Cr)
21.	Debit arrears	%

Profit Sheet		
1	Sales	(in MU)
2	Revenue	(in Rs. Cr.)
3	Total Income	(in Rs. Cr.)
4	Average Revenue Realization	(Rs. per Unit)
5	Reduction in AT&C Losses	(in %)
6	Capital Expenditure	Rs. Cr
7	Gross Margin	(in %)

Figure 26: Performance Metrics at MGVCL

Central Electricity Authority (CEA) and State Electricity Regulatory Commission (SERC) have also been stipulating certain levels of performance from time to time under the provisions of Standard of Performance (SOP) Regulation. These standards are intended to serve as guidelines for licensees for providing an efficient, reliable, coordinated and economical system of electricity distribution.

The Gujarat Electricity Regulatory Commission (GERC) has issued the GERC (Standards of Performance of Distribution Licensees) Regulations, 2005 which provides the time limits for distribution utilities for carrying out various activities, the quality of supply to be maintained, compensation payable for non-maintenance of standard of Performance. The SOP review frequency is quarterly which is presently considered to be matching with the response capability of the distribution utility. Under the SOP regulation, the case company is required to calculate the reliability of its distribution system and furnish the report to the regulatory commission using the following indices:-

a) System Average Interruption Frequency Index (SAIFI)
b) System Average Interruption Duration Index (SAIDI)
c) Momentary Average Interruption Frequency Index (MAIFI)

The company has started using IT extensively to generate performance information which is made available to the management control system. The company got ISO-9001: 2000 certification for its processes and systems which is assisting in documenting the policies and practices of the company and identify areas for improvement with periodic audits.

MGVCL's financial and operating performance in past seven years from the date of segregation is observed to remarkable. The company has brought in overall efficiency in the system and had got recognition for its various achievement awards such as 'India Power Award-2010', 'Enertia Award-2009' award for best performing PSU utility, 'I.E.E.M.A. power awards -2008' for excellence in power distribution in urban and rural sector, 'Gold Shield' and Certificate of appreciation by Ministry of Power, Government of India for MERITORIOUS PERFORMANCE for the year 2006-2007. Table below provides data on six important parameters of performance.

Table below provides data on six performance parameters:

AT& C Losses of GEB (Pre Unbundling)

2002-03	2003-04	2004-05
31.24%	35.48%	35.15%

Table 112: Performance MGVCL

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Distribution Losses	14.06	12.98	13.08	11.83	13.13	12.94	10.78
Billing Efficiency	86.10	87.02	87.01	88.17	86.87	87.06	89.22
Collection Efficiency	100.3%	101.02 %	100.78%	100.04%	96.01%	99.73%	99.21%
DTR Failure Rae	9.68	6.11	5.06	4.97	4.63	4.61	4.51
AT&C losses	**13.63%**	**12.10%**	**12.31%**	**11.80%**	**16.60%**	**13.18%**	**11.49%**
Profit After Tax (lakhs)	241	453	1705	2458	3597	2097	1946

It is evident that the company has achieved a significant reduction in distribution losses. The company started carrying out a survey of customer satisfaction for each sub-division through hiring consultancy services of M/s. AC Nielsen ORG Marg Pvt. Ltd. The survey considers six parameters of customer service performance. As an example table presents customer satisfaction index of a *Umreth Sub Division.*

Table 113: Customer Service Parameters

	Parameters	*Target*	*Achievement (Jul 2010)*
1	Customer Satisfaction Index	100 %	-
2	No of voltage complaints received during the month	Zero	31 nos
3	% of New Service Conn. Effected within 3 days	100 %	100 %
4	% of Billing complaints resolved within Regulatory time limits	100 %	100 %
5	% of Supply Complaints resolved within 2 hours	100 %	100 %
6	% of employees having being trained on ydt basis	100 %	73%

As per the Business Plan document, the company has an agenda to adopt CRM and associated tools in all its functions that would assist in improving the core competencies, develop services for the customer and generate constant feedback from the customer to identify any changes in their needs and preferences.

Decision Making System

Almost all the interviewees had affirmative assertion that there are no hierarchical rigid restrictions in meeting to higher levels of management. MD of the company is quite open to informal interactions and sometimes issues and concerns of the company are informally discussed. An executive engineer expressed that

"..MD of the company calls Heads of all the four circles to conduct every first week a meeting to sort out matters.."

A Superintendent Engineer in the same context states that

"*We still make decision on the basis of formal rules and SOP; other concerns are secondary. Corporate culture like in private sector is not feasible".*

It can be inferred that decision making style has some elements of informal control system. However, it being a company under governmental control, traces of formal bureaucratic system are also visible.

Monitoring & Review System

It is found that review of progress of all schemes/projects, regular monitoring of various activities of Sub-divisions & Circle, Civil wing works related to HT/LT maintenance program is

done and followed up with daily activity report. An interviewee (Executive Engineer in corporate office) describes that post reform the manner of conduction of periodic review of performance has changed. Now the MD of the company closely monitors the progress. Every first week of the month, a review meeting with all the Chief Engineers at four circles is conducted. Also a person from the Corporate Office of the company visits Circle office every month for discussion on seven parameters of performance related to technical, customer, HR and administration. The minutes of meeting are prepared and presented to the MD.

HR System

It is found that Human Resource department of the case company is responsible for all the function related to screening, recruitment, selection, training & development of the employees. It also executes employee performance appraisal and promotion. Deputy Manager (HR) of the company stated that HR systems in the company are undergoing changes but in gradual manner. The reason for slow process is potential resistance by employees who are used to old ways and systems. In organizational structure also, HR function is not yet elevated to top management level. HR department reports to the Chief Engineer (T&O) and thus whatever matters of importance come to his attention get filtered before reaching to the MD of the company.

Performance Appraisal and Reward System

The company has adopted a category wise performance form (Annexure)for all its employees carried out every calendar year. The performance appraisal is confidential which carried out by a reporting officer and reviewed by a reviewing officer. The performance is marked on a scale of five and accordingly promotions are recommended within the organization. There is a system of appeal in case of adverse comment from immediate reporting authority. An appraisee can

approach the HR department to sort out the matter. Interactions with field executives indicate that there is a little disappointment with the system due to the loose coupling between Rewards and Employee Performance. Most of the interviews agreed that HR approach is slightly better and changing when they compare to the pre-reform period. For instance, fast promotion scheme is introduced for the high performing employees. Certain parameters in Employee Performance Appraisal Form have been modified. The current business plan (2011-2015) of the company articulates to implement performance linked incentive.

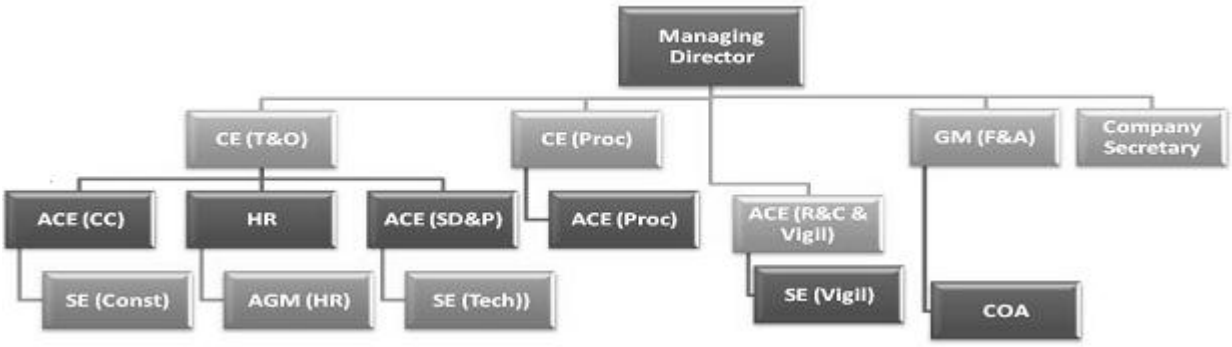


Figure 27: Figure: Organizational Structure of MGVCL

Training & Development

To create training infrastructure, the holding company, Gujarat Urja Vikas Nigam Limited (GUVNL) promoted an autonomous training and research facility by setting up Gujarat Energy Training & Research Institute (GETRI). The institute provides training to the employees of all the power utilities in Gujarat including the case company. The case company is deputing its employees to the GETRI for need based training and development programmes. Apart from meeting the mandatory requirements for training, internally, the company's business plan document outlines the importance of employee skill development in the competitive environment as crucial to sustain the high level of performance over a longer period. Towards this end,

company has hired a consultancy service which has devised a 360 degree model for training activity to the personnel at all levels in the company. This 360 degree model actually comprises of four areas of training i.e. Functional, Commercial Behavioural and Attitudinal. The researcher himself was involved in the process of executing Work Orders for imparting training - three in the functional area (in the year 2011,2012, 2013) and one Behavioural training programme (in the year 2014). The case company ensures that the training programs cover both technical and non-technical requirements for the capacity building in the various functions. Some of the newer areas where capacity building is initiated within the company are accounting practices, secretarial and statutory function, supply code and standard of performance, open access and ABT, tariff filing under the MYT framework, customer orientation, computer skills, communication skills and refresher courses for normal operations amongst others. In summation, the case company is endeavouring to provide an environment that each employee is motivated to contribute his/her best to achieve the Company's goals /objectives.

6.9.7 Summary

In summation, it can be said that survey data findings are tending to converge with case study findings. Slight differences in statistical values could be attributed to sample size and relatively higher performance of the company. Analysis of qualitative data and secondary data (company's records) indicate an overall adequate management control systems and sets up plausible reasons for higher performance. The findings of the case study support the assertion that MCS and Organizational Performance are positively associated and also confirm a positive effect of Independent Regulatory Commission. With the validation of survey data completed in this chapter, this study now moves onto final chapter on Conclusions, Suggestions & Recommendations.

CHAPTER VII

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

7.1 Introduction

The previous chapter dealt with analysis and interpretation of data obtained by way of survey questionnaire and interactions with select executives working in power distribution utilities. This chapter presents the summary of the findings, conclusions and recommendations based on the data analysed in the previous chapter. Some limitations have been identified and possible avenues for future research are mentioned. The chapter concludes with a suggested model implementable in power distribution.

7.2 Summary of the Research

The prime purpose of this study was to study the significance of effective Management Control Systems in achieving the Organisational Performance in the context of the power utility. It began with an extensive literature review to reach an understanding of the nature of Management Control Systems. In the literature review, it was found that Management Control Systems assume a high degree of importance in the implementation of the strategy. To accomplish the purpose of this doctoral thesis, it became necessary to identify researchable questions and to reach some defined research objectives and tentative hypotheses. Then, it was important to propose a conceptual framework with a potential for explaining the encompassing totality of Management Control Systems in power distribution utilities. Once these fundamental steps were

achieved, this doctoral research was able to go forward. Survey instrument was developed for collecting primary data from the three layers of management (first level, middle level and top level) in the organisational hierarchy of power distribution utilities. The respondents were asked to rate their views on Likert scale on six components of Management Control Systems. Six components of MCS include Basic Control System, Planning Control Systems, Performance Managmenet System, Monitoring & Review System, HR Systems. Independent Regulatory System (introduced in post-reform period) was incuded in the proposed conceptual fraemwork as an external factor's effect in facilitating effectivness of MCS. In the overall MCS framework, inclusion of Independent Regulatory System - a uniqueness in context of power utility could add value to literature. The survey instrument developed for this study also included suggestions from the respondnents to make the Management Control Systems more effective. The data were collected which addressed the research problems posed in the first chapter of this doctoral thesis. Then using various statistical tools, data collected were tabulated and analysed. IN the light of the literature review and responses from survey data, findings are presented into three categories as follows:

7.3 Findings Related to Secondary Data

One of the objectives of this research was to study major developments in power sector after the reforms and issues and challenges faced by power distribution utilities. Analysis of secondary data indicates that India's *power sector* is saddled with many problems, several issues and challenges. The efficiency of power distribution measured by Aggregate Technical & Commercial losses is very low. Poor performance and deteriorating health of SEBs led to reforms in the power sector. Electricity Act 2003 heralds a new era in power sector. The Act laid down the new legal and regulatory framework for the competitive environment which is

considered as a positive signal in the policy environment. The reforms led to the unbundling of the erstwhile integrated State Electricity Boards into generation, transmission and distribution companies. Post-reform, there has been some improvement in the performance of power utilities; however, distribution segment remains weakest link in the entire power value chain and very often called as 'leaky bucket'. In the altered scenario, state–owned power distribution utilities have to face tremendous challenges. It is imperative for them to reduce losses to survive and grow in the competitive environment. Various issues and concerns in distribution segment indicated that they need to be managed more efficiently and effectively. It was concluded that an effective Management Control Systems in power distribution systems could address many issues and unleash benefits to various stakeholders. Thus, the need for undertaking this study was justified.

7.4 Findings Related to Primary Data Analysis

The broad objectives of the study were:

i. To study the association between Management Control Systems and Organisational Performance in the context of power distribution utilities.

ii. To study the effect of Independent Regulatory Control in facilitating the effectiveness of Management Control Systems of power distribution utilities.

iii. To study the differences in Management Control practices of public and private power distribution utilities.

Primary data i.e. the views of executives (First level, Middle level and Top level) on Management Control Systems were collected. The findings with respect to MCS practices in power distribution utilities are presented as follows:

Hypotheses Tested: The main hypotheses formulated aimed at analysing the effect of MCS on Organisational Performance and assess the effect of Independent Regulatory Control (IRC) in terms of facilitating the effectiveness of MCS of power distribution utilities. The following hypotheses were tested in this study:

H1: There is a positive association between MCS and Organisational Performance in the context of power distribution utilities.

It is confirmed that there is a significant positive association between MCS and Organisational Performance. It can therefore be concluded that Management Control Systems play a significant role in achieving the set objectives. More effective MCS should lead to higher level of performance.

H2: Independent Regulatory Control in post-reform period has facilitated for effective MCS of power distribution utilities.

It is confirmed that there is a positive association between Independent Regulatory Control and MCS. Results show increased effectiveness of MCS. Therefore, it is concluded that Independent Regulatory Control has facilitated MCS effectiveness of power distribution utilities

H3: MCS practices in public and private sector power distribution utilities differ.

It is confirmed that there are significant differences in MCS practices of public and private sector power distribution utilities. However, distribution loss reduction is found a common first and foremost target in both public and private distribution utilities.

7.5 Factors Facilitating Management Control Systems

One of the major objectives of this study was to identify the factors that facilitate Management Control Systems

Findings: With the help of Factor Analysis it was found that a number of factors under the six major categories of MCS namely, Basic Control Systems, Decision Making Systems, Performance Management Systems, Monitoring & Review System, Planning Control Systems, and Human Resource Control Systems are important facilitators of MCS in power distribution utilities in India. Individual controls under six components are listed out here:

Basic Control System	Budget Control
	Cost control
	Quality control
	Internal Audit
Performance Management Systems	Policies and procedures to achieve target
	Less tolerance for failure to achieve target
	Adequate co-operation from other departments to achieve target
	Higher level management support to achieve target
	Setting of targets at lower levels
Decision Making System	Clarity of authority & responsibility
	Adequate delegation of power
	Participation in important decisions
Planning System	Breaking annual plans into periodic plans
	Guidelines for preparing plan
	Standard formats for preparing plan
	Time limit for preparing plan
	Participation in planning process
Monitoring & Review System	Higher frequency of reports
	Usefulness of reports
	Handling performance gaps with positive measures
HR System	Minimise goal incongruence
	Training programmes should be effective
	Performance should be recognised
	Effective performance appraisal system
	Manpower deployment based on skill and talent

Conclusion: These six major variables, namely, Basic Control Systems, Decision Making Systems, Performance Management Systems, Monitoring & Review System, Planning Control Systems, and Human Resource Control Systems which accommodate in them 26 factors are the most significant elements that facilitate the effectiveness of Management Control Systems.

Inadequacies in Existing Management Control Systems

To probe possible reasons for high distribution losses in power sector was the main motivation for this study. The study aimed at seeking answers to whether the MCS in power distribution utilities is inadequate. Percentage and mean values analysis of each individual control was useful to identify the inadequacies in MCS and also the scope for further improvement in the existing MCS. Since the scale used to measure was bi-polar, mean values below 2.5 were considered as inadequacies in MCS. Mean values ranging from 2.5 to 2.8 are considered as scope for considerable improvements in existing MCS.

Findings: With the help of mean values and percentage analysis, it is found that existing Management Control Systems has following problem areas which require improvement:

i. There is lesser amount of participation in important decision-making process.
ii. Annual plans are rarely broken into periodic plans
iii. Manpower is not efficiently deployed. Employees' skills and talents are rarely considered while deploying them.
iv. Employees' performance appraisal system has serious weakness as it is not appropriately linked to reward. There is not adequate reward to high performers. Nor there is disincentive to underperformers.

v. Several procedures are complied with that are least concerned with performance improvement.

Controls which have scope for considerable improvements are listed as follows:

i. Improve quality and cost control.

ii. Reduce the degree of tolerance for failure in achievement of set targets

iii. Adequate delegation of power

iv. Provide higher weightage to long-term plans

v. Performance recognition

vi. Frequency of reports

vii. Effectiveness of training programmes

viii. Support from higher level management

ix. Gaol congruence

x. Monitoring & review

Conclusion: Some elements of existing MCS in power distribution utilities are adequate. Some need serious attention and some have scope for substantial improvements.

7.6 Findings Related to Case Study

The case study of a state-owned power distribution company aimed to validate overall survey data findings and also to establish rigour in the research procedure. Data of a small sample of respondents from the case company were analysed with respect to two main research questions i.e. whether there is association between Management Control Systems and Organisation Performance, and effect of Independent Regulatory Control in facilitating the effective MCS.

Qualitative data were also gathered through semi structured interviews and interactions to gain better understanding of MCS complexity.

***Findings*:** Analysis of data from the case study concludes positive assertion about both the hypotheses i.e. a positive association between Management Control Systems and Organisation Performance, and Independent Regulatory Control has facilitated for the effective MCS.

***Conclusion*:** Findings from analysis of case company data indicated a convergence on overall survey data findings. Therefore, robustness of findings of this study can be relied.

7.7 Contribution

Despite the practical and theoretical importance of management control systems, empirical studies in power utility context are not conducted. There is ample evidence to suggest that power utilities in the changed competitive environment will be required to tailor their MCS to align with the environmental factors. This thesis argues that effective Management Control Systems will enhance Organisational performance. In addition to various dimensions of MCS, an important contextual dimension i.e. effect of Independent Regulatory Control is also examined. Results from survey data show that Management Control Systems and Organisational Performance are positively associated, and Independent Regulatory Control has facilitated the effectiveness of Management Control Systems. Differences in public and private power distribution utilities indicate that overall private sector has relatively better management control practices. In certain dimensions of management control systems, the public sector is better placed.

7.8 Implications

The result has both theoretical and practical implications. First, this is the first comprehensive study to explore the relationship between MCS and Organisational Performance in power utility context. Additionally, the effect of external factor (Independent Regulatory Control) in terms of facilitating the effectiveness of MCS was investigated in context of power utility. Second, this research proves that effective management control systems are related to better firm performance. Hence, the findings expand the realm of MCS research by indicating a new set of contextual variable (Independent Regulatory Control) to pay attention i.e. how company attempts to align its MCS with the regulatory requirement and achieve the desired performance

7.9 Recommendations

Following recommendations are proposed for practitioners in power distribution utilities and for future reserach:

Recommendations for Practitioners

The following recommendations are offered for practitioners in power distribution utilities:

1. It is recommended that executives/managers in power distribution utilities can make MCS more effective to address the central issue of high distribution losses. Achieving better performance with effective MCS could help the viability of power sector.
2. Utilities must integrate the different management control systems effectively in a way that maximizes operational effectiveness.

Suggested Model

After the study, there is the motivation for suggesting a model that could be implementable by the power distribution utilities. The suggested model would act as reliable guideline for

designing an effective MCS in power distribution utilities. Hence, an attempt is made to conceptualize a model, on the basis of the study made. The model is intuitively generated based on the findings of the secondary data on power sector and primary survey data and case study data, and researcher's own experience in studying the power sector. The framework for effective MCS is suggested keeping in mind the current operating environment faced by power distribution companies. Currently, the power distribution utilities in India are faced with many issues, but the central issue is high distribution losses. There is a need to push distribution segment onto a trajectory of sound commercial growth. Effective Management Control Systems can play a significant role to address many issues and unleash benefits to various stakeholders. The suggested model recognises internal and external factors and can be termed as "MCS for organisational performance". The framework is structured in the form "Input-Process-Output" model as depicted below:

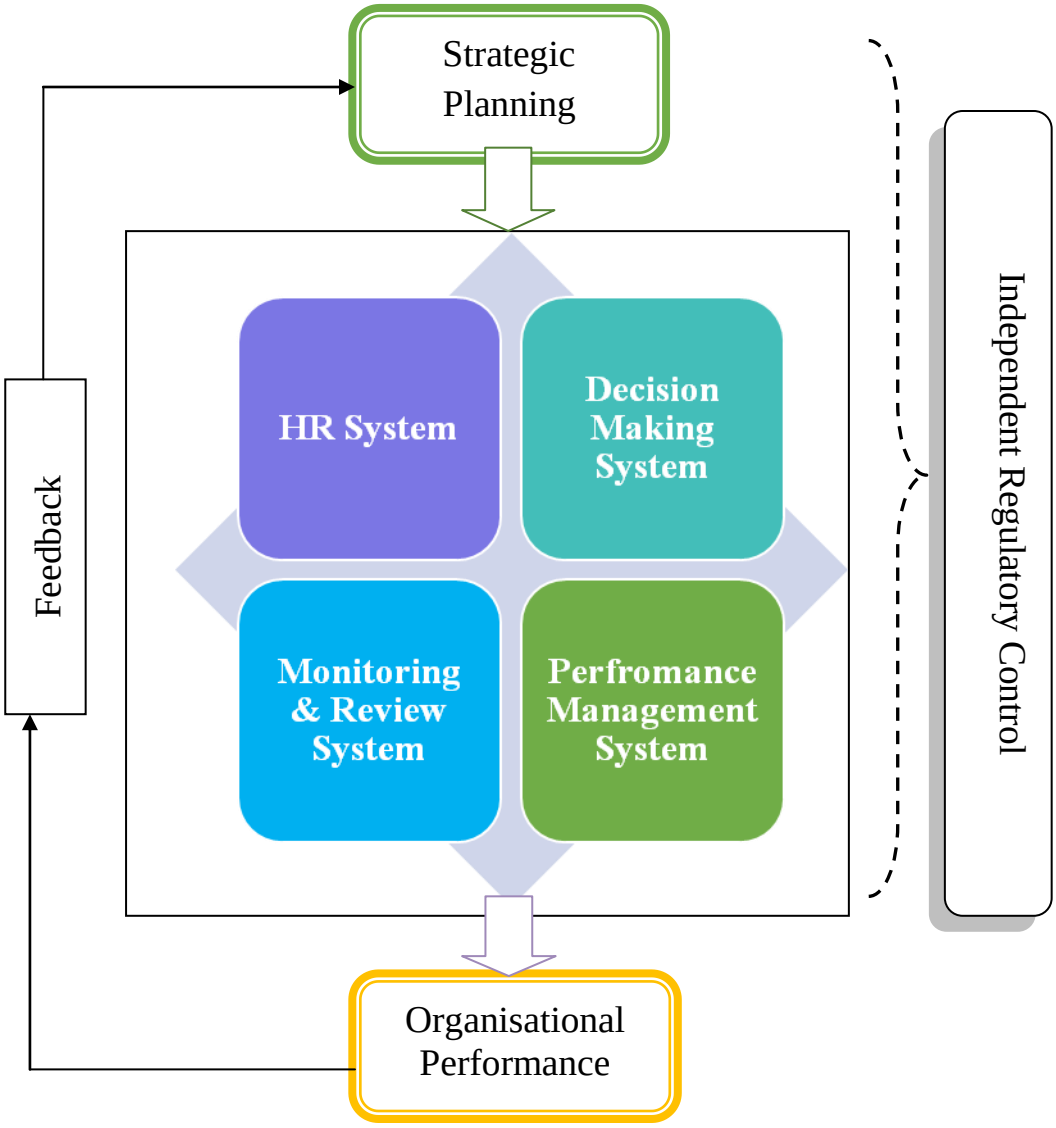


Figure 28: Suggested Model Management Control Systems for Organisational Performance

Explanation of suggested model

Strategic Planning is the key input in the model. Historically, planning in pre-reform era was taken as given and, at worst, ignored completely. In fact, strategic planning is the need of the hour in a competitive environment. It basically includes the formulation of vision and mission and setting goals and objectives based on internal and external analysis of environment (SWOT

analysis). Many control problems stem from the behaviour of organisational participants. As power distribution for long has largely remained under governmental control, the deep-rooted legacy issue is one of the key hindrances in implementing plans and policies. Skill gaps both technical and managerial are the areas of concern in power distribution. A quality human resource management (QHRM) process is a fundamental key to effective management control because it is the people who ultimately exercise management control. To deal with deep-rooted legacy issues in power distribution utilities, professionalism in human resource systems can significantly influence the strengthening of the Management Control Systems. Then, decision-making process in power distribution utilities requires balancing of formal and informal control systems. It is observed that private sector companies rely more on informal control systems compared to state-owned dicsom. Simon's four levels of control model also suggests that in a competitive environment, the degree of informal control should increase so that an organisation can quickly respond to the environmental uncertainty. Moreover, informal control systems also facilitate speedy decision making. The analysis of case study and another secondary source of data highlight that extensive use of IT and automation has strengthened Monitoring & Review system of power distribution utilities. Issues like theft, billing and collection efficiency are efficiently handled through IT applications wherever doable. Power distribution utilities need to focus on right IT and website solutions. Then there is need to make performance management process more efficient and effective. It is observed that loss reduction is key performance indicator. Regulatory interventions in terms of SOP (Standard of Performance) regulation and meaningful citizen charter have also shaped the performance management systems of power distribution utilities. There is need to have meaningful key performance indicators (KPIs) for various parameters for sustained performance improvement. Performance benchmarks need to

evolved and set. For example, American Electric Supply Company (AES), with a global presence demonstrates best practices, and some of them might be replicable. The researcher believes that it is sensible for discoms to concentrate initially on the core area of 'management control' in the current environment. Once discoms are out of red or are able to reduce the losses substantially (i.e. below 10%), it would become necessary to pay more attention to more advanced management control techniques such as Balance Score Card, Activity Based Costing, Empowerment, Economic Value Added for overall measure of financial performance and other non-financial measures. The researcher hopes that suggested model could provide reliable guidance to devising effective management control systems in the discoms and be useful to managers in performing their jobs and assisting in developing and maintaining viable patterns of organisational behaviour. The model suggested is more adoptable for State-owned power distribution utilities. State-owned power distribution utilities have historically worked under a protected environment. After the reforms they have to operate under competitive market conditions.

7.10 Limitations

The research reached its fulfillment of objectives with some limitations as follows:

i. The first factor concerns the components of MCS. While the variables of interest were measured and the relation between MCS and performance is explored, it is possible that other components of MCS, as conceptualised in literature, can be reliable for measuring the effectiveness of MCS.

ii. The second factor concerns with the geographical spread of field units of power distribution utilities. The sample size and response rate might have potentially omitted responses at the expense of generalisability of results.

7.11 Recommendations for Future Research

i. The findings of this study have provided several important insights into MCS and stimuli for future research. The following recommendations are offered for related research in the field of Management Control Systems.

ii. While the current study considers relevant elements of Management Control Systems and effect of Independent Regulatory System, it may be advantageous to conduct research that considers implications of distribution franchisee on Management Control Systems of power distribution utilities.

iii. Given that this study provides a basis for concluding that MCS contributes to organisational performance in power utility context, research related to other ways of efficient and effective management would also add value.

iv. This study was undertaken in the context of power distribution utility, further research may focus on whether the positive association between MCS and organisational performance hold in other similar organizations such as generation and transmission companies. Researchers may look to in-depth field studies of all elements of the Management Control Systems through case study approach. Future research may consider implications of distribution franchise to Management Control Systems of power distribution utilities. As the study is all cross-sectional, the results do not constitute proof of the relationships. The evidence presented can only be said to be consistent with the theoretical position developed in the study. Notwithstanding these limitations, this study does provide some insight into the management control practices in power utility context dominated by state-owned power distribution companies and gives some valuable insight into how the MCS in post-reform period in previously highly bureaucratic organizations

is developing in the changed environment i.e. characterised by unbundling, independent regulatory mechanism, open access leading to competitive environment. Finally, further research has to be done on the results of relationships between the scores of the instruments, reviews on the statements of control and the levels of maturity.

v. In this study, the role of Independent Regulatory Control (as an external factor) on perceived effectiveness of MCS turned out to be positive. But the perceived effectiveness of MCS differs in public and private power distribution utilities. Private power distribution utilities have less score compared to public distribution utilities. A potential explanation could be that MCS of private power distribution utilities is relatively more effective compared to public power distribution utilities. Apparently the general idea is that the effect of Independent Regulatory Control being an external environmental factor may not be discriminatory. This leads to a question whether managers' assessment of the effect of Independent Regulatory Control on MCS effectiveness in the private sector is different. Future studies could research this effect.

vi. Management Control Systems change in response to organisational settings and changes in several environmental factors. The study is conducted when power sector in India is under huge loss making situation. In future, when power utilities possibly overcome losses, the follow-up research may concern at improving the effectiveness of management control systems for achieving business excellence. A longitudinal study of the process of changes in MCS of state-owned power distribution company can be undertaken.

Glossary

1	Aggregate Technical & Commercial Losses	AT&C Losses is the sum total of technical loss, commercial losses and shortage due to non realization of total billed amount *Formula* {(Total Energy Input LESS Energy Realized)/ Total Energy Input}*100 Where, Energy realized =Sale of Energy * Collection Efficiency
2	Technical losses	Technical losses l losses primarily take place due to:- a) Transformation Losses (at various transformation levels) b) High losses on distribution lines due to inherent resistance and poor power factor in the electrical network. The level of technical losses varies with type of conductors used
3	Commercial Losses	Any illegal consumption of electrical energy, which is not correctly metered, billed and revenue collected, causes commercial losses to the utilities. The commercial losses are primarily attributable to discrepancies in • Meter Reading • Theft by direct hooking
4	Distribution Losses	Distribution Losses =Technical + Commercial Losses It is difference between energy supplied at the Input Points and Energy Billed to Consumers in percentage terms for a particular period
5	Collection Efficiency	The ratio of amount collected to total amount billed is termed as collection efficiency. Low collection efficiency implies higher commercial losses.The amount attributing collection efficiency higher than 100% is treated as collection against arrears. Collection Efficiency can be computed using formula $\frac{\text{Revenue Collected (in Rupees)*}}{\text{Billed Amount (in Rupees)}}$
6	Billing Efficiency	Billing efficiency is an indicator of proportion of energy that has been supplied to an area which has been billed (includes both metered and unmetered sales) to consumers. Billing Efficiency can be computed using formula $\frac{\text{Total Units Sold (kWh)}}{\text{Total Input (kWh)}}$
7	Transmission & Distribution Losses	Difference in the generated and distributed units is known as Transmission and Distribution loss. Transmission and Distribution loss are the amounts that are not paid for by users. T&D Losses = (Energy Input to feeder(Kwh) – Billed Energy to Consumer(Kwh)) / Energy Input kwh x 100 There are two types of Transmission and Distribution Losses: 1. Technical Losses 2. Non Technical Losses (Commercial Losses)
8	APDRP	Accelerated Power Development Reforms Programme is a central government scheme to incentivize utilities achieving set performance

9	Unbundling	Segregation of generation , transmission and distribution into separate business entity

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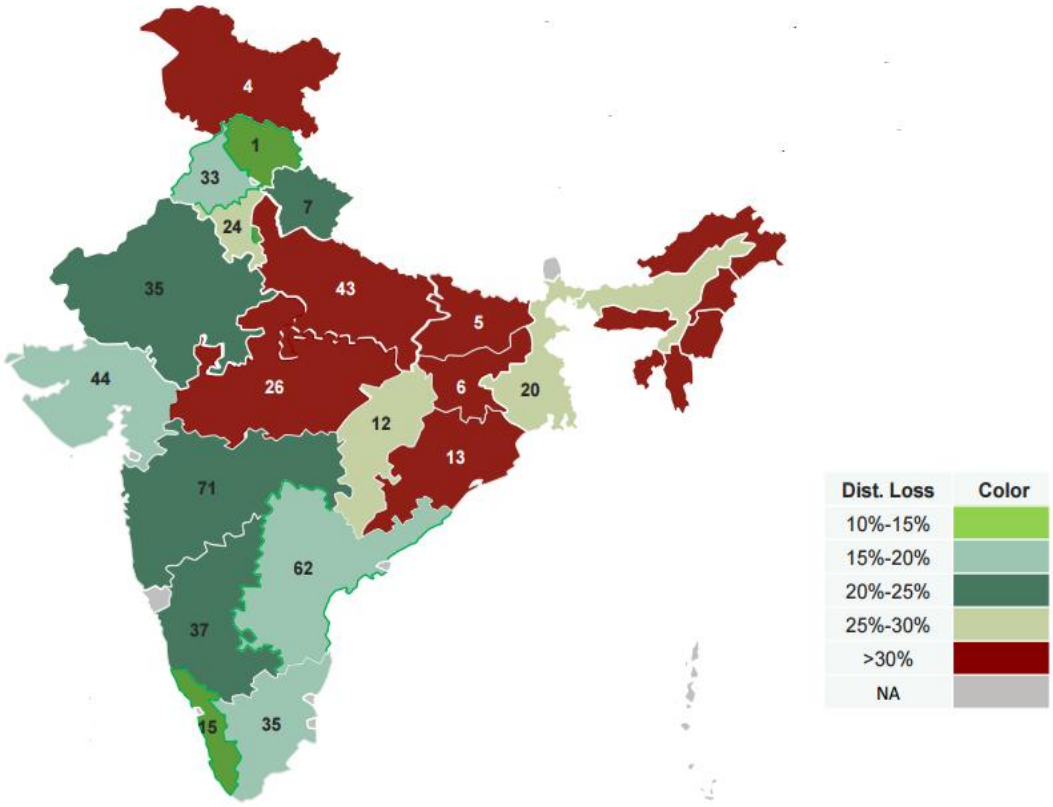
Annexure -1

Range of AT&C Losses

Range of AT&C Losses	**< 20%**		**20-30%**		**30-40%**		**>40%**	
Name of states	Delhi	15.7%	West Bengal	27.40%	MP	37.28%	Orissa	44.35%
	HP	12.22%	Assam	29.19%				51.63%
	Punjab	17.47%	Haryana	28.02%			Meghalaya	40.29%
	AP	17.50%	Rajasthan	24.19%			UP	47.44%
	Gujarat	16.89%	Uttarakhand	28.48%			Bihar	
			Karnataka	23.71%				
			Chattisgarh	28.64%				
			Maharashtra	23.30%				

Overall Situation of AT&C Losses



Source: www.crisil.com

Annexure -2

Region/State-wise Aggregate Technical and Commercial (AT and C) Loss of State Power Utilities in India

(2005-2006 to 2012-2013)

(In Percentage)

Region	States	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Eastern	**Bihar**								
	BSEB	78.17	42.63	43.83	34.37	43.92	47.44	59.24	59.4
	NBPDCL	-	-	-	-	-	-	-	50.76
	SBPDCL	-	-	-	-	-	-	-	45.77
	Jharkhand	51.66	52.51	59.95	54.16	10.21	46.79	-	-
	Odisha								
	CESU	-	-	-	-	-	-	46.15	43.61
	Central ESCO	42.55	46.97	42.89	46.84	39.98	45.54	-	-
	Northern ESCO	41.31	32.52	30.57	38.90	36.70	38.47	39.54	39.61
	Southern ESCO	45.12	42.17	45.62	50.59	51.00	54.12	52.6	49.36
	Western ESCO	33.97	36.93	38.40	37.55	37.58	43.84	43.46	41.87
	Sikkim	44.87	40.72	39.20	46.81	55.36	51.96	-	-
	Sikkim PD	-	-	-	-	-	-	58.32	53.51
	West Bengal	26.60	30.90	23.53	25.81	33.24	27.40	32.9	34.43
	Total	**41.80**	**38.31**	**35.98**	**36.64**	**33.94**	**38.24**	-	-
North Eastern	Arunachal Pradesh	37.19	52.03	45.19	60.15	58.82	61.45	65.55	60.26
	Assam								
	Central Assam EDCL	37.34	42.59	40.07	39.36	-	-	-	-
	Lower Assam EDCL	27.86	31.71	25.31	29.23	-	-	-	-
	Upper Assam EDCL	39.43	38.55	35.88	31.42	-	-	-	-
	APDCL	-	-	-	-	29.31	29.19	29.47	31.85
	Manipur	77.83	94.32	80.62	81.32	47.55	40.17	44.8	85.49
	Meghalaya	33.33	37.32	35.03	43.37	48.77	51.63	-	-
	MeECL	-	-	-	-	-	-	44.85	-
	MePDCL	-	-	-	-	-	-	-	26.6
	Mizoram	17.12	44.97	19.31	41.08	38.95	41.00	-	-
	Mizoram PD	-	-	-	-	-	43.09	36.59	27.55
	Nagaland	44.77	52.19	42.92	44.12	46.16	50.07	-	-
	Nagaland PD	-	-	-	-	-	-	22.85	75.3
	Tripura	24.91	23.46	22.53	31.91	29.16	34.48	33.76	33.85
	Total	**35.92**	**41.33**	**36.45**	**40.70**	**36.23**	**37.33**	**-**	**-**
Northern	**Delhi**								
	BSES Rajdhani Power Ltd	41.25	32.93	40.17	20.59	19.83	15.80	16.65	15.16
	BSES Yamuna Power Ltd	48.58	43.24	42.65	13.73	28.63	18.13	25.54	17.94
	TPDDL	-	-	-	-	-	-	15.67	13.12
	North Delhi Power Ltd	28.01	28.33	31.95	17.64	15.68	13.75	-	-
	Haryana								
	Dakshin Haryana BVNL	40.78	34.48	31.79	32.60	28.11	26.29	27.53	28.31

	Uttar Haryana BVNL	41.90	28.96	32.58	34.00	30.58	29.85	29.06	36.97
	Himachal Pradesh	15.15	13.18	16.15	12.85	18.46	15.72	-	-
	HPSEB	-	-	-	-	-	-	-	-
	HPSEB Ltd.	-	-	-	-	-	-	18.04	9.53
	Jammu and Kashmir	66.69	67.56	73.43	69.05	0.44	72.86	71.16	60.87
	Punjab	25.84	24.87	21.18	18.51	17.73	17.47	-	-
	PSPCL	-	-	-	-	-	-	18.96	17.66
	Rajasthan								
	AjmerVVNL	47.55	42.61	38.83	31.28	33.04	26.80	28.12	18.97
	JodhpurVVNL	47.03	37.21	37.24	30.19	31.51	23.73	23.83	20.91
	Jaipur VVNL	42.26	38.06	34.49	28.40	26.70	22.66	23.18	20
	Uttar Pradesh								
	Dakshin VVN	55.59	50.21	44.03	28.25	49.62	55.39	40.5	45.69
	Kanpur Electricity Supply Company Ltd.	47.06	49.14	47.76	53.44	51.66	44.11	30.48	37.61
	Madhya VVN	47.20	45.12	33.33	29.90	37.58	37.57	44.42	45.83
	Paschim VVN	42.43	31.51	31.29	29.38	27.68	31.61	35.95	33.39
	Poorvi VVN	46.08	63.55	26.20	49.75	27.86	40.43	52.37	52.37
	Uttarakhand	38.20	42.86	40.63	39.89	28.35	28.48	25.84	23.18
	Total	**40.44**	**37.18**	**33.61**	**29.96**	**29.66**	**28.91**	**-**	**-**
Southern	**Andhra Pradesh**								
	AP Central PDCL	18.82	18.24	14.90	14.24	17.63	20.56	17.77	15.64
	AP Eastern PDCL	12.67	12.46	8.74	10.26	9.69	14.51	10.53	9.9
	AP Northern PDCL	19.20	26.61	10.92	14.37	18.52	16.07	17.26	13.09
	AP Southern PDCL	16.51	17.20	7.29	11.36	16.63	14.20	12.19	12.74
	Karnataka								
	Bangalore ESCOM	35.75	26.88	26.58	19.17	21.10	22.75	22.57	20.45
	CHESCOM	46.03	40.58	40.82	25.33	28.21	28.73	28.99	30.42
	Gulbarga ESCOM	52.74	46.98	40.69	38.80	38.05	25.75	23.96	18.28
	Hubli ESCOM	40.38	37.40	40.72	33.90	28.51	26.22	23.62	20.44
	Mangalore ESCOM	20.83	12.09	21.45	14.01	18.40	13.75	17.94	14.57
	Kerala	25.95	25.02	22.90	21.61	14.90	14.09	12.17	-
	Pondicherry	16.05	16.55	17.21	18.47	19.35	14.43	18.91	-
	Tamil Nadu								
	TNEB	20.53	20.10	18.98	14.39	18.87	19.90	-	-
	TANGEDCO	-	-	-	-	-	18.85	21.7	20.72
	Total	**23.93**	**22.69**	**19.85**	**16.92**	**19.05**	**19.26**	**-**	**-**
Western	Chattisgarh	38.19	36.12	34.62	32.73	36.28	28.64	29.05	25.12
	Goa	15.17	19.39	14.24	21.69	6.12	14.08	15.12	14.14
	Gujarat								
	Dakshin GVCL	22.40	20.59	19.36	16.11	15.23	13.08	15.12	14.14
	Madhya GVCL	24.61	20.08	23.07	14.98	15.27	14.83	13.14	14.94
	Paschim GVCL	43.05	38.27	40.39	31.78	32.35	26.75	14.4	30.41
	Uttar GVCL	27.57	20.15	23.60	16.31	18.89	7.20	28.03	14.37
	Madhya Pradesh								
	MPMadhya KVVCL	43.20	56.64	55.79	50.24	42.26	43.95	45.85	29.97
	MPPaschim KVVCL	46.91	39.24	44.36	36.38	36.16	31.12	34.43	28.16
	MPPoorvi KVVCL	47.90	52.14	47.18	55.84	46.11	37.99	34.94	36.4
	Maharashtra								
	Maharashtra State EDCL	36.74	39.35	35.19	31.19	25.02	23.30	21.63	21.95
	Total	**38.29**	**37.37**	**35.93**	**31.64**	**28.02**	**24.44**	**-**	**-**

Categories of MCS	Individual Control Systems
Basic Control Systems	Budget Control
	Cost control
	Quality Control
	Internal Audit
Planning System	Weightage to long term plan
	Breaking annual plans
	Guidelines
	Standard formats
	Time schedule
	Participation in Planning
Decision Making System	Clarity of Authority & Responsibilities
	Delegation of power
	Degree of Involvement
	Suggest to the higher authority
Performance Management System	Efficacy of policies
	Degree of Tolerance
	Degree of Co-operation
	Degree of compliance
	Degree of support
	Target setting
HR System (Personnel Control)	Goal Congruence
	Transfer Policy
	Sponsoring for training
	Effectiveness of training
	Performance Appraisal System
	Performance-Reward Link
Monitoring & Review	Frequently of reports
	Usefulness of periodic reports
	Handling Performance gaps
	Functioning of monitoring and review system
Regulatory Control	• Percentage of Correct Metering • Customer Complaint Cell • System of identifying cost of service • Improvement in Customer Services • Performance improvement

Organisational Performance